AHFE International
Applied Human Factors and Ergonomics Conference
2019
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2019 AHFE International

10th International Conference on Applied Human Factors and Ergonomics

jointly with

1st International Conference on Industrial Cognitive Ergonomics and Engineering Psychology
1st International Conference on Human Factors for Apparel and Textile Engineering
2nd International Conference on Human Factors in Artificial Intelligence and Social Computing
2nd International Conference on Kansei Engineering
2nd International Conference on Additive Manufacturing, Modeling Systems and 3D Prototyping
2nd International Conference on Advanced Production Management and Process Control
2nd International Conference on Interdisciplinary Practice in Industrial Design
2nd International Conference on Human Factors in Aging and Gerontology
2nd International Conference on Human Factors and Assistive Technology
3rd International Conference on Human Factors and Wearable Technologies
3rd International Conference on Human Error, Reliability, Resilience, and Performance
3rd International Conference on Human Factors in Communication of Design
3rd International Conference on Human Factors in Virtual Environments and Game Design
4th International Conference on Design for Inclusion
4th International Conference on Cognitive Computing and Internet of Things
4th International Conference on Human Factors and Simulation
4th International Conference on Human Factors in Management and Leadership
5th International Conference on Human Factors in Cybersecurity
5th International Conference on Human Factors and Systems Interaction
5th International Conference on Human Factors in Robots and Unmanned Systems
5th International Conference on Human Factors in Sports, Injury Prevention and Outdoor Recreation
5th International Conference on Human Factors, Business Management and Society
5th International Conference on Human Factors in Energy
5th International Conference on Human Factors in Training, Education, and Learning Sciences
6th International Conference on Human Factors, Software, Service and Systems Engineering
6th International Conference on Architecture, Sustainable Urban Planning and Infrastructure
6th International Conference on Safety Management and Human Factors
7th International Conference on Affective and Pleasurable Design
7th International Conference on Human Factors in Transportation
7th International Conference on Ergonomics in Design
8th International Conference on Cross-Cultural Decision Making
8th International Conference on Human Factors and Ergonomics in Healthcare and Medical Devices
8th International Conference on Digital Human Modeling and Applied Optimization
10th International Conference on Physical Ergonomics and Human Factors
10th International Conference on Usability & User Experience
10th International Conference on Neuroergonomics and Cognitive Engineering
10th International Conference on Social & Occupational Ergonomics
20th International Conference on The Human Aspects of Advanced Manufacturing: Managing Enterprise of the Future

Final Program

July 24-28, 2019

Washington Hilton
Washington D.C. USA

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AHFE International
Applied Human Factors and Ergonomics Conference
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Opening Plenary Session and Keynote Address

Date: Thursday, July 25 • 17:00 - 19:00
Room: Columbia Ballroom (Terrace Level)
Chair: Dylan Schmorrow

INTRODUCTORY REMARKS
Waldemar Karwowski - General Conference Chair

IN THE FUTURE WILL THERE BE HUMANS TO FACTOR IN?

Prof. Peter A. Hancock
Pegasus Professor, Provost Distinguished
Research Professor, and Trustee Chair
University of Central Florida, USA

About the speaker
Peter A. Hancock, D.Sc., Ph.D. is Provost Distinguished Research Professor in the Department of Psychology and the Institute for Simulation and Training, as well as at the Department of Civil and Environmental Engineering and the Department of Industrial Engineering and Management Systems at the University of Central Florida (UCF). In 2009, at UCF, he was selected as the 16th University Pegasus Professor and named the 6th University Trustee Chair in 2012. He directs the MIT2 Research Laboratories and is Associate Director of the Center for Applied Human Factors in Aviation (CAHFA). Prior to his current position, he founded and was the Director of the Human Factors Research Laboratory (HFRL) at the University of Minnesota, where he held appointments as Professor in the Departments of Computer Science and Electrical Engineering, Mechanical Engineering, Psychology, and Kinesiology as well as at the Cognitive Science Center and the Center on Aging Research. He continues to hold an appointment as a Clinical Adjunct Professor in the Department of Psychology at Minnesota. He is also an affiliated Scientist of the Humans and Automation Laboratory at MIT, a Research Associate of the University of Michigan Transport Research Institute, and a Senior Research Associate at the Institute for Human and Machine Cognition in Pensacola, Florida. Professor Hancock is the author of over seven hundred refereed scientific articles and publications as well as writing and editing over twenty books.

CONFERENCE RECEPTION/BANQUET: THURSDAY, JULY 25 • 19:00
COLUMBIA BALLROOM (TERRACE LEVEL)
(AHFE 2019 BADGE REQUIRED)
Dress is business casual

Tutorials

Pre-conference Tutorials
All Tutorials will be offered on Wednesday, July 24 and Thursday, July 25, 2019 (Cardozo, Gunston and Fairchild rooms are at the Terrace Level)
Tutorial registration is required.

WEDNESDAY, JULY 24

8:00 - 12:00	Coffee Break at 10:30		Room
T-1	An Introduction to Cognitive Work Analysis	Presenter: Neville Stanton, University of Southampton	Cardozo
T-3	Cybersecurity: How to Protect Yourself and Your Company From Cyber Attacks	Presenter: Abbas Moallem, San Jose State University	Gunston
T-14	User-Centered Design Process	Presenter: Javed Sheikh, University of Sialkot	Fairchild

13:00 - 17:00	Coffee Break at 15:30		Room
T-4	Modern Design Heuristics	Presenter: Everett McKay, UX Design Edge	Cardozo
T-6	Researching UX: How Can You Ensure That You Provide a Good Experience for Your Users?	Presenters: Ger Joyce, Katarzyna Zerka, TripAdvisor and Google	Fairchild
T-16	Critical Safety Systems: Designing Warning Strategies and Requirements	Presenter: Susana Costa, University of Minho	Gunston

THURSDAY, JULY 25

8:00 - 12:00	Coffee Break at 10:30		Room
T-7	A Practical Guide to Doing Task Analysis	Presenter: Neville Stanton, University of Southampton	Cardozo
T-8	Intuitive and Simple Design	Presenter: Everett McKay, UX Design Edge	Fairchild

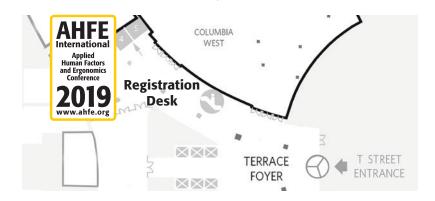| 13:00 - 17:00	Coffee Break at 15:30		Room
T-10	Prototyping HMI for Partially and Highly Automated Vehicles: A Balanced Human Systems Integration Approach	Presenters: Marcel Baltzer, Frank Flemisch, RWTH-Aachen and Fraunhofer	Cardozo
T-12	Rapid Design Elicitation and Iteration Using Q-Methodology	Presenter: Eric Vorm, Navy Aerospace Experimental	Fairchild
T-13	Eye Tracking in Use "I see What You See:" How We Can Effectively Use Eye Tracking Data in Research	Presenter: Julia Falkowska, Wroclaw University of Science and Technology	Gunston

**AHFE 2019 Registration Desk
Located at Terrace Foyer
(Terrace Level)**

Conference
Reception/Banquet
Thursday, July 25 • 19:00

Columbia Ballroom
(Terrace Level)

(AHFE 2019 Badge Required)
Dress is business casual

Registration desk open:

Tuesday, July 23............13:00 - 18:00
Wednesday, July 24.......7:00 - 18:00
Thursday, July 25............7:00 - 18:00
Friday, July 26..................7:00 - 18:00
Saturday, July 27..............7:30 - 16:00
Sunday, July 28...............7:30 - 16:00

Scientific Advisory Board (SAB) Meetings (simultaneous) Saturday, July 27, 13:00-13:30	
Conference/Track	**Room**
Human Factors and Systems Interaction	Columbia 1
Human Factors in Aging and Gerontology	Columbia 2
Human Factors in Management and Leadership	Columbia 3
Human Factors in Training, Education, and Learning Sciences	Columbia 3
Human Factors, Architecture, Sustainable Urban Planning and Infrastructure	Columbia 4
Additive Manufacturing, Modeling Systems and 3D Prototyping	Morgan
Advanced Production Management and Process Control	Holmead West
Human Factors and Assistive Technology	Fairchild East
Human Factors and Simulation	Dupont
Neuroergonomics & Cognitive Engineering	Columbia 9
Cognitive Computing and Internet of Things (IoT)	Columbia 9
Safety Management and Human Factors	Columbia 10
Transportation: Aviation, Road & Rail, Maritime, Space	Columbia 11
Digital Human Modeling and Applied Optimization	Columbia 12
Interdisciplinary Practice in Industrial Design	Cardozo
Industrial Cognitive Ergonomics and Engineering Psychology	Embassy
Design for Inclusion	Gunston West

Conference at a Glance

#	Session Title	Room	Track
	Session Time: 8:00 - 10:00 (pages 11 - 16)		
1	Plenary: Neuroergonomics and Cognitive Engineering	Columbia 1	CN
2	Plenary: Human Factors in Robots and Unmanned Systems	Columbia 2	HFRUS
3	Symposium: Digital Human Modelling by Women in Human Factors I	Columbia 3	DHMAO
4	Sociotechnical Approach to Road Safety (STARS)	Columbia 4	RR
5	Physical Ergonomics and Comfort	Morgan	PEHF
6	Information, Design and Visualization	Holmead West	ED
7	Ergonomics in Design: Application in Indian Context	Fairchild East	ED
8	Artificial Intelligence and Social Computing I	Du Pont	AISC
9	Advances in User Experience, Affordance and Technology	Columbia 9	SYSI
10	Human Factors, Business Management and Society: Business Development	Columbia 10	HFBMS
11	Education in Medicine and Rehabilitation	Columbia 11	TELS
12	Human Factors for Apparel Design/Engineering	Columbia 12	HFATE
13	Leadership, Change Process and Technology	Cardozo	HFML
14	Algorithmic Design and Rapid Prototyping for Cultural Heritage I	Gunston West	AMMSP
15	Strategic Decision Making Models in Manufacturing and Service Systems	Embassy	APMPC
16	Emotional Evidence	Gunston East	IPID
17	Human Factors and Assistive Technology I	Jay	HFAT
18	Healthcare Worker Risk and Diagnosis Systems	Holmead East	EHMD
	Refreshments: 10:00 - 10:30 • Room: Columbia West (Terrace Level)		
	Session Time: 10:30 - 12:30 (pages 17 - 22)		
20	Systemic-Structural Activity Theory	Morgan	CN
21	Physical Ergonomics & Human Factors	Holmead West	PEHF
22	Human Resilience in Aviation and Space Systems	Fairchild East	AVI/HERRP
23	Social Design, Innovation and Ergonomics I	Du Pont	SOE
24	Ergonomics in Building and Architecture I	Columbia 1	SUPI
25	User Experience: Smart Phone and Mobile Applications	Columbia 2	UUE
26	Behavioral and Cognitive Science	Columbia 3	TELS
27	Panel: Human-Agent Teaming: Soldiers, Sailors, Airmen, and Marines and Their Alliance with Autonomous Unmanned Vehicles	Columbia 4	HFRUS
28	Occupational Safety, Defense and Security	Columbia 9	HFSIM
29	Human Factors in Virtual Environments I	Columbia 10	HFGD
30	Design in Advertising and Media Communication	Columbia 11	HFCD
31	Algorithmic Design and Rapid Prototyping for Cultural Heritage II	Columbia 12	AMMSP
32	Interdisciplinary Design and Education	Cardozo	IPID
33	Design for Health and Wellness	Gunston West	IPID
34	Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries	Embassy	ENERGY
35	Brain - Machine Interface and Artificial Intelligence (AI) Systems	Gunston East	ICEEP
36	Transportation: Maritime	Jay	MAR
37	New Trends of Development and Application of Risk Analyses Methods in the Strategy of Industry 4.0	Holmead East	PEHF

#	Session Title	Room	Track
Session Time: 13:30-15:30 (pages 22 - 28)		
39	Emotion, Culture and Society	Morgan	APD
40	Understanding and Monitoring Human Performance Under Highly Ecological Settings	Holmead West	CN/CCIoT
41	UX in Design	Fairchild East	ED
42	Tasks, Errors and Personal Resilience	Du Pont	HERRP
43	Agile Manufacturing	Columbia 1	MFG
44	Safety and Human Factors at a Societal Level	Columbia 2	SMHF
45	Automation I	Columbia 3	RR
46	Ergonomics in Building and Architecture II	Columbia 4	SUPI
47	User Experience in Healthcare and Medical Applications	Columbia 9	UUE
48	Human-Machine Interaction Applications	Columbia 10	SYSI
49	Human Factors, Business Management and Society: Social and Digital Views	Columbia 11	HFBMS
50	Internationalization in Learning Science	Columbia 12	TELS
51	Human, Artificial Intelligence, and Robot Teaming	Cardozo	HFRUS
52	Human Factors in Cybersecurity: Applications and Privacy Research	Gunston West	CYBER
53	Design for Inclusion: Building Environment, Public Spaces and Communities	Embassy	DI
54	Communication Design and Practices	Gunston East	HFCD
55	Artificial Intelligence and Social Applications II	Jay	AISC
56	Human Factors and Assistive Technology II	Holmead East	HFAT
57	Artificial Intelligence and Social Applications I	Fairchild West	AISC
Refreshments: 15:30-16:00 • Room: Columbia West (Terrace Level)		
Session Time: 16:00-18:00 (pages 29 - 34)		
58	Emotional Interaction Design	Morgan	APD
59	Human-Machine Teaming and Leadership at the U.S. Air Force Academy	Holmead West	CN
60	Cultural Aspects in Design	Fairchild East	ED
61	Design for People	Du Pont	PEHF
62	Automation II	Columbia 1	RR
63	Macroergonomic Systems Design and Improvement	Columbia 2	SOE
64	Ergonomics and Material Environment Design I	Columbia 3	SUPI
65	Usability Evaluation and Interface Design	Columbia 4	UUE
66	Human Factors in Sports, Injury Prevention and Outdoor Recreation	Columbia 9	SIPOR
67	Panel: The Impact of Vehicle Automation on Vulnerable Road Users	Columbia 10	SYSI
68	Human Factors, Business Management and Society: Leadership Views	Columbia 11	HFBMS
69	Designing for Inclusion: Learning Experiences, Methodology and Future Trends	Columbia 12	DI
70	Human Factors for Apparel and Textile Engineering	Cardozo	HFATE
71	Applications in Software, Service and Systems Engineering I	Gunston West	HFSSSE
72	Digital Human Modeling and Applied Optimization I	Embassy	DHMAO
73	Human Factors in Game Design I	Gunston East	HFGD
74	Human Factors and Wearable Technologies I	Jay	HFWT
75	Theorizing and Theoretical Issues in High Reliability Organizations	Holmead East	HERRP
76	Application of 3D Scanning to Product Design	Fairchild West	IPID

#	Session Title	Room	Track
	Session Time: 8:00 - 10:00 (pages 35 - 40)		
77	Safety and Hazards	Morgan	RR
78	Symposium: Digital Human Modelling by Women in Human Factors II	Holmead West	DHMAO
79	Fashion, Clothing and Design Applications	Fairchild East	ED
80	Product and System Design	Du Pont	ED
81	Ergonomics in Manufacturing	Columbia 1	MFG
82	Human Factors in Transportation: Rail	Columbia 2	RR
83	Driver Training, Education and Hazards	Columbia 3	RR
84	Ergonomics and Material Environment Design II	Columbia 4	SUPI
85	User Experience and HMI: Automation and Transportation	Columbia 9	UUE
86	Usability and User-Centered Design I	Columbia 10	UUE
87	Security and Crises Management	Columbia 11	SYSI
88	Panel: Advances in Navy Training Research and Applications	Columbia 12	TELS
89	Advanced Methods for Human-Agent Interfaces	Cardozo	HFRUS
90	Human Factors in Virtual Environments II	Gunston West	HFGD
91	Human Factors in Aging and Gerontology I	Embassy	AGE
92	Smart Additive Manufacturing: Sensing, Data Analytics and Process Control	Gunston East	AMMSP
93	Cross-Cultural Decision Making I	Jay	CCDM
94	Interdisciplinary Practice for Automobile Design	Holmead East	IPID
	Refreshments: 10:00 - 10:30 • Room: Columbia West (Terrace Level)		
	Session Time: 10:30 - 12:30 (pages 41 - 46)		
96	Toward a Unified Approach for Studying Long-Term Bonding Between Humans and Autonomy	Morgan	CN
97	Human-Machine Interaction in Systems	Holmead West	ICEEP
98	Safety Management and Behavior Analysis	Fairchild East	SMHF
99	The Present and Future of Macroergonomic Systems	Du Pont	SOE
100	Ergonomics in Urban Design I	Columbia 1	SUPI
101	Usability and User-Centered Design II	Columbia 2	UUE
102	Human Interaction with Small Unmanned Aerial Systems	Columbia 3	HFRUS
103	Human Factors in Cybersecurity: Awareness and Cyber-Physical Security	Columbia 4	CYBER
104	Designing for Inclusion in the Cultural Heritage	Columbia 9	DI
105	Advances in Computational Social Sciences	Columbia 10	HFSIM
106	Human Factors in Game Design II	Columbia 11	HFGD
107	Human Factors and Wearable Technologies II	Columbia 12	HFWT
108	Human Error Considerations in Design	Cardozo	HERRP
109	Human Factors for Technologies in Apparel and Textile Design/Engineering	Gunston West	HFATE
110	Recent Developments in Rapid Prototyping for Assistive Technologies	Embassy	AMMSP
111	Production, Quality and Intelligent Control Systems	Gunston East	APMPC
112	Design Embracing Information Science, Intention and Experience	Jay	IPID
113	Human Factors in Training, Education, and Learning Sciences	Holmead East	TELS

#	Session Title	Room	Track
	Session Time: 13:30-15:30 (pages 47 - 53)		
115	Sensory Engineering and Emotion	Morgan	APD
116	Health and Neuroergonomics	Holmead West	CN
117	Digital Human Modeling and Applied Optimization II	Fairchild East	DHMAO
118	Virtual Reality	Du Pont	ED
119	Communication Design	Columbia 1	ED
120	Innovative Methods and Approaches for System Interaction Design	Columbia 2	SYSI
121	Workplace Safety and Human Factors I	Columbia 3	SMHF
122	Physical Ergonomics and Work-Related Musculoskeletal Disorders I	Columbia 4	PEHF
123	Social and Occupational Ergonomics: Evaluation, Optimization and Job Design	Columbia 9	SOE
124	Ergonomics in Urban Design II	Columbia 10	SUPI
125	Usability and User Experience Applications I	Columbia 11	UUE
126	Usability and User Experience Applications II	Columbia 12	UUE
127	Management of Productivity in Smart Manufacturing/Industry 4.0	Cardozo	HFSIM/SYSI
128	Education, Learning and Flipped Classroom	Gunston West	TELS
129	Driving Behavior: Safety and Simulation	Embassy	RR
130	Advances in Simulation, Virtual and Augmented Reality	Gunston East	HFSIM
131	Design and Innovation for 3D Printing	Jay	AMMSP
132	Production Management and Process Control	Holmead East	APMPC
133	Artificial Intelligence and Machine Learning	Fairchild West	AISC
	Refreshments: 15:30-16:00 • Room: Columbia West (Terrace Level)		
	Session Time: 16:00-18:00 (pages 53 - 59)		
134	Neurobusiness Applications	Morgan	CN
135	Simulation, Altered Reality and Swarm Supervisory Control	Holmead West	CN
136	User Research	Fairchild East	ED
137	Medical Device Development	Du Pont	EHMD
138	Transportation: Aviation	Columbia 1	AVI
139	Workplace Safety and Human Factors II	Columbia 2	SMHF
140	Safety Culture, Climate, Training and Education	Columbia 3	SMHF
141	Road and Rail: Usability	Columbia 4	RR
142	Social and Occupational Factors of Comfort, Risk Assessment and Pain	Columbia 9	SOE
143	Management of Productivity by Using Assistance Systems	Columbia 10	SYSI
144	Management and Leadership of Company and Organizational Cultures	Columbia 11	HFBMS
145	Human Factors, Business Management and Efficiency	Columbia 12	HFBMS
146	Service Design and Systems Engineering	Cardozo	HFSSSE
147	Human Factors and Simulated Agents and Social and Multi-Agent Network Simulations	Gunston West	HFSIM
148	Communication Design I	Embassy	HFCD
149	Kansei Engineering I	Gunston East	KE
150	Manufacturing Aspects of Work Improvement	Jay	APMPC
151	Human Factors and Assistive Technology III	Holmead East	HFAT

#	Session Title	Room	Track
Session Time: 8:00 - 10:00 (pages 60 - 65)			
153	Affective Value and Kawaii Engineering	Morgan	APD
154	Transportation: Aviation and Space	Holmead West	AVI
155	Mental State Assessment I	Fairchild East	CN
156	City Planning	Du Pont	ED
157	Patient Safety	Columbia 1	EHMD
158	Social Design, Innovation and Ergonomics II	Columbia 2	SOE
159	Workplace Safety and Human Factors III	Columbia 3	SMHF
160	Social and Occupational Ergonomics Stress, Mental Factors and Musculoskeletal Disorders	Columbia 4	SOE
161	Usability and User Experience Applications III	Columbia 9	UUE
162	Human Computer Interaction in e-Health and Environmental Applications	Columbia 10	SYSI
163	Usability of Learning Technology	Columbia 11	TELS
164	Global and Industrial Perspectives on People-Centered Design	Columbia 12	DI
165	Applications in Software, Service and Systems Engineering II	Cardozo	HFSSSE
166	Communication Design II	Gunston West	HFCD
167	Kansei Engineering II	Embassy	KE
168	Panel: Democratization of Augmented and Virtual Reality to Enable Mass Adoption	Gunston East	SYSI
169	Ergonomics Design of Wearables	Jay	PEHF
170	Human Factors and Assistive Technology IV	Holmead East	HFAT
Refreshments: 10:00 - 10:30 • Room: Columbia West (Terrace Level)			
Session Time: 10:30 - 12:30 (pages 66 - 70)			
172	Ergonomics in Design: Applications I	Morgan	ED
173	Design Methods and Creativity	Holmead West	ED
174	Agile Manufacturing and Competencies in Work Environment	Fairchild East	MFG
175	Safety Methods for Assessment and Evaluation	Du Pont	SMHF
176	Vulnerable Road Users	Columbia 1	RR
177	Human Factors, Sustainable Urban Planning and Infrastructure II	Columbia 2	SUPI
178	System Interactions Design	Columbia 3	SYSI
179	Human Factors, Business Management and Society: Employment Views	Columbia 4	HFBMS
180	Instructional Design and Learning Strategies	Columbia 9	TELS
181	Designing for Inclusion in the Information Society	Columbia 10	DI
182	Teamwork and Leadership Development	Columbia 11	HFML
183	Human Factors and Simulation: Transportation	Columbia 12	HFSIM
184	Human Factors in Virtual Environments III	Cardozo	HFGD
185	3D Printing Technology	Gunston West	AMMSP
186	Research-Driven Design	Embassy	IPID
187	Design, Anthropometry and Posture	Gunston East	PEHF
188	Physical Ergonomics and Work-Related Musculoskeletal Disorders II	Jay	PEHF
189	Non-Traditional Sensing for Job Performance, Health and Well Being and Cognitive Constructs	Holmead East	CN

#	Session Title	Room	Track
	Session Time: 13:30-15:30 (pages 71 - 76)		
191	Affective and Pleasurable Design	Morgan	APD
192	User Interface for Accessibility	Holmead West	UUE
193	Interfaces and Interaction Design	Fairchild East	ED
194	Revitalizing Safety Management and Practice	Du Pont	SMHF
195	Road and Rail: Usability and Comfort	Columbia 1	RR
196	Information Systems	Columbia 2	EHMD
197	Usability and User Experience Applications IV	Columbia 3	UUE
198	System Accessibility Design	Columbia 4	SYSI
199	HRI Applications in the Workplace and Exoskeletons	Columbia 9	HFRUS
200	Visual Ergonomics and Visual Performance	Columbia 10	ED
201	Applications in Software, Service and Systems Engineering III	Columbia 11	HFSSSE
202	Physical, Mental and Social Effects in Simulation	Columbia 12	HFSIM
203	Human Factors and Wearable Technologies III	Cardozo	HFWT
204	Human Reliability Analysis for Safety Critical Industries	Gunston West	HERRP
205	Macro 3D Printing	Embassy	AMMSP
206	Human Aspects in Industrial Environment	Gunston East	APMPC
207	Human Factors and Assistive Technology V	Jay	HFAT
208	Artificial Intelligence and Social Computing II	Holmead East	AISC
	Refreshments: 15:30-16:00 • Room: Columbia West (Terrace Level)		
	Session Time: 16:00-18:00 (pages 77 - 82)		
210	Virtual Reality and Machine Learning for Neuroergonomics	Morgan	CN
211	Ergonomics in Design: Applications II	Holmead West	ED
212	Cross-Cultural Decision Making II	Fairchild East	CCDM
213	Applications in Human Interaction and Design	Du Pont	ICEEP
214	Designing Autonomy in Transportation: Age and Inclusion	Columbia 1	RR
215	Panel: Practical State of the Art Augmented and Virtual Reality for Operational Usage	Columbia 2	SYSI
216	Human Factors, Sustainable Urban Planning and Infrastructure III	Columbia 3	SUPI
217	Usability and User Experience Applications V	Columbia 4	UUE
218	Educational Strategies	Columbia 9	TELS
219	Theoretical Advances in Human Error and Performance	Columbia 10	HERRP
220	Human Factors for Textile Design/Engineering	Columbia 11	HFATE
221	Human Factors in Aging and Gerontology II	Columbia 12	AGE
222	Additive Manufacturing, New Materials and Industrial Processes	Cardozo	AMMSP
224	Organizational Complexity and Leadership Management	Embassy	HFML
225	Human Systems Engineering and User Centered Design	Gunston East	HFSSSE
226	Mental State Assessment II	Jay	CN
227	Digital Human Modeling and Applied Optimization III	Holmead East	DHMAO

Conference at a Glance

Acronym	Track
ICEEP	1st International Conference on Industrial Cognitive Ergonomics and Engineering Psychology
HFATE	1st International Conference on Human Factors for Apparel and Textile Engineering
AMMSP	2nd International Conference on Additive Manufacturing, Modeling Systems and 3D Prototyping
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TELS	5th International Conference on Human Factors in Training, Education, and Learning Sciences
HFBMS	5th International Conference on Human Factors, Business Management and Society
HFSSSE	6th International Conference on Human Factors, Software, Service and Systems Engineering
SUPI	6th International Conference on Human Factors, Architecture, Sustainable Urban Planning and Infrastructure
SMHF	6th International Conference on Safety Management and Human Factors
APD	7th International Conference on Affective and Pleasurable Design
ED	7th International Conference on Ergonomics in Design
AVI/MAR/RR/SPACE	7th International Conference on Human Factors in Transportation: Aviation, Maritime, Road & Rail, Space
EHMD	8th International Conference on Human Factors and Ergonomics in Healthcare and Medical Devices
CCDM	8th International Conference on Cross-Cultural Decision Making
DHMAO	8th International Conference on Digital Human Modeling and Applied Optimization
CN	10th International Conference on Neuroergonomics and Cognitive Engineering
PEHF	10th International Conference on Physical Ergonomics and Human Factors
SOE	10th International Conference on Social & Occupational Ergonomics
UUE	10th International Conference on Usability & User Experience
MFG	20th International Conference on The Human Aspects of Advanced Manufacturing (HAAMAHA): Manufacturing Enterprises in a Digital World

1	**Plenary: Neuroergonomics and Cognitive Engineering** Chair: Hasan Ayaz, USA	CN
8:00-10:00 COLUMBIA 1	Collaborative brain computer interfaces for group cognitive augmentation 　　Riccardo Poli, UK	
2	**Plenary: Human Factors in Robots and Unmanned Systems** Chair: Jessie Chen, USA	HFRUS
8:00-10:00 COLUMBIA 2	Understanding people for human robot interaction 　　Greg Trafton, USA	
3	**Symposium: Digital Human Modelling by Women in Human Factors I** **Co-Chairs: Sofia Scataglini and Hyegjoo Choi, Belgium/USA**	DHMAO
8:00 -10:00- COLUMBIA 3	A new quantitative kinesiophobia assessment 　　Sofia Scataglini, Tahar Ghenimi, Eddy Roosens, Veerle Stevens, Damien Van Tiggelen, Belgium Towards occupant protections for both men and women 　　Fusako Sato, Karin Brolin, Mats Svensson, Astrid Linder, Japan Effects of body armor fit on the area of 3D surface coverage 　　Hyegjoo Choi, Todd Garlie, Peng Li, Asbed Tashjian, USA Determination of electrical resistance for conductive textiles under simulated wearing environment using modified sweating guarded hotplate 　　Hyunjin Koo, Jungsang Lee, Guira Park, Gyeongmin Yi, South Korea Estimation of preferred work envelope from simulated functional tasks in a spacesuit 　　Elizabeth Benson, Sarah Jarvis, K. Han Kim, Jason Norcross, Sudhakar Rajulu, USA	
4	**Sociotechnical Approach to Road Safety (STARS)** Chair: Neville Stanton, UK	RR
8:00-10:00 - COLUMBIA 4	Socio-technical approach to road safety (STARS) 　　Neville Stanton, UK Application of Accimap methodology in road accident investigation in Bangladesh 　　Md Shamsul Hoque, Mithun Debnath, Omar Faruqe Hamim, Shahnewaz Hasanat-E-Rabbi, Rich McIlroy, Katie Plant, Neville Stanton, Bangladesh/UK Socio-technical approach to road safety: Attitudes to road traffic safety in Kenya: results of a survey in Nairobi 　　Brenda Bunyasi, Gilbert Kokwaro, Sylvia Anyika, James Oyoo, Kevin Otieno, Annette Murunga, Kenya A comparison of schema-base differences in situation awareness between driver, motorcyclist and pedestrians in mixed traffic situation 　　Nam Vu Hoai, Vietnam Moving from actor maps to systems theoretic accident model and processes models 　　Rich McIlroy, Neville Stanton, Katie Plant, UK Attitudes, fatalistic beliefs and risk perception of pedestrians in China 　　Adnan Yousaf, Wu Jianping, Mingyu Liu, Linyang Wang, China	

5	**Physical Ergonomics and Comfort** Co-Chairs: Gunther Paul and Nelson Costa, Australia/Portugal	PEHF

8:00-10:00 - MORGAN

Comparing the results of three methods used to predict heart rate-based on energy expenditure
    Sahar Arab, Daniel Imbeau, Philippe-Antoine Dubé, Denise Dubeau, Canada

Can the use of well-adjusted school furniture improve students' performance?
    Agostinho Fernandes, Paula Carneiro, Nelson Costa, Ana Braga, Portugal

Influence of lumbar support prominence for a car seat in the seating pressure and discomfort perception.
    Luis Ortiz, Fernanda Maradei, Laura Tatiana Gerrero, Paula Andrea Galvis, Colombia

Analysis of work-related musculoskeletal disorders on office workers at the Industrial University of Santander
    Fernanda Maradei, Jenny Rodriguez, Javier Castellanos, Colombia

Human sweating measurements
    Xiaoli Fan, Chaoyi Zhao, Hong Luo, Wei Zhang, China

Customization of the user-wheelchair seat interface through an iterative experimental-computational process
    Gunther Paul, Leyde Briceno, Joshua Condon, Peter Slattery, Australia

6	**Information, Design and Visualization** Co-Chairs: Joana Lessa and João Brandão, Portugal	ED

8:00-10:00 - HOLMEAD WEST

Water museums and digital media: Two case studies on digital media in water museums
    Joana Lessa, Portugal

A human-computer interaction framework for interface analysis and design
    Sónia Rafael, Victor Almeida, Marco Neves, Portugal

Collaboration: Critical roles of academia-business partnerships and challenges the workforce must face
    Sara Antunes, Rita Almendra, Portugal

The 'place' that shows the title of a TV series - what to name it and how it has evolved
    Ricardo Pestana, João Brandão, Portugal

Information design in presentation, interpretation and dissemination of natural and cultural heritage
    Cristina Santos, Maria João Neto Pereira, Marco Neves, Portugal

Communication design and medical procedures: Inform citizens to act in emergency situations
    Marco Neves, Ana Rafaela Poças, Portugal

Color and interaction in journalistic infographics: The case of online Portuguese media
    Rita Salomé Esteves, Marco Neves, Portugal

7	**Ergonomics in Design: Application in Indian Context** Co-Chairs: Ajita D. Singh and Manoj Majhi, India	ED

8:00-10:00 - FAIRCHILD EAST

Effects of playing surface on physiological responses and performance variables of hockey players
    Ajita Dsingh, Ajay Deswal, India

Role of postural control exercises and pelvic floor muscle exercises on chronic non-specific low back pain of women with sitting jobs
    Ajita Dsingh, Amanpreet Kaur, India

The role of organizational factors in development and progression of wrist disorders: Psychosocial aspects
    Arunita Paul, Urmi Salve, India

Developing a framework that can assist designers to identify and incorporate notable cultural elements into products designed for tourists
    Wanrisa Bok Kharkongor, Debkumar Chakrabarti, India

Design interventions of an Exergame for fall problem in Indian older adults
    Nilakshi Yein, Swati Pal, India

A re-look into the information in multimedia design and animation theme presentation
    Manoj Majhi, Debkumar Chakrabarti, India

8	**Artificial Intelligence and Social Computing I** Co-Chairs: Tomek Strzalkowski and Anthony Palladino, USA	AISC

8:00-10:00 - DU PONT

Relevancy, bias, and coverage in news data scraped for automated social science analytics
Anthony Palladino, Elisa J. Bienenstock, Skaidra Smith-Heisters, Timothy K. Perkins, Michael Salwen, USA

EmoVis – An interactive visualization tool to track emotional trends during crisis events
Samira Shaikh, Karthik Ravi, Tiffany Gallicano, Michael Brunswick, Bradley Aleshire, Omar El-Tayeby, Sara Levens, USA

Using information processing strategies to predict message level contagion in social media
Sara Levens, Omar Eltayeby, Samira Shaikh, Tiffany Gallicano, Michael Brunswick, USA

Social CONVOS: A new approach to modeling information diffusion in social media
Tomek Strzalkowski, Gregorios Katsios, Ning Sa, USA

Manipulated information dissemination and risk-adjusted momentum return in the Chinese stock market
Hung-Wen Lin, Jing-Bo Huang, Kun-Ben Lin, Shu-Heng Chen, Taiwan

Actionable pattern discovery for tweet emotions
Jaishree Ranganathan, Angelina Tzacheva, Sai Yesawy Mylavarapu, USA

Dimensionality reduction to improve the accuracy of recommendation systems
Remigio Hurtado, Remigio Hurtado, Rodolfo Bojorque, Ecuador

9	**Advances in User Experience, Affordance and Technology** Co-Chairs: Adriano B. Renzi and Olnei Fonseca De Almeida, Brazil	SYSI

8:00-10:00 - COLUMBIA 9

Pharmaceutical online store project: Usability, affordances and expectations
Marcelo Guimarães, Rodrigo Zisman, Adriano Renzi, Brazil

Social event management system: Users' recommendations
Thiago Gomes da Silva, Adriano Renzi, Brazil

User experience interaction in cross-channel systems: Comparing heuristic evaluations
Adriano Renzi, Olnei Fonseca De Almeida, Marcos Cesar, Brazil

Banking cross-channel system UX evaluation
Olnei Fonseca De Almeida, Adriano Renzi, Brazil

Desatenó: Management system app for buildings
Evelin Daiane Barreto dos Santos, Adriano Renzi, Brazil

Towards machine translation of Chinese complex structures
Jiali Du, Pingfang Yu, China

Challenge of implanting educational management systems in Brazilian schools
Eline Holanda Cavalcanti Guimaraes, Angelica Fonseca da Silva Dias, Juliana Baptista dos Santos França, Brazil

10	**Human Factors, Business Management and Society: Business Development** Co-Chairs: Jussi Kantola and Heikki Ruohomaa, Finland	HFBMS

8:00-10:00 - COLUMBIA 10

Intermediary organization and collaboration platform for SMEs
Kodjovi Lotchi, Ebo Kwegyir-Afful, Afnan Zafar, Ari Sivula, Jussi Kantola, Finland

Company decision factors while choosing the future location for the future business
Heikki Ruohomaa, Vesa Salminen, Finland

Ecosystem-based development on managing digital transformation
Heikki Ruohomaa, Vesa Salminen, Finland

A model for capturing tacit knowledge in enterprises
Yehya Soliman, Hannu Vanharanta, Poland/Finland

Responsibility caps from strategy to operations in leadership and management - conceptual model
Tero Reunanen, Finland

ENGINE model- Changing higher education with industry cooperation
Rauni Jaskari, Timo Holopainen, Tero Reunanen, Martin Grotjahn, Thomas Röhr, Ludger Schneider-Störmann, Finland

Knowledge management model to support a supply chain for timely order delivery in a telecommunications equipment marketing company
Nicolle Vargas, Denisse Villaverde, Gino Viacava, Carlos Raymundo, Francisco Dominguez, Peru

11	**Education in Medicine and Rehabilitation** Co-Chairs: Joanna Bartnicka and Mariusz Stepien, Poland	TELS

8:00-10:00 - COLUMBIA 11

The Erasmus+ strategic partnership as a way to attract young people to engineering
> Mariusz Stepien, Anton Rassolkin, Kévin Berger, Toomas Vaimann, Poland

Virtual reality in stroke rehabilitation: Educational challenges for medics and patients
> Joanna Bartnicka, Agnieszka Aneta Zietkiewicz, Joanna Roziak, Alicja Kasprzak, Poland

Functional evaluation as a new learning area against "functional disability epidemic"
> Joanna Bartnicka, Katarzyna Mleczko, Agnieszka Aneta Zietkiewicz, Cristina Herrera, Constanza Valenzuela, Peter Dieter, Poland

Methods and tools for acquiring high-quality skills in digital era - innovative practices and results from 3DSPEC and e-MOTIVE projects
> Dariusz Michalak, Magdalena Rozmus, Poland

A teaching experience of the human-computer interaction course in a Master Program
> Freddy Paz, Freddy Asrael Paz, Arturo Moquillaza, Fiorella Falconi, Peru

Cyberloafing in academia: Determinants and impacts
> Anees Baqir, Javed Anjum Sheikh, Hamaad Rafique, Pakistan

12	**Human Factors for Apparel Design/Engineering** Co-Chairs: Longlin Luo and Jia Lyu, China	HFATE

8:00-10:00 - COLUMBIA 12

Research on human factors engineering for the innovative design of work clothes for couriers
> Longlin Luo, Xiaoping Hu, China

The application and development of smart clothing
> Jia Lyu, Yue Sui, Dongsheng Chen, China

Dynamic wardrobe from a user's perspective
> Carla Morais, Portugal

Performative approaches in designing costumes: Ergonomics in immersion and storytelling
> Alexandra Cabral, Carlos M. Figueiredo, Portugal

Exploring fashion design methods: understanding human factors in new society contexts
> Luís Santos, Gianni Montagna, Maria João Neto Pereira, Portugal

Apparel for aging users
> Cristina Carvalho, Gianni Montagna, Carla Morais, Portugal

13	**Leadership, Change Process and Technology** Co-Chairs: Christian Vocke and Diana Paola Moreno Alarcon, Germany/France	HFML

8:00-10:00 - CARDOZO

Technology start-up firms' management of data security and trust in collaborative work with third-parties in a developing economy
> Mohammed Aminu Sanda, Ghana

Work in the age of artificial intelligence - challenges and potentials for the design of new forms of human-machine interaction
> Wilhelm Bauer, Christian Vocke, Germany

Production process improvement of automotive wire harnesses enterprise through work teams
> Velia Herminia Castillo Pérez, Mario Corral-Chacón, Liliana Carrasco-Armendariz, Ramon Elizondo, Mexico

Applying safety leadership and systems thinking to the formal and informal controls approach used in safety and risk management within the French nuclear sector
> Diana Paola Moreno Alarcon, Jean Francois Vautier, Guillaume Hernandez, Franck Guarnieri, France

Leadership and the human factor in an enterprise providing services to the Polish Armed forces
> Artur Kobylanski, Zbigniew Wisniewski, Malgorzata Wisniewska, Poland

A study on concepts development of 'Locavore' for restaurant managers in Taiwan
> Shao-Chieh Lin, Jen-Son Cheng, Shieh-Liang Chen, Peng-Jyun, Taiwan

A study of team structure to enable effective product development process implementation
> Shasha Lu, Bin Yao, Chao Zhan, Hongtao Liu, Jin Zhefeng, China

14	**Algorithmic Design and Rapid Prototyping for Cultural Heritage I** Co-Chairs: Leonardo Baglioni and Graziano Mario Valenti, Italy	AMMSP

8:00-10:00 - GUNSTON WEST

An algorithmic approach to VIEWSHEDS analysis for cultural landscape: Manziana and the Bracciano lake area
> Matteo Flavio Mancini, Italy

Design and digital fabrication of a parametric joint for bamboo sustainable structures
> Francesco Di Paola, Andrea Mercurio, Italy

Three renaissance vaults in Milan. Cultural heritage and digital workflows for BIM modelling
> Cecilia Bolognesi, Fausta Fiorillo, Damiano Aiello, Italy

Four projects of Pier Luigi Nervi. A methodology for the construction and 3D print of architectural models
> Federico Fallavollita, Italy

Parametric design of applied origami with a synthetic computational approach
> Riccardo Foschi, Fabrizio I. Apollonio, Federico Fallavollita, Italy

Generative design for printable mass customization jewelry products
> Massimo Di Nicolantonio, Emilio Rossi, Italy

15	**Strategic Decision Making Models in Manufacturing and Service Systems** Co-Chairs: Yusuf Tansel Ic and İsmail Bıçakcı, Turkey	APMPC

8:00-10:00 - EMBASSY

Ergonomic risk evaluation in work stations based on FARE-KEMIRA-M integration
> Pelin Toktas, Gülin Feryal Can, Turkey

Prioritizing workers according to their exposure levels in manual lifting tasks by implementing MCDM approach
> Gülin Feryal Can, Pelin Toktas, Turkey

A component based model developed for machine tool selection decisions
> Yusuf Tansel Ic, Mustafa Yurdakul, Turkey

A new formulation for level of repair analysis problem with multiple upstream approach in repair network
> İsmail Bıçakcı, Yusuf Tansel Ic, Turkey

Multiple service home health care routing and scheduling problem: A mathematical model
> Asiye Ozge Dengiz, Kumru Didem Atalay, Fulya Altıparmak, Turkey

Order acceptance and scheduling problem: A proposed formulation and the comparison with the literature
> Papatya Sevgin Bıçakcı, İmdat Kara, Turkey

Management model logistic for the use of planning & inventory tools in a selling company of the automotive sector in Peru
> Luis Carazas, Manuel Barrios, Victor Nunez, Carlos Raymundo, Francisco Dominguez, Peru

16	**Emotional Evidence** Co-Chairs: YoungAe Kim and Joungyun Choi, USA	IPID

8:00-10:00 - GUNSTON EAST

In & out of school: Capturing the lived experiences of Latinx students through images
> Jeremy Swanston, Gerta Bardhoshi, USA

How creative mindset is involved in positive emotions and attitude that affects creative design process
> Joungyun Choi, USA

Happiness on Instagram – Content analysis and engagement based on attention theory
> Qiuwen Li, YoungAe Kim, USA

How color coding encourages emotional interactions while using smartphones
> YoungAe Kim, USA

A journey of taking industrial design students into uncharted territories: Designing crowd-sourced playful interactions for a public art event
> Magnus Feil, Milagros Zingoni, USA

Teaching industrial design through real world markets and manufacturing
> George Chow, USA

17	**Human Factors and Assistive Technology I** Co-Chairs: Anna Szopa and Lama Hamandi, USA/Lebanon	**HFAT**

8:00-10:00 - JAY

Evaluation of a multilingual workspace to practice math for visually impaired students
> Islam Elkabani, Lama Hamandi, Rached Zantout, Lebanon

The auto-personalization computing project in libraries
> Anna Szopa, Gregg Vanderheiden, Bern Jordan, David Folmar, USA

A comparative study of augmented reality assistant tools in assembly
> Lea Daling, Anas Abdelrazeq, Christoph Sauerborn, Frank Hees, Germany

The effect of training with a prosthetic hand simulator in adult non-amputees: A controlled pilot study
> Stijn Verwulgen, Erik Haring, Kristof Vaes, Anouck Mees, Bram Raeymaekers, Steven Truijen, Belgium

Human factors in all-terrain wheelchair design for rural population
> Paula Chacon-Cifuentes, A. A. Zuleta, Gustavo Sevilla, Andres Valencia-Escobar, Esteban Correa-Bedoya, Felix Echeverria-Echeverria, Colombia

Usability of assistive technology in the workplace: A literature review
> Carolina Alonso, Danielle Silva dox Santos, Francisco Duarte, Brazil

18	**Healthcare Worker Risk and Diagnosis Systems** Co-Chairs: Chuliporn Sopajareeya and Riad Taha Al-Kasasbeh, Thailand/Russia	**EHMD**

8:00-10:00 - HOLMEAD EAST

Low back pain and work ability among Thai nurses
> Chuliporn Sopajareeya, Thailand

Evaluation of the impact of the ergonomics of technical systems on the state of health of a human operator with regard to his functional reserve
> Riad Taha Al-Kasasbeh, Nikolay Korenevskiy, Altyn Aikeyeva, Ilyash Maksim, Jordan/Russia

Are teachers more affected by burnout than physicians, nurses and other professionals? A systematic review of the literature
> Myriam Squillaci, Switzerland

Understanding the challenges to the safe delivery of care in the Mexican healthcare system
> Carlos D. de León Zuloaga, Carlos Aceves-Gonzalez, Elvira Perez Vallejos, Rosa Rosales-Cinco, Alexandra Lang, Sue Higness, Mexico/UK

Ergonomic injury risk across ten surgical specialties
> John Vaughan, Yona Vaisbuch, Justin Moore, Ksenia Aaron, Yifei Ma, USA

Quantitative evaluation of pulse diagnosis using capillary blood flow of images
> Yumie Osada, Fuminori Matsuura, Yoshinori Hirano, Xiaodan LU, Tomoko Ota, Hiroyuki Hamada, Noriyuki Kida, Japan

SENS: A motion feedback device to assist in improving joint motion
> Jeff Feng, Rajeshree Jaiswal, USA

10:00 - 10:30   Refreshments will be provided in Columbia West (Terrace Level)

20	**Systemic-Structural Activity Theory** Co-Chairs: Inna Bedny and Alexander Yemelyanov, USA	CN

10:30 - 12:30 - MORGAN

Self-regulation model of decision-making
　　Alexander Yemelyanov, USA
Application of systemic-structural activity theory to evaluation of innovations
　　Inna Bedny, USA
Goal-classification and the influence of activity-goal-formation on individuals'
systemic-consideration of activity-strategies and decision-outcomes
　　Mohammedaminu Sanda, Ghana
Performance evaluation process and express decision
　　Alexander Yemelyanov, Alla Yemelyanov, USA
Estimation of emotional processes in regulation of the structural afferentation of
varying contrast by means of visual evoked potentials
　　Sergey Lytaev, Mikhail Aleksandrov, Mikhail Lytaev, Russia

21	**Physical Ergonomics & Human Factors** Co-Chairs: Xingwei Wang and Xiaoli Fan, Taiwan/China	PEHF

10:30 - 12:30- HOLMEAD WEST

Review of the evaluation methods of mental workload
　　Xiaoli Fan, Chaoyi Zhao, Huimin Hu, Yuwei Jiang, China
The understanding and influence of the connotation of semantics on the
figurative product
　　Ching-Yi Wang, Peng Jyun Liu, Taiwan
Experts and novices on the recognition and cognitive differences of brand color
　　Ching-Yi Wang, Peng Jyun Liu, Yu-Hsuan Chung, Yu-Ting Chen, Taiwan
Deep learning model to recognize the different progression condition patterns of
manual wheelchair users for prevention of shoulder pain
　　Jen-Yung Tsai, Yih-Kuen Jan, Ben-Yi Liau, Chien-Liang Chen, Peng-Je Chen,
　　Chih-Yang Lin, Yi-Chun Liu, Chi-Wen Lung, Taiwan/USA
Time frequency analysis of pupillary oscillations sheds light on cognitive
workload of operators
　　Punit Kumar Bhavsar, Babji Srinivasan, Rajagopalan Srinivasan, India
Development of ergonomic work station for sewing operations
　　Yuvraj Garg, Manoj Tiwari, India
Impact of handwheel size on valve-operators' torque production capabilities
　　Saif Al-Qaisi, Jad Mansour, Yousef Al-Abdallat, Lebanon

22	**Human Resilience in Aviation and Space Systems** Co-Chairs: Kimberly Stowers and Brandon Cuffie, USA	AVI/HERRP

10:30 - 12:30 - FAIRCHILD EAST

Risk culture in commercial air transport industry
　　Cengiz Turkoglu, UK
STPA: An engineering method to improve aviation human resilience
　　John Thomas, USA
A management science perspective on resilience
　　Kimberly Stowers, Yash Mehta, Youjeong Huh, Lisa Brady, Nicholas Kasdaglis,
　　USA
Alternatives for scheduling departures for efficient surface metering in ATD-2:
Exploration in a human-in-the-loop simulation
　　Bonny K. Parke, Lindsay K. Stevens, William J. Coupe, Hanbong Lee,
　　Yoon C. Jung, Deborah L. Bakowski, Kimberly Jobe, USA
Considerations for passenger experience in space tourism
　　Tiziano Bernard, Brandon Cuffie, Sebastien Boulnois, Yash Mehta, Yassine Rayad,
　　Lucas Stephane, USA
Impact of plants in isolation: The EDEN-ISS human factors investigation in
Antarctica
　　Irene Lia Schlacht, Daniel Schubert, Giorgio Musso, Germany

| 23 | **Social Design, Innovation and Ergonomics I**
Co-Chairs: Nicos Souleles and Ana Margarida Ferreira, Cyprus/Portugal | SOE |

10:30-12:30 - DU PONT

Social art: "Echoes of Machin"
  Ana Nolasco, Portugal
Sustainable human environment: Mouraria, local color and sense of place of a historical Lisbon neighborhood
  Cristina Pinheiro, Lambert Rozema, Ana Margarida, Portugal/Holland
Collaborative practices through design and engineering - pilot project to improve the human condition in vulnerable communities
  Joao Bernarda, Ana Margarida Ferreira, Carlos Santos Silva, Rui Costa Neto, Portugal
Developing portable clean cart with broom and dustpan for street sweepers needs
  Bing Cheng Zhu, Chien-Hsu Chen, Taiwan
Discuss the use of lip gloss and design improvement with universal design
  Peng Jyun Liu, Ching-Yi Wang, Yi Chun Hsieh, Pei Jyun Ku, Taiwan
Application of universal design for design improvement of hangers
  Peng Jyun Liu, Ching-Yi Wang, Yi-Chun Hsieh, Chu-Lin Su, Taiwan
Case study of science communication in ergonomics: Introduction of ErgonomicThon workshop
  Yasuyuki Yamada, Takeshi Ebara, Japan

| 24 | **Ergonomics in Building and Architecture I**
Co-Chairs: Jerzy Charytonowicz and Anna Jaglarz, Poland | SUPI |

10:30-12:30 - COLUMBIA 1

Public toilets - Determinant of the progress of civilization and consciousness of societies or a necessary evil?
  Anna Jaglarz, Poland
Reconstruction with a change of function – ergonomics of the hotel environment
  Joanna Jablonska, Elzbieta Trocka-Leszczynska, Poland
T-house in shaping sustainable housing
  Boguslaw Wojtyszyn, Alicja Maciejko, Poland
Ergonomics for children
  Elzbieta Trocka-Leszczynska, Joanna Jablonska, Poland
Hygienic-sanitary zones in hotel objects
  Joanna Jablonska, Elzbieta Trocka-Leszczynska, Poland
Building as a primary means of preventative care. The postulate of certification of buildings intended for use by the elderly in multi-family housing and collective housing
  Agata Bonenberg, Poland
T-house: Shaping ergonomic and flexible interior in modular form connected with horticultural therapy zone
  Jerzy Charytonowicz, Alicja Maciejko, Agnieszka Skrzypczak, Poland

| 25 | **User Experience: Smart Phone and Mobile Applications**
Co-Chairs: Soo Kim and Wei Wang, USA | UUE |

10:30-12:30 - COLUMBIA 2

UTAUT-QiU: Technology acceptance evaluation model with integrated quality-in-use assessment for mobile UI adapted for low- and post-literate users
  Nikhalesh Patel, Olga Ormandjieva, Kristina Pitula, Canada
The effects of progress indication on the usability of mobile wayfinding process
  Shasha Li, Chien-Hsiung Chen, Taiwan
Utilizing wearable eye-tracking technology in mobile app design usability evaluation process
  Wei Wang, USA
A training social media mobile app prototype for the elderly: A pilot study
  Abdulrahman Hafez, Yuanqiong (Kathy) Wang, USA
Using established UX design techniques and visual enhancements to redesign an enterprise mobile app and improve employee productivity and engagement
  Soo Kim, Ed McFadden, USA
Design and research on evaluation model of user experience on mobile terminal products
  Zhaohui Huang, Yeyi Hong, Xiao Xu, China
A study on the landmark design for wayfinding maps in 3D virtual environments
  Mengxi Chen, Chien-Hsiung Chen, Taiwan

26	**Behavioral and Cognitive Science** Co-Chairs: Beth Atkinson and Juan Cristóbal Castro-Alonso, USA/Chile	TELS

10:30-12:30 - COLUMBIA 3

The modality effect of cognitive load theory
Juan Cristóbal Castro-Alonso, John Sweller, Chile

How can robotics be integrated into the field of care and acceptance by the population for the use of artificial intelligence be strengthened?
Ann Kathrin Stinder, Alexander-Maximilian Frische, Daniel Schilberg, Germany

A healthy smartphone application to enhance patient services in Saudi Arabia in a human centered design approach
Saad Almesalm, May Alfowzan, Hadeel Alajouri, Saudi Arabia

A study of metacognitive problem solving in undergraduate engineering students
Lisa Elliott, Heather Lum, Faisal Aqlan, Richard Zhao, Catherine Dolores Lasher, USA

The effect of screen size on reading speed: A comparison of three screens to print
Lisa Elliott, Medina Ljubijanac, Danielle Wieczorek, Sarah Hornick, USA

Utilizing a hybrid usability assessment for a new on-demand hypoxia training system
Beth Atkinson, Emily Anania, Sarah Warnham, USA

27	**Panel: Human-Agent Teaming: Soldiers, Sailors, Airmen, and Marines and Their Alliance with Autonomous Unmanned Vehicles** Co-Chairs: Ralph Brewer and Lixiao Huang, USA	HFRUS

10:30-12:30 - COLUMBIA 4

Human–agent teaming with next generation combat vehicles (NGCV): Interaction metrics and models
Lixiao Huang, Craig Johnson, Nancy Cooke, Eric Holder, USA

Assessment of manned-unmanned team performance: Comprehensive after-action review technology development
Ralph W. Brewer, II, Anthony J. Walker, E. Ray Pursel, Eduardo J. Cerame, Anthony L. Baker, Kristin E. Schaefer, USA

An uncertainty principle for interdependence: Laying the theoretical groundwork for human-machine teams
William Lawless, USA

Neurophysiological closed-loop control for competitive multi-brain robot interaction
Bryan Hernandez, Elijah Sawyers, Landon Bentley, Chris Crawford, Marvin Andujar, USA

Human-robotic interactions (HRI) during natural disasters: Operator states assessments and improvements for effective HRI
S. Camille Peres, Ranjana Mehta, Robin Murphy, Joseph Nuamah, Yibo Zhu, USA

28	**Occupational Safety, Defense and Security** Co-Chairs: Brianna Eiter and Jennica Bellanca, USA	HFSIM

10:30-12:30 - COLUMBIA 9

Naturalistic decision-making analogs for the combat environment
Thom Hawkins, USA

Risk perception with and without workers present in hazard recognition images
Jennica Bellanca, Brianna Eiter, Jonathan Hrica, Robert Weston, Terrance Weston, USA

EXAMiner: A case study of the implementation of a hazard recognition safety intervention
Brianna Eiter, Jonathan Hrica, USA

Development of a mast climbing work platform visual inspection tool
Bryan Wimer, USA

Development of visual elements for accurate simulation
Timothy Orr, Jennica Bellanca, Jason Navoyski, Brendan Macdonald, William Helfrich, Brendan Demich, USA

Influence of social norms on decision-making against landslide risks in interactive simulation tools
Pratik Chaturvedi, Varun Dutt, India

Assessing a malodor's affective rating in the absence of odor context
William Pike, Mark Mazzeo, Basiel Makled, Conner Parsey, USA

| 29 | **Human Factors in Virtual Environments I**
Co-Chairs: Evangelos Markopoulos and Antonio Capobianco, UK/Germany | HFGD |

10:30-12:30 - COLUMBIA 10

Digital cultural strategies within the context of digital humanities economics
> Evangelos Markopoulos, Panagiotis Markopoulos, Mika Luimula, Younus Almufti, Chiara Romano, UK

Depth sensor based detection of obstacles and notification for virtual reality systems
> Peter Wozniak, Antonio Capobianco, Nicolas Javahiraly, Dan Curticapean, Germany

An investigation of material perception in virtual environments
> Mutian Niu, Cheng-Hung Lo, China

Research on location of emergency sign based on virtual reality and eye tracking technology
> Guilei Sun, China

Design of virtual public resilience spaces of traditional cultures
> Jingjing He, Chaoxiang Yang, Michale Straeubig, China/UK

| 30 | **Design in Advertising and Media Communication**
Co-Chairs: Sunny Sui Kwong Lam and Chi Kit Chan, Hong Kong | HFCD |

10:30-12:30 - COLUMBIA 11

Understanding how advertising gamification influences consumers: The effect of image experience and interactivity
> Huijie Yao, Yunbo Chen, China

Locality and local identity discourses in post-handover Hong Kong brand advertisements
> Sui-kwong Sunny Lam, Lai Sim Ng, China

Mainstreaming cultural jamming? Revisiting the socio-cultural impact of viral campaign
> Chi Kit Chan, Anna Wai Yee Yuen, China

An investigation into the power of digital media in Hong Kong
> Edward C. K. Hung, China

Emotions in advertising: How emotions affect creativity and communication
> Amic G. Ho, Sunny Sui-kwong Lam, Hong Kong

| 31 | **Algorithmic Design and Rapid Prototyping For Cultural Heritage II**
Co-Chairs: Jessica Romor and Graziano Mario Valenti, Italy | AMMSP |

10:30-12:30 - COLUMBIA 12

Rapid prototyping for dissemination of perspective treatises
> Leonardo Baglioni, Marta Salvatore, Italy

Semantic and procedural approaches in generative modeling for the representation of cultural heritage
> Graziano Mario Valenti, Leonardo Baglioni, Italy

Procedural modeling as a tool for morphological analysis of the design idea
> Jessica Romor, Italy

Resolution analysis of image-based 3D models
> Marta Salvatore, Graziano Mario Valenti, Italy

Generative models for experimentation and knowledge of perspective principles
> Graziano Mario Valenti, Marco Fasolo, Flavia Camagni, Italy

| 32 | **Interdisciplinary Design and Education**
Co-Chairs: Joyce Thomas and Randall Bartlett, USA | IPID |

10:30-12:30 - CARDOZO

Exploring a new future in collaborative design processes in education
> Joyce Thomas, Jerrod Windham, Suresh Sethi, Manish Arora, USA

Industrial design participation in project management
> Randall Bartlett, USA

Moving from dependency, wastefulness, and risk toward sustainability and resilience through designed systems
> Carlton Lay, USA

Designing under the influence: Exploring the motivations and obstacles of young design students
> Benjamin Bush, USA

Lessons from the archive: Still relevant 50 years later
> David Smith, USA

Collaboration models for teaching design within specialized contexts
> Shea Tillman, USA

33	**Design for Health and Wellness** Co-Chairs: WonJoon Chung and Anna Kabjin Kim, Canada	IPID

10:30-12:30 - GUNSTON WEST

Experiencing momentum through an effective use of technology in museums
> Anna Kabjin Kim, Eileen Harris, Canada

Better mental healthcare through the built environment
> Alanna Bamber, Canada

Leveraging disciplinary and cultural diversity in the conceptualization stages of design
> Alex Close, Eileen Harris, Canada

Interdisciplinary approach of the design process for the application of new materials in wheelchair design
> Paula Chacon-Cifuentes, A. A. Zuleta-Gil, Gustavo Sevilla Cadavid, Andres Valencia-Escobar, Esteban Correa-Bedoya, Felix Echeverria-Echeverria, Colombia

Importance of involving children in designing recycling facilities: A case study of Hong Kong children collecting and recycling recyclables
> Kin Wai Michael Siu, Yi Lin Wong, Mei Seung Lam, China

The role of affective design in sustainability
> Guillermo Juarez, Canada

Designing hospital wayfinding systems, touchscreen kiosks, environmental cues and mobile Apps: An evaluation of a mobile wayfinding application
> Christy Harper, Tyler Duke, Andrea Crosser, Angie Avera, Spencer Jefferies, USA

34	**Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries** Co-Chairs: Susen Döbelt and Roger Lew, Germany/USA	ENERGY

10:30-12:30 - EMBASSY

Imagine 2025: Prosumer and consumer requirements for distributed energy resource systems business models
> Susen Döbelt and Maria Kreusslein, Germany

Nuclear power plant accident diagnosis algorithm including novelty detection function using LSTM
> Jaemin Yang, Jonghyun Kim, Subong Lee, South Korea

Beyond COSS: Human factors for whole plant management
> Roger Lew, Ronald Boring, Thomas Ulrich, USA

Multivariate assessment of workload in the nuclear power plant main control room: A pilot study in a full scope simulated environment
> Lauren Reinerman-Jones, Jinchao Lin, Gerald Matthews, Daniel Barber, Niav Hughes, USA

35	**Brain - Machine Interface and Artificial Intelligence (AI) Systems** Co-Chairs: Umer Asgher and Noriyuki Oka, Pakistan/Japan	ICEEP

10:30-12:30 - GUNSTON EAST

An application of extended Kalman filter for the pressure estimation in minimally invasive surgery
> Van-Muot Nguyen, Eike Christian Smolinski, Alexander Benkmann, Wolfgang Drewelow, Torsten Jeinsch, Germany

A research agenda for neuroactivities in construction safety knowledge sharing, hazard identification and decision making
> Rita Yi Man Li, China

Impact of auditory alert on driving behavior and prefrontal cortex response in a tunnel: An actual car driving study
> Noriyuki Oka, Toshiyuki Sugimachi, Kouji Yamamoto, Hideki Yazawa, Hideki Takahashi, Jongseong Gwak, Yoshihiro Suda, Japan

Recognition of the cognitive state in the visual search task
> Shuomo Zhang, Yanyu Lu, Shan Fu, China

Research on the influence of dimension of visual grouping cue for guiding sign recognition
> Zhongting Wang, Ling Luo, Chuanyu Zou, Linghua Ran, Haimei Wu, China

Stress measurement in multi-tasking decision processes using executive functions analysis
> Lucas Paletta, Martin Pszeida, Bernhard Nauschnegg, Raphael Marton, Thomas Haspl, Austria

Psycho Web: A machine learning platform for the diagnosis and classification of mental disorders
> Paulina Morillo, Holger Ortega, Diana Chauca, Julio Proaño, Diego Vallejo-Huanga, María Cazares, Ecuador

36	**Transportation: Maritime** Co-Chairs: Carl Hult and Massimo Di Nicolantonio, Sweden/Italy	MAR

10:30-12:30 - JAY

Towards autonomous shipping – exploring potential threats and opportunities in future maritime operations
   Gesa Praetorius, Carl Hult, Carl Sandberg, Sweden

Design of a sustainable and accessible royal rig MAXY clipper for single-handed
   Massimo Di Nicolantonio, Italy

Evaluating the impact of increased volume of data transmission on teleoperated vehicles
   Kiome Pope, Aaron Roberts, Christopher Fenton, Neville Stanton, UK

A novel target motion analysis interface: helping operators get the gist? Interfaces with legs? Documenting the design sprint of prototype future submarine control room user interfaces
   Daniel Fay, Aaron Roberts, Neville Stanton, UK

Enhancing maritime search and rescue capabilities with unmanned aerial systems – practical requirements and solution approach
   Thomas Luebcke, Aylin Gözalan, Philipp Gorczak, Germany

The interaction of basic regulations with imperfect decision aiding in simulated maritime collision avoidance
   Nicholas Fitzgerald, Christopher Wickens, Cap Smith, Benjamin Clegg, Gautham Vijayaragavan, Adam Williams, USA

37	**New Trends of Development and Application of Risk Analyses Methods in the Strategy of Industry 4.0** Co-Chairs: Juraj Sinay and Hana Pacaiova, Slovak Republic	PEHF

10:30-12:30 - HOLMEAD EAST

Risk-based thinking methodology and its influence on occupational health and safety processes
   Hana Pacaiova, Anna Nagyova, Milan Oravec, Slovakia

Effective tools to eliminate dangerous practices in the performance of work
   Karol Habina, Jan Trcka, Slovakia

Lift as a subject of risk analysis in the context of smart buildings
   Juraj Glatz, Juraj Sinay, Marianna Tomašková, Marta Vargová, Slovakia

Study of forklift cab shape design based on behavior analysis
   Jing Ou, Yunshuang Zheng, Jun Yi, Bing Guo, China

Risk assessment software tools
   Jan Donic, Slovakia

Lunch Break 12:30 - 13:30 • Enjoy lunch at the restaurant of your choice

39	**Emotion, Culture and Society** Co-Chairs: Shuichi Fukuda, Yuuki Shigemoto and Matthias Hillner, Japan/Singapore	APD

13:30-15:30 - MORGAN

A big shift in engineering: From product to society
   Shuichi Fukuda, Japan

Artificial intelligence and natural intelligence
   Shuichi Fukuda, Japan

Designing emotional product design: When design management combines engineering and marketing
   Yuuki Shigemoto, Japan

Design and research of infusion assistant products for children: Take the design of children's infusion hand plate and the mask of medical staff as an example
   Qian Ji, Zhao Yiming, Lili Liu, Duanzhen Zhu, China

User-centered design research: Case study of baby bottle sterilizer design
   Ying Cao, Chen Chen, China

Time consciousness in relation to emergent typography
   Matthias Hillner, Singapore

The lived experience of healthcare staff in the contemporary hospital environment in Montreal
   Hammouni Zakia, Tiiu Poldma, Canada

40	**Understanding and Monitoring Human Performance Under Highly Ecological Settings** Co-Chairs: Frédéric Dehais and Daniel Callan, France/Japan	CN/ CCIoT

13:30-15:30 - HOLMEAD WEST

Measuring mental fatigue using a 32 dry EEG system in real flight condition
Daniel Callan, Frédéric Dehais, Japan/France
Making sense of noisy data collected from wearables to monitor human performance "in-the-wild"
Tiago Falk, Canada
Cognitive flexibility modulates pilot decision-making under uncertainty: An eye-tracking and fNIRS study
Julia Behrend, Frederic Dehais, France
Neuroergonomics on the road to enhance vehicle-operator communications
Carryl Baldwin, USA
Neurocognitive and physiological monitoring using dry wearable sensors within an ice during 14-day simulated lunar/Martian missions
Tim Mullen, USA
Investigations enabled by human performance monitoring to address urban air mobility challenges
Angela Harrivel, Chad Stephens, Jon Holbrook, Eric Chancey, James Comstock, Kellie Kennedy, Joanne Walton, USA

41	**UX in Design** Co-Chairs: Paulo Noriega and Eric Brangier, Portugal/France	ED

13:30-15:30 - FAIRCHILD EAST

Measure of the lived and functional effects of gamification: An experimental study in a professional context
Eric Brangier, Cathie Marache-Francisco, France
Natural human-computer interfaces' paradigm and cognitive ergonomics
Victor Almeida, Sónia Rafael, Marco Neves, Portugal
Evaluation of the concept of smart city gamification from a user centered design perspective
Francisco Rebelo, Paulo Noriega, Tiago Oliveira, Portugal
Grains of memory: User experience in the SandBox interactive installation
Adriana Moreno, Arminda Guerra Lopes, Monica Mendes, Portugal
Visual storytelling - Creative strategy of visual clues promoted by archetypal images
Jose Silva, Daniel Raposo, João Neves, Fernando Moreira da Silva, Portugal
Comparative research about the preferences in 5 countries for the artificial intelligence agent UX in the multi-display based vehicle
Hoonsik Yoo, Youngjin Kim, Bong Gyou Lee, South Korea

42	**Tasks, Errors and Personal Resilience** Co-Chairs: Valerie Rice and Gary Boykin, USA	HERRP

13:30-15:30 - DU PONT

Self-reported stress-related coping strategies and perceived stress among a sample of active duty and veteran U. S. military service members
Valerie Rice, USA
Training for readiness and resilience: Supplemental findings
Lauren Hallal-Kirk, Debra J. Patton, Joan Johnston, Laura Milham, Lisa Townsend, Dawn Riddle, USA
Physical readiness is more than physical fitness: Relationships between army physical fitness test scores and self-reports of physical and psychological fitness
Gary Boykin, Valerie Rice, USA
Which mindfulness meditation delivery method yields the greatest benefits?
Valerie Rice, Cory Overby, USA
Measuring medical readiness in studies with military samples
Helen Phipps, Paul Schroeder, Lewis Nichols, Jorge Pena, Joshua Duncan, David Tucker, USA
Quantifying, visualizing, and predicting radiation oncology process reliability using incident learning system data
Thomas Howell, Lukasz Mazur, USA
An estimation and comparison of human abilities to communicate information through pursuit tracking vs. pointing on a single axis
Michael Blandino, Edgar Berdahl, R. William Soukoreff, USA

43	**Agile Manufacturing** Co-Chairs: Stefan Trzcielinski and Sebastian Pimminger, Poland/Austria	MFG

13:30-15:30 - COLUMBIA 1

The relation of pro-exploitation attributes with selected criterion of agility of public transport vehicles manufacturing
> Joanna Kałkowska, Poland

The influence of macroenvironment changes on agility of enterprise
> Stefan Trzcielinski, Poland

Lean manufacturing model in a make to order environment in the printing sector in Peru
> Adriana Becerra, Alessandro Villanueva, Victor Nunez, Carlos Raymundo, Francisco Dominguez, Peru

Agile management methods in an enterprise based on cloud computing
> Michal Trziszka, Poland

44	**Safety and Human Factors at a Societal Level** Co-Chairs: Regina Pope-Ford and Paulo Maldonado, USA/Portugal	SMHF

13:30-15:30 - COLUMBIA 2

Dynamic façades: Optimization of natural light at workplaces
> Sandra Preto, Portugal

Cubo: Communication system for children with autism spectrum disorders
> Sofia Espadinha, Paulo Maldonado, Portugal

Parent awareness of smartphone use and its health impact
> Regina Pope-Ford, USA

Human listener's misperception between signal comprehension in noise and noise acceptability
> Bankole Fasanya, USA

Development of working at height management system based on legislation in Malaysia
> Ezrin Hani Sukadarin, Law Peng Hang, Malaysia

Inspiration mining: Intersecting improbable connections in a new landscape of cultural reflection and influence
> Paulo Maldonado, Leonor Ferrão, Portugal

45	**Automation I** Co-Chairs: Neville Stanton and Ata Khan, UK/Canada	RR

13:30-15:30 - COLUMBIA 3

Bayesian artificial intelligence-based driver for fully automated vehicle with cognitive capabilities
> Ata Khan, Canada

A survey study to explore comprehension of autonomous vehicle's communication features
> Shuchisnigdha Deb, Daniel Carruth, Lesley Strawderman, USA

A novel method for designing metaphor based driver-vehicle interaction concepts in automated vehicles
> Jan Bavendiek, Emily Oliveira, Lutz Eckstein, Germany

How should automated vehicles communicate? – Effects of a light-based communication approach in a Wizard-of-Oz study
> Ann-Christin Hensch, Isabel Neumann, Matthias Beggiato, Josephine Halama, Josef Krems, Germany

Pimp my ride - personalisation vs customisation of alerts and feedback in semi-autonomous vehicles
> Kirsten Revell, Neville Stanton, James Brown, UK

Model of driving skills decrease in the context of autonomous vehicles
> Darina Havlíčková, Petr Zámečník, Eva Adamovská, Adam Gregorovič, Václav Linkov, Aleš Zaoral, Czech Republic

46	**Ergonomics in Building and Architecture II** Co-Chairs: Anna Jaglarz and Jerzy Charytonowicz, Poland	SUPI

13:30-15:30 - COLUMBIA 4

Ergonomics of sound in a hotel environment
> Elzbieta Trocka-Leszczynska, Joanna Jablonska, Poland

Designing public toilets in the historic urban landscape. Analysis based on the polish cities
> Anna Jaglarz, Poland

Landscape-solutions of sports and tourist complexes in the Karkonosze Mountains: Examples of sustainable development
> Anna Wojtas-Haran, Poland

Automated clash free rebar design in precast concrete exterior wall via generative adversarial network and multi-agent reinforcement learning
> Pengkun Liu, Jiepeng Liu, Liang Feng, Wenbo Wu, Hao Lan, China

An attempt to assess the need and potential of aesthetic regeneration to improve walkability and ergonomic experience of urban space
> Tanima Bhattacharya, Suparna Dasgupta, Joy Sen, India

Design and thinking of urban ecological symbiosis community under the background of globalization
> Chen Liexue, Zhou Wuzhong, China

47	**User Experience in Healthcare and Medical Applications** Co-Chairs: Berglind Smaradottir and Richard Horst, Norway/USA	UUE

13:30-15:30 - COLUMBIA 9

User experiences and satisfaction with an electronic health record system
> Berglind Smaradottir, Rune Fensli, Norway

Classification of similarly looking drugs by human perception as compared with unsupervised learning results
> Jinhyung Kim, Minjee Park, Choeun Kim, Byeol Kim, Eunah Choi, Taezoon Park, South Korea

Comparing formative and summative approaches in the usability testing of medical devices
> Richard Horst, USA

The Impact of binaural beats on user performance and emotions using a BCI for robot control
> Lizette De Wet, Lourens Potgieter, South Africa

The effects of clinical task interruptions on subsequent performance of a medication pre-administration task
> Craig Williams, Phillip Morgan, Gary Christopher, Nancy Zook, Rebecca Hoskins, UK

48	**Human-Machine Interaction Applications** Co-Chairs: Ricardo Vigário and Jorge Perez Medina, Portugal/Ecuador	SYSI

13:30-15:30 - COLUMBIA 10

Detecting human factors that induce errors in movement patterns for the development of a web-based telerehabilitation platform
> Wilmer Esparza, Jonathan Baldeon, Jorge Luis Pérez Medina, Karina Jimenes Vargas, Ecuador

Prescriptive and descriptive similarity of team contexts
> Daichi Mitsuhashi, Taro Kanno, Daisuke Karikawa, Satoru Inoue, Kohei Nonose, Kazuo Furuta, Japan

Towards a mobile phone pupillometer
> Ricardo Vigário, Mariana Santos, Raúl Vences, Carla Quintão, Portugal

RehabVisual: An application to stimulate visuomotor skills in preterm babies with developmental alterations
> Cláudia Quaresma, Catarina Santos, Ana Ferreira, Carla Quintão, Portugal

The use of voice controlled interface in a human computer interaction experiment using the Kinect v. 5.4 software: Challenges of a rainbow nation
> Lesedi Milanzi, South Africa

49	**Human Factors, Business Management and Society: Social and Digital Views** Co-Chairs: Evangelos Markopoulos and Ebo Kwegyir-Afful, UK/Finland	HFBMS

13:30-15:30 - COLUMBIA 11

Understanding the nature of entrepreneurial leadership in the startups across the stages of the startup lifecycle
> Evangelos Markopoulos, Nino Dvalidze, UK

Host country nationals' perceptions of expatriates and social support: Does host country nationals' position matter?
> Evans Sokro, Ghana

The new trends in research on social responsibility of the university
> Marcin Geryk, Poland

Investigation on the value judgment criteria of customized garment products by mass consumers
> Jun Yin, Hui Tao, Xuewei Jiang, China

Econometric modeling of the efficiency in the generation of electric power in Chile
> Ana María Vallina-Hernández, Rodrigo Estay, Hanns De la Fuente-Mella, Chile

Dignified corruption and societal pressure: The irony of Ghana's corruption menace
> Reginald Arthur, Olivia Anku-Tsede, Ghana

50	**Internationalization in Learning Science** Co-Chairs: Florentin Popescu and Mark Livingston, The Netherlands/USA	TELS

13:30-15:30 - COLUMBIA 12

Mapping, measuring and assessing internationalization. A Dutch–Russian perspective
> Dmitry Shtykhno, Florentin Popescu, Roman Iskandaryan, Tijmen Weber, Rob Warmenhoven, Russia/The Netherlands

Comprehensive internationalization at HAN University of Applied Sciences. Administrative leadership, structure, and staffing
> Florentin Popescu, The Netherlands

Opening up higher education: An e-Learning program on service-learning for university students
> Covadonga Lorenzo, Epifanio Lorenzo, Spain

Human factors in digital transformation of education: Lessons learned from the Future Gate at Saudi K-12
> Yousef Al-Ohali, Mohammed Alhojailan, Nikos Palavitsinis, Jad Najjar, Anastasios Koutoumanos, Ahmed AlSuhaibani, Saudi Arabia

Digital skills and new media and information literacy in the conditions of digitization
> Valentina Milenkova, Diliana Keranova, Dobrinka Peicheva, Bulgaria

A query generation technique for measuring comprehension of statistical graphics
> Mark Livingston, Derek Brock, Jonathan Decker, Dennis Perzanowski, Christopher Van Dolson, Joseph Mathews, Alexander Lulushi, USA

51	**Human, Artificial Intelligence, and Robot Teaming** Co-Chairs: Nancy Cooke and Lixiao Huang, USA	HFRUS

13:30-15:30 - CARDOZO

Relational factors in human-agent teaming: Exchange structures and accountability
> Erin Chiou, USA

Predicting human performance for the optimization of human-robot collaboration
> Hong Cai, Yasamin Mostofi, USA

Team trust and resilience in human-autonomy teaming
> Mustafa Demir, Nancy Cooke, USA

Lessons learned in designing a synthetic task environment using Minecraft
> Glenn J. Lematta, Pamela B. Coleman, Erin K. Chiou, Nathan J. McNeese, Mustafa Demir, Nancy J. Cooke, USA

Human machine collaborative planning and optimization
> Lindsay Sanneman, Julie Shah, USA

Humans and robots in off-normal applications and emergencies
> Robin Murphy, USA

Conveying robot state and intent nonverbally in military-relevant situations: An exploratory survey
> Lauren Boos, Lilia Moshkina, USA

52	**Human Factors in Cybersecurity: Applications and Privacy Research** Co-Chairs: Rick van der Kleij and Isabella Corradini, The Netherlands/Italy	**CYBER**

13:30-15:30 - GUNSTON WEST

Attempting to reduce susceptibility to fraudulent computer pop-ups using incentivized malevolence cue identification training
> Phillip Morgan, Robinson Soteriou, UK

Cyber resilient behavior: Integrating human behavioral models and resilience engineering capabilities into cyber security
> Rick van der Kleij, Rutger Leukfeldt, The Netherlands

An international extension of Sweeney's data privacy research
> Wayne Patterson, Cynthia Winston-Proctor, USA

The human factor in managing the security of information
> Malgorzata Wisniewska, Zbigniew Wisniewski, Katarzyna Szaniawska, Michal Lehmann, Poland

Beyond passwords: Enforcing username security as the first line of defense
> Nicholas Caporusso, Thaier Fandakly, USA

Social engineering and the value of data: The need of specific awareness programs
> Isabella Corradini, Enrico Nardelli, Italy

Investigation and user's web search skill evaluation for eye and mouse movement in phishing of short message
> Takeshi Matsuda, Michio Sonoda, Masashi Eto, Hironobu Satoh, Tomohiro Hanada, Nobuhiro Kanahama, Hiroki Ishikawa, Ryutaro Ushigome, Seiha Yoshimitsu, Japan

53	**Design for Inclusion: Building Environment, Public Spaces and Communities** Co-Chairs: Avril Accolla and Francesco Spagnoli, China/Italy	**DI**

13:30-15:30 - EMBASSY

Development of an anthropometric protocol for wheelchair users: Guiding the decision-making for designing inclusive spaces
> Libertad Rizo, Adrián Leal-Pérez, John Rey-Galindo, Carlos Aceves-Gonzalez, Elvia Luz González-Muñoz, Mexico

A new inclusive housing prototype
> Francesco Spagnoli, Italy

Assessing accessibility and safety conditions in an urban environment: What do pedestrians perceive?
> Carlos Aceves-González, Libertad Rizo-Corona, Rosa Rosales-Cinco, John Rey-Galindo, Karthikeyan Ekambaram, Maricela Ramos-Tachiquín, Mexico

Bioclimatic design approach for low-income dwelling at Monte Sinahí, Guayaquil
> Boris Forero, Jesús Rafael Hechavarría Hernández, Robinson Vega Jaramillo, Ecuador

Creating an accessibility index for large built environments
> Wajdi Wazzan, Saudi Arabia

Designing a pilot system for sustainable villages for all
> Avril Accolla, China

Co-design of public spaces for intercultural communication, diversity and inclusion
> Alessandra Rinaldi, Maurizio Caon, Leonardo Angelini, Omar Abou Khaled, Elena Mugellini, Italy

54	**Communication Design and Practices** Co-Chairs: Amic Ho and Joungyun Choi, Hong Kong/USA	**HFCD**

13:30-15:30 - GUNSTON EAST

Nudge users to healthier decisions: A design approach to encounter misinformation in health forums
> Mahdi Ebnali, Cyrus Kian, USA

How the creative mindset operates with respect to creative performance: pedagogical factors that ignite the creative mindset in design education
> Joungyun Choi, USA

Exploration and thinking on the cultural communication of Guangdong museum
> Xiaobao Yu, Ting Wang, China

Bullet points: Applying emotional symbols in information management
> Amic Ho, Hong Kong

Impact of inspiration sources on designer's idea generation strategy
> Xinyu Yang, Jianxin Cheng, China

55	**Artificial Intelligence and Social Applications II** Co-Chairs: Stella Angova and Mireya Zapata, Bulgaria/Ecuador	AISC

13:30-15:30 - JAY

Axonal delay controller for spiking neural networks based on FPGA
    Mireya Zapata, Jordi Madrenas, Miroslava Aracely Zapata, Jorge Alvarez, Ecuador
Academic quality management system audit using artificial intelligence techniques
    Rodolfo Bojorque, Fernando Pesántez, Ecuador
Ensemble-based machine learning algorithms for classifying breast tissue based on electrical impedance spectroscopy
    Sam Matiur Rahman, Md Asraf Ali, Omar Altwijri, Mahdi Alqahtani, Nasim Ahmed, Nizam U. Ahamed, Bangladesh/Saudi Arabia/New Zealand/Malaysia
Cognitive solutions in the enterprise: A case study of UX benefits and challenges
    Jon Temple, Brenda Burkhart, Ed McFadden, Claude Elie, Felix Portnoy, USA
Research on accuracy of flower recognition application based on convolutional neural network
    Jing-hua Han, Chen Jin, Li-Sha Wu, China
AI-based children monitoring support system using accident situation knowledge database and RGB-D camera
    Fumiya Mitsuhashi, Koji Kitamura, Yoshifumi Nishida, Hiroshi Mizoguchi, Japan
Innovation and artificial intelligence
    Muhammad Sohaib Shakir, Zarina Bibi, Farhat Mehmood, Pakistan

56	**Human Factors and Assistive Technology II** Co-Chairs: Matteo Zallio and Brittani Washington, USA	HFAT

13:30-15:30 - HOLMEAD EAST

Meaningful age-friendly design. Case studies on enabling assistive technology
    Matteo Zallio, Damon Berry, Larry Leifer, USA
Proper implementation of website features affecting the use of screen readers
    Brittani Washington, Jinjuan Feng, USA
Assistive technologies for elderly – review on recent developments in lower limb and back pain management
    Murali Subramaniyam, Kishore Kumar Sampath, Dinesh Shanmugam, Dong Joon Kim, Kyung Sun Lee, Park Se Jin, Seung Nam Min, India/South Korea
Proposal of a technological ergonomic model for people with disabilities in the public transport system in Guayaquil
    Bryan Colorado Pástor, Milagros Fois, Maikel Leyva Vázquez, Jesús Rafael Hechavarría Hernández, Ecuador
Sequaca – Cognitive rehabilitation game kit for treatment of neurocognitive disorders
    Camila Ruttimann, Elyssar Karatli, Anna de Norões, Luiza Rebello, Giuseppe Amado, Brazil
Implementation of an electronic device for multisensory stimulation: Visual, auditory, memory and attention for children from 2 to 5 years old
    Omar Alvarado, Alejandro Alvarado, Jorge Prado, Maria del Carme Cordero, Maria Rosa Pazmiño, Tamara Vazquez, Ecuador

57	**Artificial Intelligence and Social Applications I** Co-Chairs: Chuan-Jun Su and Nicholas Caporusso, Taiwan/USA	AISC

13:30-15:30 - FAIRCHILD WEST

Ubiquitous fitting: Ontology-based dynamic exercise program generation
    Chuan-Jun Su, Yi-Tzy Tang, Shi-Feng Huang, Yi Li, Taiwan
Machine self-confidence in autonomous systems via meta-analysis of decision processes
    Brett Israelsen, Nisar Ahmed, Eric Frew, Brian Argrow, Dale Lawrence, USA
Cascading convolutional neural network for steel surface defect detection
    Chih-Yang Lin, Cheng-Hsun Chen, Ching-Yuan Yang, Fityanul Akhyar, Chao-Yung Hsu, Hui-Fuang Ng, Taiwan
A meta-language approach for machine learning
    Nicholas Caporusso, Peng Zhang, Trent Helms, USA
Framework of sensor inconsistency detection system for nuclear power plants
    Jeonghun Choi, Seung Jun Lee, South Korea

15:30-16:00 Refreshments will be provided in Columbia West (Terrace Level)

58	**Emotional Interaction Design** Co-Chairs: Masashi Okubo and Yoshihiro Sejima, Japan	APD

16:00-18:00 - MORGAN

Influence of visual non-verbal information on information transmission to audience
    Akihiro Tatsumi, Kazuyuki Seki, Masashi Okubo, Kazuyuki Seki, Japan

Development of a pupil response system with empathy expression in face-to-face body contact
    Yoshihiro Sejima, Yoichiro Sato, Tomio Watanabe, Japan

An experimental study on evaluating glare in blue light exposure
    Daisuke Miyazaki, Kimi Ueda, Hirotake Ishii, Hiroshi Shimoda, Souma Kawamoto, Wakako Takekawa, Japan

Analysis of answering time data for cognitive task to investigate intellectual concentration
    Kimi Ueda, Shota Shimonaka, Kosuke Sugita, Wakako Takekawa, Hiroshi Shimoda, Hirotake Ishii, Fumiaki Obayashi, Japan

Research on platform design with tolerance of non-errors in user successive design
    Kun Chen, Dingbang Luh, China

Evaluating similarities in visual product appearance for brand affiliation
    Matthias Sebastian Fischer, Daniel Holder, Thomas Maier, Germany

Case study on innovative design of PTC peripheral products based on caring people
    Huabin Wang, China

59	**Human-Machine Teaming and Leadership at the U. S. Air Force Academy** Co-Chairs: Chad Tossell and Ewart de Visser, USA	CN

16:00-18:00 - HOLMEAD WEST

Teaming with agents: Agent mitigated decision making and conflict mediation
    Kerstin Haring, Jessica Tobias, Justin Waligora, Gale Lucas, Jonathan Gratch, Ewart de Visser, Chad Tossell, USA

Autonomy in operational environments
    Nathan Tenhundfeld, Ewart de Visser, Chad Tossell, Victor Finomore, USA

The critical mission: Human-machine teaming and leadership at the U. S. Air Force Academy
    Ewart de Visser, Chad Tossell, USA

Future horizons with human-machine teaming and leadership at the U. S. Air Force Academy
    Ewart de Visser, Chad Tossell, USA

Communication and control for human-robot teaming
    Elizabeth Phillips, USA

Basic influence process in human machine teaming
    Christopher Kelley, Kerstin Haring, USA

60	**Cultural Aspects in Design** Co-Chairs: João Brandão and Elisabete Rolo, Portugal	ED

16:00-18:00 - FAIRCHILD EAST

The italic style, understanding the shape through history
    João Brandão, Catarina Almeida, Portugal

Lighting design at workplaces: What should be the concerns for an architect?
    Sandra Preto, Portugal

Design for the model of shared office space based on the logic of behavior: A case study of Chinese users
    Zhang Ping, Yang Simeng, Liu Tingyu, Zhang Liang, China

The preservation of the built environment: A process of ergonomic design
    Conceição Trigueiros, Mario Saleiro Filho, Portugal

Graphic design and cinema: Portuguese movie posters from the Nouvelle Vague period
    Elisabete Rolo, Maria do Carmo Kattau Tierno de Andrade Lopes, Portugal

At hand, the brain of men
    Luis Miguel Francisco Ginja, Portugal

61	**Design for People** Co-Chairs: John Smallwood and Marek Bures, South Africa/Czech Republic	PEHF

16:00-18:00 - DU PONT

Strength and motor function in an aging population in dependence to work position
> Marek Bures, Věra Čadková, Czech Republic

Observing or experiencing - the effect of age simulation on the sensitivity to age-related impairment in elderly care
> Danny Rueffert, Angelika C. Bullinger, Germany

The evaluation of mechanical properties of soft tissue on pressure ulcers among bedridden elderly patients
> Chi-Wen Lung, Yih-Kuen Jan, Jin-Huei Lu, Chien-Liang Chen, Fang-Chuan Kuo, Ben-Yi Liau, Taiwan

Ergonomics in automotive glass manufacturing: Workers' perceptions of strain
> John Smallwood, Claire Deacon, South Africa

Enhancing the life of the elderly - an application of design thinking
> Ravindra S. Goonetilleke, Emily Yim Lee Au, China

Ergonomic requirements in the design of high performance sports suits: BMX clothing
> Fausto Zuleta Montoya, Gustavo Sevilla Cadavid, Blanca Echavarria Bustamante, Johana Hoyos-Ruiz, Colombia

Development and validation of a dynamic time warping based algorithm to evaluate motion similarity for home-based fall interventions in older people
> Xiaoqun Yu, Shuping Xiong, South Korea

62	**Automation II** Co-Chairs: Dustin Souders and Kirsten Revell, USA/UK	RR

16:00-18:00 - COLUMBIA 1

Vocal guidance of visual gaze during an automated vehicle handover task
> Jediah Clark, Neville Stanton, Kirsten Revell, UK

Tailoring introductory information to the level of automation: Effects on attitudes and usage of a simulated level 3 automated driving system
> Dustin Souders, Shubham Agrawal, Irina Benedyk, Yujie Li, Srinivas Peeta, USA

How do you want to be driven? Investigation of different highly-automated driving styles on a highway scenario
> Patrick Roßner, Angelika C. Bullinger-Hoffmann, Germany

Using technology acceptance model to explain driver acceptance of advanced driver assistance systems
> Md Mahmudur Rahman, Shuchisnigdha Deb, Daniel Carruth, Lesley Strawderman, USA

The user and the automated driving: A state-of-the-art
> Sara Ferreira, Anabela Simões, José Pedro Tavares, Antonio Lobo, Antonio Couto, Liliana Cunha, José Carvalhais, Daniel Silva, Portugal

Investigating drivers' behaviour during diverging maneuvers using an instrumented vehicle
> Fabrizio D'Amico, Alessandro Calvi, Chiara Ferrante, Luca Bianchini Ciampoli, Fabio Tosti, Italy

63	**Macroergonomic Systems Design and Improvement** Co-Chairs: Leszek Pacholski and Joanna Kalkowska, Poland	SOE

16:00-18:00 - COLUMBIA 2

The reporting system as a feedback tool to improve the process of entering data in IT systems
> Maciej Siemieniak, Katarzyna Siemieniak, Poland

The conditioning of macroergonomic design and improvement of the intelligent building's use and service
> Joanna Kałkowska, Leszek Pacholski, Poland

The macroergonomic improvement of total quality management industrial systems
> Milena Drzewiecka-Dahlke, Leszek Pacholski, Poland

The ergonomics of work conditions as force element of the OHS management
> Adam Gorny, Poland

The improvement of women professional entrepreneurial attitude in a context of social expectations
> Paulina Siemieniak, Poland

Monitoring personnel presence and displacement in production facilities using RFID technology
> Robert Waszkowski, Tadeusz Nowicki, Andrzej Walczak, Poland

64	**Ergonomics and Material Environment Design I** Co-Chairs: Anna Jaglarz and Joanna Jabłonska, Poland	SUPI

16:00-18:00 - COLUMBIA 3

Ideas behind the changes in the 20th c. avant-garde architecture
  Teresa Bardzinska-Bonenberg, Poland

The role of cultural heritage in sustainable development: Values and valuation as key factors in spatial planning of rural areas
  Wojciech Bonenberg, Poland

The application of BIM in the "China Beautiful Rural" design project: Yangyou Village river ecological landscape reconstruction design project
  Wojciech Bonenberg, Xia Wei, Mo Zhou, China

The method of designing an architectural compositions applying images reflected in water mirror
  Zdzislaw Pelczarski, Poland

Inclusive healthcare waiting rooms: A comparison study for improving the user experience within a built environment
  Claudia Fernández, Carlos Aceves-Gonzalez, Matteo Zallio,
  Mario Mireles-Ramirez, Mexico/USA

65	**Usability Evaluation and Interface Design** Co-Chairs: Xingyi Zhong and Cigdem Altin Gumussoy, China/Turkey	UUE

16:00-18:00 - COLUMBIA 4

Usability evaluation of the set top box and TV interfaces
  Cigdem Altin Gumussoy, Aycan Kaya, Murat Koprulu, Turkey

Effects of gender and prior experience on immersive user experience with virtual reality
  Camille Sagnier, Emilie Loup-Escande, Gérard Valléry, France

Humanized design of interaction interfaces for small screen devices:
Take intelligent lock as an example
  Na Lin, Zhongting Wang, Chaoyi Zhao, China

Research on application model of unconsciousness in user interface
  Xingyi Zhong, Mengyi Cao, Ting Han, China

Research on interface design of venue monitoring system based on product semantics
  Ying Cao, Biying Li, Jiaxin Liu, China

Usability evaluation of intelligent medical imaging diagnostic interface based on SD method
  Lei Wu, Lijun Mou, Juan Li, Yao Su, Yue Sun, Yekai Wei, Huai Cao1, Sijie Dong, China

66	**Human Factors in Sports, Injury Prevention and Outdoor Recreation** Co-Chairs: Reuben Burch and Stijn Verwulgen, USA/Belgium	SIPOR

16:00-18:00 - COLUMBIA 9

The importance of baselining Division 1 football athlete jumping movements for injury mitigation and return to play
  Reuben Burch, Lesley Strawderman, Anthony Piroli, Harish Chander,
  Wenmeng Tian, Fredrick Murphy, USA

Foot arc and jumping ability of athletes and non-athletes
  Ajita Dsingh, Mansi Batra, India

Relationship between prosthesis and training in prosthetic marathon runner
  Fuminori Matsuura, Yumie Osada, Isao Matsumoto, Yoshinori Hirano, Xiaodan Lu,
  Tomoko Ota, Hiroyuki Hamada, Noriyuki Kida, Japan

Effective measures for minimizing playing-related musculoskeletal disorders among tertiary education student pianists in Malaysia
  Titi Rahmawati Hamedon, Chia-Ying Ling, Fung Chiat Loo, Malaysia

Thermal performance of equestrian helmets
  Merlin Bauwens, Sarah de Graaf, Alexandra Vermeir, Shriram Mukunthan,
  Guido De Bruyne, Belgium

Disorders of female athlete triad in college girls of Punjab
  Ajita Dsingh, Amanpreet Brar, Jeewanjot Kaur, India

67	**Panel: The Impact of Vehicle Automation on Vulnerable Road Users** Co-Chairs: Shuchisnigdha Deb and Md Mahmudur Rahman, USA	SYSI

16:00-18:00 - COLUMBIA 10

The role of context and perception of road rules in the pedestrian crossing decision: A challenge for the autonomous vehicle
> Marie-Axelle Granié, Florent Varet, Béatrice Degraeve, Achot Khalafian, France

Pedestrian receptivity and their interaction with autonomous vehicles
> Daniel Carruth, Shuchisnigdha Deb, USA

Are older adults at greater "risk" of missing out on the potential benefits of vehicle automation?
> Bruce Mehler, USA

Automated vehicles and schools: An analysis of deployment issues
> Michael Clamann, USA

Impact of vehicle automation on driving behaviors of novice teen drivers
> Anuj Pradhan, USA

68	**Human Factors, Business Management and Society: Leadership Views** Co-Chairs: Tero Reunanen and Timo Holopainen, Finland	HFBMS

16:00-18:00 - COLUMBIA 11

Visualization of the wisdom cube - scientific knowledge space for management and leadership
> Hannu Vanharanta, Evangelos Markopoulos, Finland/UK

Enhanced higher education - industry cooperation improving work capabilities of sales engineering graduates
> Ludger Schneider-Störmann, Thomas Röhr, Rauni Jaskari, Timo Holopainen, Tero Reunanen, Germany

Value creation in three clusters focusing on chemistry
> Timo Holopainen, Jukka Rantala, Finland

Leadership role models for young professionals – case study from Finnish university students
> Tero Reunanen, Eyal Eckhaus, Finland

UDA-ERP: Theory, development and conflicts
> Catalina Astudillo-Rodriguez, Esteban Crespo-Martínez, Juan-Manuel Maldonado-Matute, Ecuador

69	**Designing for Inclusion: Learning Experiences, Methodology and Future Trends** Co-Chairs: Giuseppe Di Bucchianico and Alessandra Rinaldi, Italy	DI

16:00-18:00 - COLUMBIA 12

Inclusion in Danish architectural education and design practice
> Masashi Kajita, Denmark

Green for all. A didactic experience on design for all applied to gardening earthenware objects.
> Giuseppe Di Bucchianico, Italy

Teaching e-Learning advanced program for visually impaired students
> Theresa Lobo, USA

Designing of inclusive learning experiences: Preliminary outcomes of a pilot project tailored to SLD
> Alessia Brischetto, Alessandra Rinaldi, Italy

Inclusive design methodology in practice: Turning a prison into an inclusive Civic University
> Jasmien Herssens, Belgium

Participatory design with older adults: Exploring the latent needs of young-old and middle-old in daily living using a universal design approach
> Alex Pui-Yuk King, China

Advanced E-learning education for visually impaired students
> Theresa Lobo, USA

70	**Human Factors for Apparel and Textile Engineering** Co-Chairs: Carmen Mihai, Ene Alexandra and Javed Sheikh, Romania/Pakistan	HFATE

16:00-18:00 - CARDOZO

Impact of a design automation process in textile natural fibers and yarns dying
    Ene Alexandra, Carmen Mihai, Emilia Visileanu, Cristian Jipa, Romania

Solutions for designing the composite textile structure to block, intake and storage of the petroleum residues due to natural disasters
    Carmen Mihai, Ene Alexandra, Emilia Visileanu, Cristian Jipa, Romania

Woven fabrics specially designed for thermal protection and system recovery of air vehicles
    Carmen Mihai, Ene Alexandra, Romania

Biodigital design and functional visualization of multi-class personalized compression textiles for ergonomic fit
    Rong Liu, Bo Xu, Chongyang Ye, China

A classification of care apparel characteristics for disabled user requirement'
    Qilong Feng, China

Parametric design for the construction of a corset surface based on historical female bodies
    Felipe Zapata-Roldán, Blanca Echavarria Bustamante, Colombia

Use of 3D printing and NANO materials in fashion: From revolution to evolution
    Javed Sheikh, Faisal Waheed, Ahmed Khalid, Ijaz Qureshi, Pakistan

71	**Applications in Software, Service and Systems Engineering I** Co-Chairs: Alex Eftyhiou and Hesham Fouad, UK/USA	HFSSSE

16:00-18:00 - GUNSTON WEST

An experimental trial of a novel ticketing system using biometrics
    Jun Iio, Tadashi Okada, Japan

Improve your task analysis! Efficiency, quality and effectiveness increase in task analysis using a software tool
    Vaishnavi Upadrasta, Astrid Oehme, Harald Kolrep, Germany

Applying the ecological interface design framework to a proactively controlled network routing system
    Alex Eftyhiou, UK

An instrumented software framework for the rapid development of experimental user interfaces
    Hesham Fouad, Derek Brock, USA

Using virtual reality and motion capture as tools for human factors engineering at NASA Marshall Space Flight Center
    Tanya Andrews, Brittani Searcy, Brianna Wallace, USA

The human vulnerability of cloud computing
    Myeonggil Choi, South Korea

Fuzzy goal programming for compromising costs and ergonomic load imbalance in manual order picking
    Rifat Ozdemir, Kuwait

72	**Digital Human Modeling and Applied Optimization I** Co-Chairs: Matteo Zallio and Jochen Vleugels, USA/Belgium	DHMAO

16:00-18:00 - EMBASSY

Chicken or egg problem? New challenges and proposals of digital human modelling and interior development of automated vehicles
    Yucheng Yang, Martin Fleischer, Klaus Bengler, Germany

A comparative study between three measurement methods to predict 3D body dimensions using shape modelling
    Thomas Peeters, Jochen Vleugels, Stijn Verwulgen, Guido De Bruyne, Belgium

Posture transfer method on prescanned full-body geometry for spacesuit design
    Linh Vu, K. Han Kim, Sudhakar Rajulu, USA

Digital human modeling: The challenges of digital human models when developing new car concepts
    Ingrid Bubb, Jennifer Hebe, Klaus Bengler, Germany

Estimation of facial contact pressure based on finite element analysis
    Wonsup Lee, Jin-Gyun Kim, Johan Molenbroek, Richard Goossens, Heecheon You, South Korea

73	**Human Factors in Game Design I** Co-Chairs: Thomas de Groot and Johan de Heer, The Netherlands	HFGD

16:00-18:00 - GUNSTON EAST

A gamified approach towards identifying key opportunities and potential sponsors for the future of F1 racing in a declining car ownership environment
  Evangelos Markopoulos, Panagiotis Markopoulos, Mika Luimula, Younus Almufti, Chiara Romano, Paulina Benitez, UK
Devilish dilemma games: Narrative game engine and accompanying authoring tool
  Johan de Heer, Thomas de Groot, Rafal Hrynkiewicz, Tije Oortwijn, Paul Porskamp, The Netherlands
Gamifying the rice industry: The 'Riceville' paradigm
  Evangelos Markopoulos, Ho Fung Kisum Chan, Lincoln Lee Ming Tze, UK
Cultural playing: A video game case study of never alone and the teaching of culture
  Hélio Parente de Vasconcelos Neto, Maria Aurileide Ferreira Alves, Brazil

74	**Human Factors and Wearable Technologies I** Co-Chairs: Jacqui McLaughlin and Xiaohui Mo, Japan/China	HFWT

16:00-18:00 - JAY

Comparative user experience analysis of pervasive wearable technology
  Nicholas Caporusso, Angela Walters, Devon Patchin, Spencer Romeiser, Meng Ding, Noah Vaughn, Daniel Jachetta, USA
The research of visual characteristics for the deaf wearing AR glasses
  Zhelin Li, Xiaohui Mo, Chengchuan Shi, Shanxiao Jiang, Lijun Jiang, China
Current situation and problems of hand-transmitted vibration measurement equipment: Benefits of wearable sensors for everyday monitoring
  Leif Anderson, Jacqui McLaughlin, Setsuo Maeda, Japan
Advancing the applications of augmented reality technology in healthcare: Current trends and implications for the future
  Anya Andrews, USA
NIMBLE - A motion sensing and tracking system
  Jeff Feng, Pei-Fen Chang, USA

75	**Theorizing and Theoretical Issues in High Reliability Organizations** Co-Chairs: Manikam Pillay and Damien Armenis, Australia	HERRP

16:00-18:00 - HOLMEAD EAST

Investigating collective mindfulness in mining: A prospective study in high-reliability organizations
  Manikam Pillay, Karen Klockner, Michael Tuck, Australia
Management tool for reliability analysis in socio-technical systems - a case study
  Salvador Ávila Filho, Érica Cayres, Adriano Puglia, César Malpica, Edmara Drigo, Cassio Brunoro Ahumada, Camille Peres, Brazil
Formerly unrevealed public records should change the account of what occurred on June 30, 2013
  Fred Schoeffler, Lance Honda, Joy A. Collura, USA
Winning hearts and minds in high-reliability industries: The role of human performance in persistent front-line behaviour change
  Damien Armenis, Australia
Human reliability research needs for long-duration spaceflight
  Ronald Boring, David Gertman, Thomas Ulrich, USA

76	**Application of 3D Scanning to Product Design** Co-Chairs: Susan Sokolowski and Linsey Griffin, USA	IPID

16:00-18:00 - FAIRCHILD WEST

Capturing and describing the foot bottom with digital tools to design better fitting footwear
  Susan L. Sokolowski, Alex Xu, USA
The application of the performance hand wear and tools innovation framework: Road cycling gloves
  Susan Sokolowski, Christel Thue Hoegsted, USA
3D hand scanning to digital draping for glove design
  Linsey Griffin, Susan Sokolowski, Emily Seifert, Chris Curry, USA
The variability of U. S. women's plus size product sizing and self-identified size 18 bodies
  Susan Sokolowski, Jessie Silbert, Linsey Griffin, USA
Application of dynamic anthropometry for product design
  Linsey Griffin, Bethany Juhnke, USA

77	**Safety and Hazards** Co-Chairs: Sanna Lohilahti Bladfält and Noor Zainab Habib, Sweden/UK	RR

8:00-10:00 - MORGAN

Gear shifter design – lack of dedicated positions and the contribution to cognitive load and inattention
> Sanna Lohilahti Bladfält, Camilla Grane, Peter Bengtsson, Sweden

Forensic analyses of rumble strips
> Jack Auflick, James Sprague, Joseph Eganhouse, Julius Roberts, USA

Investigation of Dubai tram safety challenges and road user behavior through tram driver's opinion survey
> Shahid Tanvir, Noor Zainab Habib, Guy H. Walker, UAE/UK

The effects of music background on hazard perception among young adult drivers
> Warren Brodsky, Avinoam Borowsky, Israel

Analysis of driving safety and cellphone use based on social media
> Chao Qian, Yueqing Li, Wenchao Zuo, Yuhong Wang, USA

A scenario-based investigation of truck platooning acceptance
> Matthias Neubauer, Oliver Schauer, Wolfgang Schildorfer, Austria

78	**Symposium: Digital Human Modelling by Women in Human Factors II** Co-Chairs: Sofia Scataglini and Silvia Imbesi, Belgium/Italy	DHMAO

8:00-10:00 - HOLMEAD WEST

A co-model for research through co-design
> Daniele Busciantella Ricci, Sofia Scataglini, Italy

Toward a co-logical aid for research through co-design
> Sofia Scataglini, Daniele Busciantella Ricci, Belgium

How to turn yourself into a virtual travel companion in someone else's car: Drawing design approaches from the philosophy of mind
> Laura Boffi, Italy

Monitoring older people: An overview of devices responding to significant needs of elderly affected by Parkinson's Disease
> Silvia Imbesi, Giuseppe Mincolelli, Italy

3D mapping of skin compression tolerance for spacesuit fit prediction
> Yaritza Hernandez, Elizabeth Benson, K. Han Kim, Sarah Jarvis, Linh Vu, Sudhakar Rajulu, USA

79	**Fashion, Clothing and Design Applications** Co-Chairs: Anna Szopa and Yulin Zhao, USA/China	ED

8:00-10:00 - FAIRCHILD EAST

The application of ergonomics of the built environment in architectural project as a benefit for the hearing impaired
> Aline Neves, Marcelo Soares, Renata de Assunção Neves, China

Girls bra design for the demand of user
> Yulin Zhao, Dingbang Luh, China

Cut Me Off: An exploratory study about how the user perceives the information of clothes textile labels
> Maria Aurileide Ferreira Alves, Gonçalo Falcão, Portugal

Assessment of Portuguese firefighters' needs: Preliminary results of a pilot study
> Sophia Piacenza, Miguel Carvalho, Rachel Boldt, Fernando Ferreira, Linsey Griffin, Susan Ashdown, Portugal/USA

80	**Product and System Design** Co-Chairs: Huimin Hu and Hong Luo, China	ED

8:00-10:00 - DU PONT

A JACK-based ergonomic analysis and design of the cockpit of agricultural material-handling vehicles
> Sen Gu, Cheng Huang, Zhiqiang Song, Shasha Yuan, China

Study on the influence of BMI difference on pressure distribution of mattress
> Huimin Hu, Pu Hong, Mengjing Cai, Yinxia Li, Hong Luo, Haimei Wu, China

Research on body pressure distribution of mattress for different genders
> Huimin Hu, Mengjing Cai, Pu Hong, Yinxia Li, Ling Luo, Haimei Wu, China

Research on comfort of mattresses with different hardness based on body pressure distribution
> Huimin Hu, Pu Hong, Mengjing Cai, Hong Luo, Haimei Wu, China

Toothbrush innovation design based on man-machine engineering research
> Peng Han, China

Effect of body weight of wheelchair care recipient on physical activity intensity of assistant person
> Haruka Sugiyama, Yohsuke Yoshioka, Masaki Takahashi, Mitsuaki Shiraishi, Fumitake Hakozaki, Satoshi Kameno, Yoshihide Tokuda, Ken Nunota, Cheng Jiayu, Japan

The importance of ergonomics in the development of sustainable materials applied to footwear design
> Ana Fernandes, Portugal

81	**Ergonomics in Manufacturing** Co-Chairs: Cristina Mora and Edmund Pawlowski, Italy/Poland	MFG

8:00-10:00 - COLUMBIA 1

Impact of industry 4.0 on occupational health and safety
> Aleksandra Polak-Sopinska, Anna Maczewska, Anna Walaszczyk, Zbigniew Wisniewski, Poland

Ergonomics principles for the design of an assembly workstation for left-handed and right-handed users
> Lucia Botti, Alice Caporale, Maddalena Coccagna, Cristina Mora, Italy

Lean production management model for SMEs waste reduction in the processed food sector in Peru
> Carlos Raymundo, Ernesto Altamirano, Jose Chavez, Fernando Osorio, Francisco Dominguez, Peru

Development of an intelligent robotic additive manufacturing cell for the nuclear industry
> Richard French, Hector Marin-Reyes, Gabriel Kapellmann Zafra, Samantha Abrego, UK

Manageable and scalable manufacturing IT through an app based approach
> Christian Knecht, Andreas Schuller, Andrei Miclaus, Germany

Qualitative features of the human capital in the formation of the agility of enterprises. Research results in Polish companies
> Hanna Wlodarkiewicz-Klimek, Poland

Human factors/ergonomics in eWorld: Methodology, techniques and applications
> Oleksandr Burov, Ukraine

82	**Human Factors in Transportation: Rail** Co-Chairs: Tobias Heine and Denis Miglianico, Germany/France	RR

8:00-10:00 - COLUMBIA 2

Engineering the right change culture in a complex (GB) rail industry
> Michelle Nolan-McSweeney, Brendan Ryan, Sue Cobb, UK

Analysis of driving performance data to evaluate brake manipulation by railway drivers
> Daisuke Suzuki, Naoki Mizukami, Nobuyuki Tsuyuki, Yutaka Kakizaki, Japan

Decrease driver's workload and increase vigilance in light rail vehicle
> Denis Miglianico, Vincent Pargade, France

Application of cognitive work analysis to explore passenger behaviour change through provision of information to help relieve train overcrowding
> Jisun Kim, Kirsten Revell, John Preston, UK

The effect of tram driver's cab design on posture and physical strain
> Tobias Heine, Marco Käppler, Barbara Deml, Germany

83	**Driver Training, Education and Hazards** Co-Chairs: Mohammed Al Eisaei and Minerva Rajendran, UAE/India	RR

8:00-10:00 - COLUMBIA 3

Proposal for graduated driver licensing program: Age vs. experience Abu Dhabi case study
> Yousif Al Thabahi, Marzouq Al Zaabi, Mohammed Al Eisaei, Abdulla Al Ghafli, UAE

Impact of mind wandering on driving
> Minerva Rajendran, Venkatesh Balasubramanian, India

Assessing the relation between emotional intelligence and driving behavior: An online survey
> Swathy Parameswaran, Venkatesh Balasubramanian, India

Road surface roughness and urban bus ride quality in Edinburgh: An EEG approach
> Benjamin Oladele Afuye, Wafaa Saleh, Achille Fonzone, UK

The analysis of UK road traffic accident data and its use in the development of a direct vision standard for trucks in London
> Russell Marshall, Stephen Summerskill, James Lenard, UK

The development of a direct vision standard for trucks in London using a volumetric approach
> Stephen Summerskill, Russell Marshall, Abby Paterson, Anthony Eland, UK

84	**Ergonomics and Material Environment Design II** Co-Chairs: Wojciech Bonenberg and Agata Bonenberg, Poland	SUPI

8:00-10:00 - COLUMBIA 4

Human scale in architecture of buildings for the performing arts
> Pawel Amalowicz, Poland

Renovations of public spaces at the junction with water – boulevards. Case studies in a spatial, visual and usable context
> Andrzej Sobolewski, Roman Czajka, Poland

Village regeneration through cultural creativity and local identity:
Polish case study
> Wojciech Bonenberg, Agata Bonenberg, Mo Zhou, Poland

Preference of Chinese vernacular windows: Combined effects of shape and view
> Man Zhang, Jiangtao Du, Yuyang Tang, China

Ergonomic shaping of functional and spatial program of housing
> Przemyslaw Nowakowski, Poland

85	**User Experience and HMI: Automation and Transportation** Co-Chairs: Samineh Gillmore and Timo Schempp, USA/Germany	UUE

8:00-10:00 - COLUMBIA 9

Comparative analysis of controlling drone
> Hajun Kim, Lim Seungchan, Lee Wonsup, South Korea

User centered design strategies for improving visualization of sensor data in rotorcraft cockpit displays for degraded visual environment operations
> Bradley Davis, Kelly Dickerson, Samineh Gillmore, USA

An evaluation method for a new adaptive operating system - using the example of a tractor
> Timo Schempp, Andreas Kaufmann, Ingmar Stoehr, Markus Schmid,
> Stefan Boettinger, Germany

The development of an adaptive HMI - from the idea to the prototype
> Andreas Kaufmann, Timo Schempp, Ingmar Stoehr, Markus Schmid,
> Thomas Maier, Germany

A smart factory in a laboratory size for developing and testing innovative human-machine interaction concepts
> Carsten Wittenberg, Benedict Bauer, Nicolaj Stache, Germany

86	**Usability and User-Centered Design I** Co-Chairs: Pamela Savage-Knepshield and Marija Bertovic, USA/ Germany	UUE

8:00-10:00 - COLUMBIA 10

Applying user-centered design to software modernization
> Pamela Savage-Knepshield, USA

Human-computer interaction in business process external tasks
> Robert Waszkowski, Tadeusz Nowicki, Małgorzata Ole , Poland

Usability of the written procedures: an eye tracking study
> Marija Bertovic, Ulf Ronneteg, Germany

Evaluation of online consulting using co-browsing: What factors are related to good user experience?
> Kamalatharsi Mutuura, Andreas Papageorgiou, Oliver Christ, Switzerland

Proposal of a multidimensional model of user experience in physical settings
> Begoña Julia Nehme, Eugenio Rodríguez, Chile

Usability test: How elders confront food packaging?
> Begoña Julia Nehme, Erik Ciravegna, Chile

87	**Security and Crises Management** Co-Chairs: Mário Simões-Marques and Aysen Taylor, Portugal/USA	SYSI

8:00-10:00 - COLUMBIA 11

Improving usability with think aloud and focus group methods. A case study: An intelligent police patrolling system (I-Pat)
> Tania Calle-Jimenez, Doris Tutillo-Sanchez, Sandra Sanchez-Gordon,
> Janio Jadán-Guerrero, Cesar Guevara, Patricio Lara-Alvarez, Patricia Acosta-Vargas,
> Luis Salvador-Ullauri, Isabel L. Nunes, Ecuador/Portugal

Pilots' role in the critical infrastructure of aviation
> Aysen Taylor, T. Steven Cotter, USA

Influence of dynamic automation function allocations on operator situation awareness and workload in unmanned aerial vehicle control
> Yulin Deng, James Shirley, Wenjuan Zhang, Na Young Kim, David Kaber, USA

Applying a variation of Delphi method for knowledge elicitation in the context of an intelligent system design
> Mario Simões-Marques, M. Filomena Teodoro, Gabriel Calhamonas,
> Isabel l. Nunes, Portugal

Disaster management support system prototype design evolution based on UX testing
> Mário Simões-Marques, Pedro Mendonça, Diogo Figueiredo, Isabel L. Nunes,
> Portugal

A study of an airworthiness requirement influence of human factors on aviation incidents
> Zhang Yinbo, Jin ZheFeng, Ruijie Fan, Meng Hua, Shasha Lu, China

88	**Panel: Advances in Navy Training Research and Applications** Chair: Beth Atkinson, USA	TELS

8:00-10:00 - COLUMBIA 12

Advances in Navy training research and applications
> Henry Phillips, USA

When human performance assessment data becomes big: Adhering to psychometric principles in the era of "big data"
> Mitchell Tindall, Beth Atkinson, USA

Advances in Navy training research and applications: Using synthetic crew members for CRM training
> John Killilea, USA

Advances in Navy training research and applications: The development of manned-unmanned teaming training
> John Killilea, Emily Anania, USA

Scenario based adaptive training tools to support shipboard tactical decision making
> James Pharmer, USA

89	**Advanced Methods for Human-Agent Interfaces** Co-Chairs: Jessica Reichers and Nia Peters, USA	HFRUS

8:00-10:00 - CARDOZO

Virtual ship information overlay and navigation VISION system
> Katia Estabridis, Jessica Reichers, Nathan Brannon, Joshua Rubini, Gary Hewer, Naomi Hillis, USA

Task engagement inference within distributed multiparty human-machine teaming via topic modeling
> Nia Peters, USA

Decision making using automated estimates in the classification of novel stimuli
> Amber Hoenig, Joseph Stephens, USA

Participant perception and HMI preferences during simulated AV disengagements
> Syeda Sheherbano Rizvi, Francesca Favaro, Sumaid Mahmood, USA

90	**Human Factors in Virtual Environments II** Co-Chairs: Brian Sanders and Stijn Verwulgen, USA/Belgium	HFGD

8:00-10:00 - GUNSTON WEST

Understanding user interface preferences for XR environments when exploring physics and engineering principles
> Brian Sanders, Yuzhong Shen, Dennis Vincenz, USA

Appreciation of proportion in architecture: A comparison between facades primed in virtual reality and on paper
> Stijn Verwulgen, Sander Van Goethem, Gustaaf Cornelis, Jouke Verlinden, Tom Coppens, Belgium

Immersive virtual reality beyond available physical space
> Nicholas Caporusso, Gordon Carlson, USA

Gazing pattern while using AR route-navigation on smartphone
> Asami Tanabe, Yohsuke Yoshioka, Japan

Healthcare design based on virtual reality technology: Enhance the user's engagement in the rehabilitation process
> Yu Qiao, Siyi Yang, China

Research on virtual simulation evaluation system for passenger compartments lighting of subway trains in China
> Jian Xu, Ze-rui Xiang, Jin-yi Zhi, Xiao-fei Xu, Si-jun He, Jin Wang, Yang Du, Gang Xu, China

91	**Human Factors in Aging and Gerontology I** Co-Chairs: Jay Kalra and Mengyi Cao, Canada/China	AGE

8:00-10:00 - EMBASSY

Alterations in thyroid function testing with aging
> Jay Kalra, Zoher Rafid-Hamed, Patrick Seitzinger, Canada

A grip force training and testing device for old people
> Shijian Luo, Ze Bian, Yufei Zhang, Ping Shan, Hebo Gong, China

Optimized design of accompanying smart car for the elderly based on humanization design methods
> Mengyi Cao, Xingyi Zhong, Ting Han, China

Measuring ways research on public facilities of the elderly's physical flexibility
> Xing-Rong Wen, Ding-Bang Luh, China

Individual 3D behavior capture method for elderly people with dementia under everyday life environment with RGBD camera
> Kei Hirano, Yoshifumi Nishida, Yusuke Miyazaki, Koji Kitamura, Japan

92	**Smart Additive Manufacturing: Sensing, Data Analytics and Process Control** Co-Chairs: Prahalad Rao and Hongyue Sun, USA	AMMSP

8:00-10:00 - GUNSTON EAST

Modeling in-plane deviations of shapes to come based on prior deviation features in additive manufacturing
> Arman Sabbaghi, USA

Ushering the digital twin in metal additive manufacturing – a case for model-based monitoring of porosity in directed energy deposition.
> Prahalada Rao, USA

Cyber-coordinated simulation models for multi-stage additive manufacturing of energy products
> Hongyue Sun, USA

3D printing of high-strength continuous carbon fiber reinforced polymer composites
> Pedram Parandoush, Dong Lin, USA

Toward defect-free additive fabricating of flexible and hybrid electronics: Physics-based computational modeling and control of aerosol jet printing
> Roozbeh (Ross) Salary, Jack Lombardi, Darshana Weerawarne, Prahalada Rao, Mark Poliks, USA

93	**Cross-Cultural Decision Making I** Co-Chairs: Atsuo Murata and Toshihisa Doi, Japan	CCDM

8:00-10:00 - JAY

Employee satisfaction, task performance, and emotional labor: An empirical examination
> Noriko Okabe, Japan

Sensitivity analysis of intercultural relationship based on DMIS model
> Zhenbin Wu, Baocui Chen, Xuebo Chen, China

Cross-cultural analysis of top page design among Brazilian, Chinese, Japanese and United States web sites
> Toshihisa Doi, Atsuo Murata, Japan

Globalisation, cultural differentiation and pluralism processes and proactive dimension of human world of "boundary-less careers"
> Agnieszka Cybal-Michalska, Poland

Influential factors in cross-country standards adoption from a macroergonomics perspective
> Qinyi Liu, Liang Ma, Phairoj Liukitithara, China

94	**Interdisciplinary Practice for Automobile Design** Co-Chairs: Canqun He and Chunrong Liu, China	IPID

8:00-10:00 - HOLMEAD EAST

Extracting contour shape of passenger car form in rear view based on form similarity judgment by young Chinese consumers
> Chunrong Liu and Minghua Zhang, China

Research on evaluation of CMF based on vision in automobile seat design
> Canqun He, Xue Sun, Weizhen Xiao, China

Study on the design elements of shape and interface of modern agricultural machinery
> Yitong Liu, Huabin Wang, China

Research on steering wheel interaction design for middle class consumers
> Xiyao Wang, Jiong Fu, China

10:00 - 10:30   Refreshments will be provided in Columbia West (Terrace Level)

96	**Toward a Unified Approach for Studying Long-Term Bonding Between Humans and Autonomy** Chair: Frank Krueger, USA	CN

The role of mind perception in bonding between humans and autonomy
Jonathan Gratch, USA
Monitoring brain function during human robot interaction with mobile fNIRS in natural settings
Hasan Ayaz, USA
The role of oxytocin in shaping long-term human bonding
Mary Lee, USA
A neuropsychological model of long-term bonding between humans and autonomy
Frank Krueger, USA
Long-term bonding with social robots
Ewart de Visser, USA

97	**Human-Machine Interaction in Systems** Co-Chairs: Umer Asgher and Salman Nazir, Pakistan/Norway	ICEEP

Black hole illusion: Functions of temporal and spatial cues
Ming Chang, Lei Huang, China
Research on interactive performance optimization strategy of complex systems based on information coding
Tian Qin, Siyi Wang, China
Novel metaheuristic approach: Integration of variables method (IVM) and human-machine interaction for subjective evaluation
Umer Asgher, Rolando Simeón Monet, Riaz Ahmad, José Arzola-Ruiz, Pakistan/Cuba
Modeling and multi-objective optimization of insulating lining using Heuristic technique "Exploration of Variables Codes (ECV)"
Umer Asgher, José Arzola-Ruiz, Osmel Martínez-Valdés, Riaz Ahmad, Yasar Ayaz, Sara Ali, Pakistan/Cuba
Using adaptive integration of variables algorithm for analysis and optimization of 2D irregular nesting problem
José Arzola-Ruiz, Arlys Michel Lastre, Alexis Cordovés-García, Umer Asgher, Cuba/Pakistan
Predicting operator performances and cognitive efficiency by monitoring physiological and cognitive states to improve risk management
Eva Hansenne, Jerome Wertz, Mathieu Jaspar, Anne-Sophie Nyssen, Clementine Francois, Belgium
Evaluation of fatigue and comfort of blue light under general condition and low blue light condition
Yunhong Zhang, Na Liu, Hong Chen, China

98	**Safety Management and Behavior Analysis** Co-Chairs: Kapo Wong and Alan H. S. Chan, Hong Kong	SMHF

Gender differences in risk-taking-related personality traits and risk perception: implications for safety training and awareness programs
Kapo Wong, Alan H. S. Chan, Saad A. Alabdulkarim, Hong Kong
Socially oriented design of technical systems and objects: Safety and accident prevention
Yulia Salnikova, Evgeny Kolbachev, Russia
Compliance supervision or self-regulation? A new research perspective based on game theory
Yuan Gao, Yunxiao Fan, China
Issues of human error management in introducing new technology for bridge inspection drones
Riku Tsunori, Yusaku Okada, Japan
Driving risk assessment under the effect of alcohol through an eye tracking system in virtual reality
Chiara Ferrante, Valerio Veraldi, Maria Rosaria De Blasiis, Italy
The impact of autonomous vehicles' active feedback on trust
Ana Mackay, Inês Fortes, Catarina Santos, Dário Machado, Patrícia Barbosa, Vera Vilas Boas, João Ferreira, Nelson Costa, Carlos Silva, Emanuel Sousa, Portugal
An assessment of the potential risk of hearing loss from earphones based on the type of earphones and external noise
Alethea Diana Villa, Ysabel Neena Gayahan, Manuel Vincent VI Chanco, Jeriko Merlo Reyes, Lizbeth Mariano, Philippines

99	**The Present and Future of Macroergonomic Systems** Co-Chairs: Marcin Butlewski and Ana Margarida Ferreira, Poland/Portugal	SOE

10:30-12:30 - DU PONT

Gamifying onboarding: How to increase both engagement and integration of new employees
> Louisa Heimburger, Rúben Gouveia, Oliver Korn, Lea Buchweitz, Germany

Well-being through design for dynamic diversity: The voice of minorities in design for all
> Marcin Butlewski, Poland

Social design, innovation and ergonomics: Reflections on education, transdisciplinarity, and new blurred models for sustainable social change
> Ana Margarida Ferreira, Nicos Souleles, Stefania Savva, Portugal

Towards an expert system for assigning optimal workplaces to workers with disabilities
> Gregor Harih, Nataša Vujica-Herzog, Slovenia

The role of building construction project planning in accommodating ergonomic considerations of the aging workforce
> Steven Kangisser, Young Mi Choi, USA

Ergo + 50: Ergonomic assessment methodology aimed at older workers
> Alberto Ferreras Remesal, Carlos Chirivella Moreno, Alicia Piedrabuena Cuesta, Rakel Poveda Puente, Sonia Serna Arnau, Consuelo Latorre Sánchez, Mercedes Sanchís Almenara, Raquel Marzo Rosello, Spain

100	**Ergonomics in Urban Design I** Co-Chairs: Joanna Jablonska and Anna Jaglarz, Poland	SUPI

10:30-12:30 - COLUMBIA 1

Landscape parks in China: Steering and handling growing tourism
> Teresa Bardzinska-Bonenberg, Shoufang Liu, Poland

Smart village as a model of sustainable development:
Case study of Wielkopolska region in Poland
> Wojciech Bonenberg, Mo Zhou, Xia Wei, Poland

The growing house – The way to solve the housing problem in Interwar Germany
> Jadwiga Urbanik, Poland

Architectural challenges of designing front entrance area at city schools
> Andrzej Dudzinski, Poland

Smart eco-villages and tourism development based on rural revitalization with comparison Chinese and Polish traditional villages experiences
> Ling Qi, Mo Zhou, Wojciech Bonenberg, Zixuan Ma, China

Management balance between nature and rural settlements in China
> Shoufang Liu, Lin Li, Wojciech Bonenberg, Teresa Bardzinska-Bonenberg, Mo Zhou, China

Active city for healthy ageing and "anti-globesity"
> Cristiana Cellucci, Michele Di Sivo, Italy

101	**Usability and User-Centered Design II** Co-Chairs: Hashim Chunpir and Lauren LaSpina-Paoletti, Germany/USA	UUE

10:30-12:30 - COLUMBIA 2

Comparison of information technology service management (ITSM) practices in e-science, libraries, public administration and the private sector
> Hashim Chunpir, Germany

GDPR considerations in recruiting participants for human factors research
> Richard Horst, Yasmin Diederiks, USA

Heuristic and bias information on ship engine operation alarm display
> Adi Mas Nizar, Takashi Miwa, Makoto Uchida, Masumi Nakamura, Japan

Closing the gap of creating design concepts for DSS by applying the situation awareness oriented design principles
> Elena Dalinger, Daniel Feiser, Germany

Building a house with a limited tool set: Overcoming the challenge of incorporating usability in the acquisition process
> Jade Driggs, Alice Diggs, Richard Steinberg, USA

Are you prepared for the ISO 11607 medical device packaging changes?
> Lauren LaSpina-Paoletti, USA

102	**Human Interaction with Small Unmanned Aerial Systems** Co-Chairs: Durant Bridges and Antti Väätänen, USA/Finland	HFRUS

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<tr>
<td rowspan="2">10:30-12:30 - COLUMBIA 3</td>
<td colspan="2">

Small unmanned aircraft-systems-operations augmented reality user interface types
  Durant Bridges, USA
Human–drone interaction: Virtues and vices in systemic perspective
  Khavanova Inna, Olga Burukina, Russia
Development of a concept of operations for autonomous systems
  Antti Väätänen, Jari Laarni and Marko Höyhtyä, Finland
Visual detection of trespassing of a small unmanned aerial vehicle into an airspace
  Kai Li, S Chang, Lu Peng, Caijun Zhao, Taiwan
Taking advantage of swarming to support consistent and predictable behavior of an autonomous system following loss of communications
  Serge Chaumette, France
Spatiotemporal analysis of "Jello Effect" in drone videos
  Yang Cai, Eric Lam, Todd Howlett, Alan Cai, USA
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103	**Human Factors in Cybersecurity: Awareness and Cyber-Physical Security** Co-Chairs: Nicholas Caporusso and Jeremiah Still, USA	CYBER

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<td>10:30-12:30 - COLUMBIA 4</td>
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Perceiving behavior of cyber malware with human-machine teaming
  Yang Cai, Jose Morales, Neta Ezer, USA
Human-centered cyber situation awareness
  Vincent Mancuso, Sarah McGuire, Diane Staheli, USA
Over-the-shoulder attack resistant graphical authentication schemes impact on working memory
  Jeremiah Still, Ashley Cain, USA
Comparative evaluation of security and convenience trade-offs in password generation aiding systems
  Nicholas Caporusso, Michael Stainbrook, USA
HackIT: A human-in-the-loop simulation tool for realistic cyber deception experiments
  Palvi Aggarwal, Aksh Gautam, Vaibhav Aggarwal, Cleotilde Gonzalez, Varun Dutt, USA
Mathematical model of intrusion detection based on sequential execution of commands applying Pagerank
  Cesar Guevara, Jairo Hidalgo, Marco Yandún, Hugo Arias, Lorena Zapata-Saavedra, Ivan Ramirez-Morales, Fernando Aguilar-Galvez, Lorena Chalco-Torres, Dioselina Pimbosa Ortiz, Ecuador
Why drive license-free on information highway?
  Aftab Ahmad, Hak J. Kim, USA
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104	**Designing for Inclusion in the Cultural Heritage** Co-Chairs: Giuseppe Mincolelli and Alessandra Rinaldi, Italy	DI

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Media convergence in information transmission in museum space
  Yongbin Wang, Yongbin Wang, China
User interaction and scenario-based experience design for new media technology in museum spatial experience
  Jian Yu, Yongbin Wang, China
Inclusive design practices for natural parks. Products and services for experience-focused solutions in places of high naturalistic value
  Ivo Caruso, Vincenzo Cristallo, Carlo Martino, Italy
Inclusive participation design methodologies for digital cultural heritage
  Giuseppe Mincolelli, Michele Marchi, Italy
An application for mobile systems developed with the community involvement. An open source mobile application project of a perceptive city map
  Francesca Bozza, Italy
The effect of sliding door hardware design on opening operation
  Satoshi Kose, Yoshiaki Goto, Ken Nunota, Shinji Tanaka, Japan
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105	**Advances in Computational Social Sciences** Co-Chairs: Zining Yang and Sekwen Kim, USA	HFSIM

10:30-12:30 - COLUMBIA 10

Diffusion of environmental protectionism: single-use plastic bags ban policy in California
> Zining Yang, Sekwen Kim, USA

The urban renew case study on a feasibility profit sharing in different development intensity by game theory
> Yuan Yuan Lee, Zining Yang, Oliver Shyr, USA

Nefarious actors: An agent based analysis of threats to the democratic process
> Nicholas Stowell, Norvell Thomas, USA

Train intelligent detection system based on convolutional neural network
> Zhang Qiang, Zining Yang, Gao Chunhai, Cheung Virginia, USA

106	**Human Factors in Game Design II** Co-Chairs: Kun Chen and Ricardo Navarro, China/Peru	HFGD

10:30-12:30 - COLUMBIA 11

Logic evaluation through game-based assessment
> Carlos Arce-Lopera, Alan Perea, Colombia

Designing experiences: A virtual reality video game to enhance immersion
> Ricardo Navarro, Vanessa Vega, Sergio Martinez, Maria José Espinosa, Daniel Hidalgo, Brian Benavente, Peru

The design of a WebGL-based 3D virtual roaming system for the "Batu Hitam" shipwreck
> Gantian Bian, Baosheng Wang, China

Virtual reality and its effect on intrinsic motivation during simulator training
> Salman Nazir, Steven Mallam, Norway

The design of card game for leukemia children based on narrative design
> Hongzhi Pan, Long Ren, Chenyue Sun, Jiali Zhang, China

107	**Human Factors and Wearable Technologies II** Co-Chairs: Chantal Lidynia and Chih-Yu Hsiao, Germany/Taiwan	HFWT

10:30-12:30 - COLUMBIA 12

A novel joint angle measurement system to monitor hip movement in children with hip diseases
> Donato Giuseppe Leo, Badr M. Abdullah, Daniel C. Perry, Helen Jones, UK

Nudging vs. budging: Users' acceptance of nudging for more physical activity
> Chantal Lidynia, Julia Offermann-van Heek, Martina Ziefle, Germany

Evaluation of suitable rest times for the use of optical head-mounted displays
> Chih-Yu Hsiao, Yi-An Liu, Mao-Jiun Wang, Taiwan

Smartphone-based human fatigue detection for daily activities using gait analysis
> Swapnali Karvekar, Ehsan Rashedi, Masoud Abdollahi, USA

Wearable smart emotion-aware gloves: Development of a new way for people to interact with others
> Shijian Luo, Ping Shan, Chengyi Shen, Zhitong Cui, Ze Bian, Huan Lin, Wenyin Zou, China

108	**Human Error Considerations in Design** Co-Chairs: Xiaoli Wu and Salvador Avila Filho, Japan/Brazil	HERRP

10:30-12:30 - CARDOZO

Mining human error incident patterns with text classification
  Toru Nakata, Japan
A risk analysis method for human-machine system based on risk scenario and interaction interface analysis
  Xing Pan, Yuhang Jiang, Wenjin Zhang, Xianheng Zhao, China
Human factors engineering analyses for human system interface of severe accident management support system based on human factors engineering program
  Lee Sungheon, Jonghyun Kim, South Korea
Research on the evaluation method of human factors for the display and warning system of power plant in aircraft cockpit
  Zongpeng Wang, Yundong Guo, Youchao Sun, China
Optimization of information interaction interface based on error-cognition mechanism
  Xiaoli Wu, Chengqi Xue, Feng Zhou, Linlin Wang, Weiwei Zhang, Tingting Zhang, Ling Xia, China
'To err is human' but it's time to go deeper. An analysis of human and system level challenges in the educational testing industry
  Irenka Suto, Jo Ireland, UK
A pilot error analysis method for the human-machine interface design process of civil aircraft cockpit
  Shasha Lu, Yang Zhou, Hongtao Liu, Zhefeng Jin, China

109	**Human Factors for Technologies in Apparel and Textile Design/ Engineering** Co-Chairs: F. Moreira da Silva and Gianni Montagna, Portugal	HFATE

10:30-12:30 - GUNSTON WEST

Distribution of clothing pressure in support knee-high socks and its evaluation
  Tamaki Mitsuno, Aya Yamagishi, Mayuko Takenaka, Japan
Reliability of anthropometric reference data for children's product design
  Su-Jeong Shin, Mona Maher, USA
Formation of the 3D virtual models for clothing fit assessment applied in human factors
  Hyunjung Lee, Su-Jeong Shin, USA
Research on the characteristics of hand shape in different countries
  Jing Zhao, Gang Wu, Chao Zhao, Fan Zhang, Haitao Wang, Xinyu Cao, China
Clothing pressure alters brain wave activity in the occipital and parietal lobes
  Yunjuan Liu, Yan wang, Dongsheng Chen, Yingjin Gan, China
Development of flame retardant Fiber Reinforced Plastics products embedded with Japan-specific traditional design
  Tetsuo Kikuchi, Japan

110	**Recent Developments in Rapid Prototyping for Assistive Technologies** Co-Chairs: Frode Eika Sandnes and Fausto Orsi Medola, Norway/Brazil	AMMSP

10:30-12:30 - EMBASSY

Using virtual reality and rapid prototyping to co-create together with hospitalized children
  Vanessa Ghirardeli Usó, Frode Eika Sandnes, Fausto Orsi Medola, Brazil
Avoiding product abandonment through user centered design: A case study involving the development of a 3D printed customized upper limb prosthesis
  Amanda Coelho Figliolia, Fausto Orsi Medola, Frode Eika Sandnes,
  Luis Carlos Paschoarelli, Ana Claudia Tavares Rodrigues, Brazil
Evaluation of orthosis rapid prototyping during the design process: Analysis of verification models
  Ana Lya Moya Ferrari, Aline Darc Piculo dos Santos, Guilherme da Silva Bertolaccini,
  Fausto Orsi Medola and Frode Eika Sandnes, Brazil
3D printing as tool for guiding product design: A teaching experience in the ergonomics course
  Rodolfo Nucci Porsani, Bruno Borges da Silva, Luiz Antonio Vasques Hellmeister,
  Fausto Orsi Medola, Luis Carlos Paschoarelli, Brazil
Design and development of a myoelectric upper limb prosthesis with 3D printing: A low-cost alternative
  Bruno Borges da Silva, Rodolfo Nucci Porsani, Luiz Antonio Vasquez Hellmeister,
  Fausto Orsi Medola, Luis Carlos Paschoarelli, Brazil
Manufacturing technology in rehabilitation practice: Implications for its implementation in assistive technology production
  Idinei Francisco Pires de Carvalho Filho, Fausto Orsi Medola, Frode Eika Sandnes,
  Luis Carlos Paschoarelli, Brazil

Detailed Technical Program

Saturday, July 27, 2019

Saturday, July 27

111	**Production, Quality and Intelligent Control Systems** Co-Chairs: Beata Mrugalska, Carlos Raymundo and Fiorella Lastra, Poland/Peru	APMPC

10:30-12:30 - GUNSTON EAST

Production management model based on lean manufacturing for cost reduction in the timber sector in Peru
> Fiorella Lastra, Nicolas Meneses, Ernesto Altamirano, Carlos Raymundo, Javier M. Moguerza, Peru

Production management model for increasing productivity in bakery SMEs in Peru
> Junior Huallpa, Tomas Vera, Ernesto Altamirano, Carlos Raymundo, Javier M. Moguerza, Peru

Conditioning of computerized maintenance management systems implementation
> Zbigniew Wisniewski, Artur Blaszczyk, Poland

Analysis of operational efficiency in picking activity on a pipes and fittings company
> Gustavo Moresco, Vanina Silva, Brazil

Remaining useful life prediction for components of automated guided vehicles
> Beata Mrugalska, Ralf Stetter, Poland

Discussion on the range of cut-off values in robust algorithm A
> Zhang Fan, Yue Zhang, Zhao Chao, Jing Zhao, Gang Wu, Haitao Wang, Xinyu Cao, China

Model for dilution control applying empirical methods in narrow vein mine deposits in Peru
> Luis Salgado, Diego Nuñez, Ivan Pehovaz, Carlos Raymundo, Javier M. Moguerza, Peru

112	**Design Embracing Information Science, Intention and Experience** Chair: Cliff Shin, USA	IPID

10:30-12:30 - JAY

Planting new seeds: Opportunities for design to transform agriculture through emerging technologies
> John Capozzo, Cliff Shin, USA

Should the environment be a human factor?
> Stan Ruecker, Claudia Grisales, John A. Capozzo, Juan Alfonso de la Rosa, Gerry Derksen, Priscilla Boff Ferronato, Thais Cristina Sehn, Cliff Shin, USA

Quantitative research on the relationship between design elements and Kansei image of electric vehicle styling
> Mingzhu Li, Canqun He, Zhangping Lu, Liqing Huang, China

Research on modeling design of modern agricultural machinery based on soft system methodology
> Huabin Wang, Baoping Xu, China

113	**Human Factors in Training, Education, and Learning Sciences** Co-Chairs: Ellen Bass and Benita Zulch, USA/South Africa	TELS

10:30-12:30 - HOLMEAD EAST

Challenges in operator training for (semi-)autonomous systems
> Salman Nazir, Norway

The construction manager's mask: A more purpose-fit selection for South Africa
> Andries van Heerden, Michelle Burger, Benita Zulch, South Africa

Developing an online community of learners for maritime training – a case study
> Amit Sharma, Salman Nazir, Norway

Curriculum infusion through case studies: Engaging undergraduate students in course subject material and influencing behavior change
> Ellen Bass, Holly Foster, Douglas Lee, Susie Bruce, R. Reid Bailey, USA

UI preferences for programming education
> Blessing Leonard, Giovanni Vincenti, USA

Directions towards sustainability through higher education
> Theresa Lobo, USA

Lunch Break 12:30 - 13:30 • Enjoy lunch at the restaurant of your choice

115	**Sensory Engineering and Emotion** Co-Chairs: Keiichi Watanuki and Keiichi Muramatsu, Japan	APD

13:30-15:30 - MORGAN

Evaluation of psychological emotions during fragrance exposure by chaotic analysis of fingertip plethysmography
Tomofumi Sakata, Keiichi Muramatsu, Kazunori Kaede, Keiichi Watanuki, Japan

Evaluation of emotions induced by 2D and 3D video systems in a two-dimensional emotion space
Akifumi Harada, Keiichi Watanuki, Keiichi Muramatsu, Kazunori Kaede, Japan

Motion characteristics of elderly in handlebar operation of mobility scooter
Kazunori Kaede, Masato Utsugi, Keiichi Muramatsu, Keiichi Watanuki, Japan

Evaluation of difference in face color preference between humans and human-like agents
Keiichi Muramatsu, Yoshimasa Tawatsuji, Kazunori Kaede, Eiichiro Tanaka, Tatsunori Matsui, Keiichi Watanuki, Japan

The effects of neuromodulation on creative thinking
Koji Koizumi, Kazutaka Ueda, Ziyang Li, Naoki Tateyama, Masayuki Nakao, Japan

Improvement of health behavior based on health information feedback
Tetsuro Ogi, Kenichiro Ito, Kotaro Ohashi, Japan

Neural bases of creative thinking
Kazutaka Ueda, Masayuki Nakao, Japan

116	**Health and Neuroergonomics** Co-Chairs: Peter Hall and Hasan Ayaz, Canada/USA	CN

13:30-15:30 - HOLMEAD WEST

Novel contributions of neuroergonomics and cognitive engineering to population health
Peter Hall, Canada

Beyond physical domain, understanding workers cognitive and emotional status to enhance worker performance and wellbeing
Juan Manuel Belda-Lois, Carlos Planell Palop, Andrés Soler, Nicolás Palomares Olivares, Purificación Castelló Mercé, Consuelo Latorre Sánchez, Jose Laparra Hernández, Spain

Machine-learning classifier for discerning performance levels of physicians evaluating MRI brain scans for early-stage Alzheimer's disease
Javed Mostafa, Yi Hong, Wang Yue, Daniel Kaufer, Prithima Mosaly, Lukasz Mazur, USA

Application of functional near infrared spectroscopy (fNIRS) on speech and language research in children
Selen Gündüz, Turkey

A cross-sectional study using wireless electrocardiogram to investigate physical workload of wheelchair control in real world environments
Shawn Joshi, Roxana Ramirez Herrera, Daniella Nicole Springett, Benjamin David Weedon, Dafne Zuleima Morgado Ramirez, Catherine Holloway, Hasan Ayaz, Helen Dawes, USA

Performance and brain activity during a spatial working memory task: Application to pilot candidate selection
Mickael Causse, Zarrin Chua, Nadine Matton, France

Hierarchical models of smartphone-derived signals to predict context
Matthew Pava, Matthew Widjaja, Sophia Mayne-DeLuca, Eric Shieh, Bartlett Russell, USA

117	**Digital Human Modeling and Applied Optimization II** Co-Chairs: Sudhakar Rajulu and Jan Neuhoefer, USA/Germany	DHMAO

13:30-15:30 - FAIRCHILD EAST

Predicting anthropometric measurements from 3D body scans: Methods and evaluation
Peng Li, Steven Paquette, USA

Application of multi-objective optimization on ergonomics in production – A case study
Aitor Iriondo, Dan Högberg, Anna Syberfeldt, Erik Brolin, Lars Hanson, Sweden

Predictive assessments of spacesuit fit using a Monte-Carlo analysis
K. Han Kim, Linh Vu, Elizabeth Benson, Richard Rhodes, Sudhakar Rajulu, USA

From design sketch to immersive product experience: Exploration of a new competence portfolio
Jan Neuhoefer, Felix Rockel, Germany

Rigging and re-posing a human model from standing to cycling configuration
Raman Garimella, Koen Beyers, Toon Huysmans, Stijn Verwulgen, India

118	**Virtual Reality** Co-Chairs: Paulo Noriega and Francisco Rebelo, Portugal	ED

13:30-15:30 - DU PONT

Evaluation of behavioral compliance with safety warnings at different levels of cognitive load in warehouses
> Ana Almeida, Francisco Rebelo, Paulo Noriega, Portugal

Locomotion-in-place and teleport: Which is the best technique to be used in human behavior research using virtual reality?
> Inês Galrão, Francisco Rebelo, Paulo Noriega, Portugal

Influence of distance from observation point to hanging wall on feeling of depth of space behind wall
> Daiya Nagakura, Yohsuke Yoshioka, Japan

Openness feeling on height direction in high ceiling room and bending pattern of leading passage
> Takuya Sugiyama, Yohsuke Yoshioka, Japan

Exploratory study to investigate the influence of a third person on an individual emergency wayfinding decision.
> Paulo Noriega, Elisângela Vilar, Francisco Rebelo, Inês Galrão, Daniel Semedo, Nuno Graça, Portugal

Emotion through narrative: Validation for user engagement in game context
> Yanick Trindade, Francisco Rebelo, Paulo Noriega, Portugal

How deep is a virtual reality experience: Virtual environments, emotions and physiological measures?
> Paulo Noriega, Tiago Oliveira, José Carvalhais, Francisco Rebelo, Vanessa Cristina Gonçalves Lameira, Portugal

119	**Communication Design** Co-Chairs: Daniel Raposo and Elsabete Rolo, Portugal	ED

13:30-15:30 - COLUMBIA 1

Communication design as tool for social transformation: A co-design project with the residents of the Rego Neighborhood, in Lisbon
> Inês Coimbra, Teresa Olazabal Cabral, Portugal

Boundary dimension design of graphical symbols based on user preference
> Zhongting Wang, Ling Luo, Linghua Ran, Liang Zhang, China

An ergonomic assessment on the detectability design of the New Generation Currency (NGC) coin series and Bangko Sentral ng Pilipinas (BSP) coin series
> Diane Denise Francisco, Patricia Michaela C. Gregorio, Ninna Ysabel G. Layug, Nikole Andrei B. Mallare, Philippines

The brand mark competitors map as visual research tool. Using graphic and symbolic data in the brand visual identity project
> Daniel Raposo, Rogério Ribeiro, Mariana Martins Amaral, Juan-R. Martin-Sanroman, Portugal

A methodology for the analysis of brand visual identity of food products: comprehension and valuation of graphic signs
> Daniel Raposo, Catarina Laginha, João Neves, Jose Silva, Fernando Moreira da Silva, Portugal

120	**Innovative Methods and Approaches for System Interaction Design** Co-Chairs: Isabel L. Nunes and Maximilian Zarte, Portugal/Germany	SYSI

13:30-15:30 - COLUMBIA 2

Learning from employee perceptions of human-work and work-organization in digitized production-drilling activity in mines
> Mohammed Aminu Sanda, Ghana/Sweden

Vehicle multi-sensory user interaction design research based on the minds methods
> Qianqian Wu, Zhang Zhang, China

System-of-systems approach for sustainable production planning and controlling in manufacturing companies
> Maximilian Zarte, Agnes Pechmann, Isabel l. Nunes, Germany/Portugal

Set-top box automated lip-reading controller based on convolutional neural network
> Yuanyao Lu, Haiyang Jiang, China

Prototyping in human computer interaction
> Maryam Afzaal, Sidra Perveen, Khadija Akbar, Nazifa Nazir, Mahnoor Dar, Pakistan

121	**Workplace Safety and Human Factors I** Co-Chairs: Nanthawan Am Eam and Mohamed Mokdad, Thailand/Bahrain	**SMHF**

13:30-15:30 - COLUMBIA 3

An evaluation of work posture by REBA: A case study in maintenance department
  Nanthawan Am Eam, Thaweeuk Noosom, Kunthara Ninthappho,
  Patompong Jankaew, Thailand

Welders' knowledge of personal protective equipment usage and occupational hazards awareness in the Ghanaian informal auto-mechanic industrial sector
  Mohammed Aminu Sanda, Juliet Nugble, Ghana

Safety in date palm tree work in Algeria: The role of belt design and use
  Mohamed Mokdad, Bouhafs Mebarki, Lahcene Bouabdellah, Ibrahim Mokdad,
  Bahrain

The Sailport project: A trilateral approach to the improvement of workers' safety and health in ports
  Alessandro Filippeschi, Mauro Pellicci, Federico Vanni, Giulia Forte, Giulia Bassani,
  Lorenzo Landolfi, Diego De Merich, Giuseppe Campo, Carlo Alberto Avizzano,
  Massimo Bergamasco, Italy

Human-system interaction design requirements to improve machinery and systems safety
  Peter Nickel, Peter Bärenz, Siegfried Radandt, Michael Wichtl, Urs Kaufmann,
  Luigi Monica, Hans-Jürgen Bischoff, Manobhiram Nellutla, Germany

Hazard analysis of a gas-fired GMH8 Goodman furnace
  Sarah Poelman, Jerry Purswell, USA

122	**Physical Ergonomics and Work-Related Musculoskeletal Disorders I** Co-Chairs: Henrijs Kalkis and Zenija Roja, Latvia	**PEHF**

13:30-15:30 - COLUMBIA 4

Quantification of the impact of existing vs. enhanced radiation therapy workspace configuration on human performance
  Prithima Reddy Mosaly, Lukasz Mazur, USA

Influence of the upper limb position on the forearm EMG activity-Preliminary results
  Ilona Kačerová, Marek Bures, Martin Kába, Tomáš Görner, Czech Republic

Physical workload analysis in processing operations: Metal processing manufacturing
  Zenija Roja, Henrijs Kalkis, Kristine Bokse, Inara Roja, Sandis Babris, Ansis Ventins,
  Latvia

The role of stakeholders in E-occupational health and safety system in Estonia
  Inese Vilcane, Tarmo Koppel, Henrijs Kalkis, Olga Tsenter, Piia Tint, Estonia

The effects of different resting methods on musculoskeletal disorders after prolonged standing tasks
  Ei-Wen Lo, Wan-Hui Chen, Taiwan

123	**Social and Occupational Ergonomics: Evaluation, Optimization and Job Design** Co-Chairs: Hebert Roberto da Silva and Zbigniew Wisniewski, Brazil/Poland	**SOE**

13:30-15:30 - COLUMBIA 9

The ergonomics of sorting recyclable materials: A case study of a Brazilian cooperative
  Hebert Roberto da Silva, Brazil

Effectiveness of prosthetic adaptation and users' satisfaction: Comparison between different technologies
  Maria Patrizia Orlando, Claudia Giliberti, Fabio Lo Castro, Raffaele Mariconte,
  Lucia Longo, Italy

Handheld grass cutter machine with supporting wheel
  Mayur Mhamunkar, Sagar Bagane, Lokesh Kolhe, Vikrant Singh, Mohit Ahuja,
  Yueqing Li, USA

Ergonomic evaluation in the Ecuadorian workplace
  Oswaldo Jara, Fanny Ballesteros, Esteban Carrera, Pablo Davila, Ecuador

Path analysis of the antecedents and occupational stress among managers of the textile industries: a cross-sectional study from Pakistan using PLS-SEM
  Aftab Ahmad, Amjad Hussain, Mohammad Pervez Mughal, Nadeem Ahmad Mufti,
  Muhammad Qaiser Saleem, Pakistan

Inclusion of the informal sector pension provision under the new pensions act
  Olivia Anku-Tsede, Ghana

	124	**Ergonomics in Urban Design II** Co-Chairs: Agata Bonenberg and Christianne Falcao, Poland/Brazil	**SUPI**

13:30-15:30 - COLUMBIA 10

Users preferences in land use and architecture of rural areas
    Wojciech Bonenberg, Mo Zhou, Xia Wei, Poland/China
Accessibility of the open public space in cities
    Alicja Maciejko, Roman Czajka, Poland
Architectural and urban spaces for creative thinking. Visual data and
questionnaire analysis methods in support of design process
    Agata Bonenberg, Poland
Possibilities of using architecture in striving to maintain balance between natural
and built environment. Architecture in the invisible borders of greenery
    Anna Wojtas-Haran, Poland
Functional and aesthetic aspects of modernization of large-panel residential
buildings
    Przemyslaw Nowakowski, Poland
The influence factor for walkability of street furniture: In case of Turin
    Xiaolei Shi, Daniela Bosia, Lorenzo Savio, China

	125	**Usability and User Experience Applications I** Co-Chairs: Jiahuan Qiu and Chenyang Sun, China	**UUE**

13:30-15:30 - COLUMBIA 11

Obstacles for open design to be adapted by the masses
    Yongtao Zheng, Maiqi Lin, Hai Fang, China
Logic of behaviors and somaesthetics driven user experience research:
Design and innovation in air energy products
    Jiahuan Qiu, Jun Zhang, China
Iterative symbiosis between multi-role user requirements and data information
visualization
    Luan Jiachen, Jun Zhang, China
Influence of the user experience in switching speed of the digital reading interface
    Chenyang Sun, Jun Zhang, China
User experience improvement design of shopping mall based on crowd
classification research
    Chufan Jin, Jiamin Jiang, Dian Zhu, Xi Chen, China
Applying the technology acceptance model to consumer behavior towards virtual
reality service
    Fei-Hui Huang, Taiwan
Understanding one-handed thumb interaction with a mobile touchscreen device:
Effects of keyboard size, gap and button shape
    Da Tao, Tieyan Wang, Haibo Tan, Jian Cai, Xu Zhang, China

	126	**Usability and User Experience Applications II** Co-Chairs: Aditi Bhatt and Kui Gao, India/China	**UUE**

13:30-15:30 - COLUMBIA 12

Young Chinese users' perception of passenger car form in front quarter view
analyzed with quantitative and qualitative methods
    Chunrong Liu, Kui Gao, China
Gamification design of shared bicycle system based on Fogg behavior model
    Xin He, Hui Yan, Xinyue Gong, China
User experience research on the human-computer interaction system of
connected car
    Han Gao, Bo Li, Ting Han, China
Spatial heuristic evaluation through way finding: A tale of two Indian cities
    Aditi Bhatt, Saptarshi Kolay, India
An ergonomic assessment of transmission, layout, and content of Philippine fast-
food chains' customer feedback surveys for effective data collection
    Dylan Dizon, Maria Sophia Ariola, Von Christiene Dela Vega, Keneth Sedilla,
    Philippines
GEST-DC: Unifying transportation and air quality information in an mHealth
application
    Vivian Genaro Motti, Niloofar Kalantari, Pattiya Mahapasuthanon, Hui Zheng, USA
User emotional experience evaluation on bicycle design from a multi-sensory
perspective
    Jo-Yu Kuo, Danni Chang, China

127	**Management of Productivity in Smart Manufacturing/Industry 4.0** Co-Chairs: Tim Jeske and Benjamin Adrian, Germany	HFSIM/ SYSI

13:30-15:30 - CARDOZO

Holistic productivity management using digitalization
> Tim Jeske, Marc-André Weber, Frank Lennings, Sascha Stowasser, Germany

Industry 4.0 technology and employees behavior interaction in Serbian industrial companies
> Zorica Veljković, Vesna Spasojević Brkić, Andrija Petrović, Serbia

Epistemic debt: A concept and measure of technical ignorance in smart manufacturing
> Tudor Ionescu, Sebastian Schlund, Christina Schmidbauer, Austria

Enabling smart workplaces by implementing an adaptive software framework
> Peter Burggräf, Achim Kampker, Kai Kreisköther, Tobias Adlon, Aaron Riegauf, Benjamin Dorn, Patricia Casla, Angelo Marguglio, Giuseppe Donvito, Germany

Automatic generation of methods-time measurement analyses for assembly tasks from motion capture data using convolutional neuronal networks - A proof of concept
> Jochen Deuse, Lukas Stankiewicz, Ronny Zwinkau, Frank Weichert, Germany

Analysing body motions using motion capture data
> Martin Benter, Peter Kuhlang, Germany

128	**Education, Learning and Flipped Classroom** Co-Chairs: Agnese Brunzini and Tibor Barath, Italy/Hungary	TELS

13:30-15:30 - GUNSTON WEST

Music aesthetics course teaching reform based on flipped classroom model
> Hanyang Qu, Dahai Xing, China

Value proposition in higher education – enhancing the learning quality: Service design based program evaluation and development
> Tibor Barath, Hungary

Teaching learning aspects for current technical education
> Prasanthi Nunna, India

Measuring student engagement & commitment on private academic institutions using fuzzy logic expert system metrics applications
> Evangelos Markopoulos, Jarno Einolander, Hannu Vanharanta, Jussi Kantola, Ari Sivula, UK/Finland/Poland

How to improve medical simulation training: A new methodology based on ergonomic evaluation
> Agnese Brunzini, Alessandra Papetti, Eleonora Brandoni Serrani, Martina Scafà, Michele Germani, Italy

129	**Driving Behavior: Safety and Simulation** Co-Chairs: Alessandro Calvi and Songsu Son, Italy/USA	RR

13:30-15:30 - EMBASSY

Applying perceptual treatments for reducing operating speeds on curves: A driving simulator study for investigating driver's speed behavior
> Alessandro Calvi, Fabrizio D'Amico, Chiara Ferrante, Luca Bianchini Ciampoli, Fabio Tosti, Italy

Comparing the differences of EEG signals based on collision and non-collision cases
> Xinran Zhang, Yan Xuedong, China

Impact of aggressive driving behavior on intersection efficiency and traffic control
> Songsu Son, UAE

Speed behavior in a suburban school zone: A driving simulation study with familiar and unfamiliar drivers from Puerto Rico and Massachusetts
> Didier Valdés, Mike Knodler, Benjamin Colucci Rios, Alberto Figueroa, Maria Rojas, Enid Colon, Nick Campbell, Francis Tainter, USA

Learning drivers' behavior using social networking service
> Acyut Kaneria, Yueqing Li, Xiang Zhao, Vinaya Manchaiah, USA

Driving at night: The effects of various colored windshield tints on visual acuity, glare discomfort, and color perception
> Elijah Gabalda, Jeonne Ramoso, Ma. Gilean Badilla, Keneth Sedilla, Philippines

130	**Advances in Simulation, Virtual and Augmented Reality** Co-Chairs: Teresita Sotomayor, Mark Mazzeo and Debbie Patton, USA	HFSIM

13:30-15:30 - GUNSTON EAST

User-centric development and evaluation of a lateral canthotomy and cantholysis (LCC) part-task military medical training system
> Margaret Bailey, Teresita Sotomayor, Ian Dykens, USA

Long term follow-up of self-reported stress and anxiety following in-person and virtual world mindfulness training: A pilot study
> Angela Jeter, Valerie Rice, Jessica Villarreal, Cory Overby, USA

The medical synthetic training environment (mSTE): Supporting the Army's STE Cross Functional Team (CFT)
> Beth Pettitt, Jack Norfleet, USA

Optimizing occupational safety through 3D simulation and immersive virtual reality
> Ebo Kwegyir-Afful, Maria Lindholm, Jussi Kantola, Sulaymon Tajudeen, Sara Tilabi, Finland

Same task, different place: Developing novel simulation environments with equivalent task difficulties
> Benjamin T. Files, Ashley H. Oiknine, Jerald Thomas, Peter Khooshabeh, Anne M. Sinatra, Kimberly A. Pollard, USA

Controlling simulated entities generated by a virtual environment using a fuzzy logic-based system
> Hung Tran, USA

3D user interface for a multi-user augmented reality mission planning application
> Simon Su, Vincent Perry, Heather Roy, Katherine Gamble, Sue Kase, USA

131	**Design and Innovation for 3D Printing** Co-Chairs: Massimo Di Nicolantonio and Martijn ten Bhömer, Italy/China	AMMSP

13:30-15:30 - JAY

Ma(r)kers: Digital fabrication as opportunity for enhancing territories through hacking, personalization, traces
> Annapaola Vacanti, Xavier Ferrari, Raffaella Fagnoni, Andrea Vian, Italy

Sustainable 3D Printing: Design opportunities and research perspectives
> Emilio Rossi, Massimo Di Nicolantonio, Paola Barcarolo, Jessica Lagatta, Italy

3D printing to innovate the guitar design
> Antonio Marano, Italy

Artisan as a maker or artisan as not recognized co-designer?
> Gabriele Goretti, Elisabetta Cianfanelli, Benedetta Terenzi, Margherita Tufarelli, Eleonora Trivellin, Italy

Italian manufacturing: Between technological and social innovation
> Marco Marseglia, Eleonora Trivellin, Elisabetta Cianfanelli, Margherita Tufarelli, Gabriele Goretti, Italy

CAD/CAM technology application in treatment of complex craniofacial bone defects
> Diana Navarro, Colombia

Application of robust design techniques for 3D printing on textiles
> Martijn ten Bhömer, Derrick Tate, Shixuan Wang, Filippo Campanile, Yaoyu Chen, China

132	**Production Management and Process Control** Co-Chairs: Vanina Silva and Maria Marcela Solis-Quinteros, Brazil/Mexico	APMPC

13:30-15:30 - HOLMEAD EAST

Analysis of the technological capability of linking SMEs in the electronic sector to integrate into the Maquiladora Industry Electronic sector in Tijuana, Baja California Mexico
> Maria Marcela Solis-Quinteros, Luis Alfredo Avila Lopez, Carolina Zayas-Marquez, Teresa Carrillo-Gutiérrez, Karina Arredondo-Soto, Mexico

Discussion on the iterative process in robust algorithm A
> Zhang Fan, Yue Zhang, Zhao Chao, Jing Zhao, Gang Wu, Haitao Wang, Xinyu Cao, China

Six Sigma-based optimization model in hauling cut and fill exploitation activities to reduce downtime in underground mines in Peru
> Kevin Rojas, Vidal Aramburu, Carlos Raymundo, Javier M. Moguerza, Edgar Ramos, Peru

Model for monitoring socioenvironmental conflicts in relation to the emission of particulate matter in the prehauling phase of a surface mine in Peru
> Marcio Filomeno, Josemaria Heracles, Vidal Aramburu, Carlos Raymundo, Javier M. Moguerza, Peru

The difference between expert and non-expert skill in beauty services based on eye tracking technology
> Kohei Okado, Kazuyuki Tanida, Hiroyuki Hamada, Akihiko Goto, Yuka Takai, Japan

Three-dimensional motion analysis of Mochi pounding
> Akihiko Goto, Naoki Sugiyama, Daigo Goto, Tomoko Ota, Hiroyuki Hamada, Japan

Design of a model of assignment of workers and operations that reduces the biomechanical danger in a panela productive unit of Colombia
> Yenny Alexandra Paredes, Juan Pablo Caballero, Colombia

133	**Artificial Intelligence and Machine Learning** Co-Chairs: Zining Yang and Tim Lauer, USA/Germany	AISC

13:30-15:30 – FAIRCHILD WEST

Association matrix method and its applications in mining DNA sequences
 Guojun Mao, China
Siri, how to design a procedure? Applying machine learning & natural language processing in procedure design
 Nilesh Ade, Camille Peres, Noor Quddus, USA
Deep-learning artificial intelligence and system-informational culture ergonomics
 Nicolay Vasilyev, Vladimir Gromyko, Stanislav Anosov, Russia
Deep learning-based real-time failure detection of storage devices
 Chuan-Jun Su, Lien-Chung Tsai, Shi-Feng Huang, Yi Li, Taiwan
Behavioral analysis of human-machine interaction in the context of demand planning decisions
 Tim Lauer, Rebecca Welsch, S. Ramlah Abbas, Henke Michael, Germany
Identifying touristic interest using big data techniques
 Maritzol Tenemaza, Edison Loza, Myriam Peñafiel, Juan Pablo Zaldumbide, Angélica De Antonio, Jaíme Ramírez, Ecuador

15:30-16:00 Refreshments will be provided in Columbia West (Terrace Level)

134	**Neurobusiness Applications** Co-Chairs: Rajneesh Suri and Hasan Ayaz, USA	CN

16:00-18:00 – MORGAN

Using fNIRS and EDA to investigate the effects of messaging related to a dimensional theory of emotion
 Jan Watson, Amanda Sargent, Yigit Topoglu, Hongjun Ye, Wenting Zhong, Rajneesh Suri, Hasan Ayaz, USA
Brain based assessment of consumer preferences for cognition enhancing hot beverages
 Amanda Sargent, Jan Watson, Yigit Topoglu, Hongjun Ye, Wenting Zhong, Rajneesh Suri, Hasan Ayaz, USA
The effects of advertising on cognitive performance
 Hongjun Ye, Siddharth Bhatt, Wenting Zhong, Amanda Sargent, Jan Watson, Yigit Topoglu, Rajneesh Suri, Hasan Ayaz, USA
The effects of incentives in a choice-based conjoint pricing study
 Hongjun Ye, Siddharth Bhatt, Wenting Zhong, Jan Watson, Amanda Sargent, Yigit Topoglu, Rajneesh Suri, Hasan Ayaz, USA
Electrodermal activity in ambulatory settings: A narrative review of literature
 Yigit Topoglu, Jan Watson, Rajneesh Suri, Hasan Ayaz, USA
Reliability of consumer choices for conflicting price promotions
 Amanda Sargent, Jan Watson, Yigit Topoglu, Hongjun Ye, Wenting Zhong, Hasan Ayaz, Rajneesh Suri, USA
The neuromodulation of attention: How to be a more effective speaker
 Merrill Liechty, Robert Phillips, Hasan Ayaz, Siddharth Bhatt, USA

135	**Simulation, Altered Reality and Swarm Supervisory Control** Chair: Ryan McKendrick, USA	CN

16:00-18:00 – HOLMEAD WEST

Twisted: Performance implications of presence and task difficulty in virtual command and control planning
 Robert Noneman, Erin Cherry, USA
Towards a model of mutualistic human-machine teaming
 Ryan McKendrick, USA
Designing a graphical user interface to allow users to accurately interpret fNIRS data with minimal training
 Amanda Harwood, Norman Greenberg, Ryan McKendrick, Carmen Sims, USA
Identifying groups of people with similar patterns of brain activation using fNIRS time series data and unsupervised machine learning
 Brian Falcone, Bradley Feest, Amanda Harwood, Ryan McKendrick, USA
S-SMART: Sliding-window spline-based motion artifact reconstruction technique for functional near infrared spectroscopy
 Adrian Curtin, Hasan Ayaz, USA
Non-visual human-robot communication for superior battlefield situation awareness
 Ryan McKendrick, USA
Human-machine sensory fusion for indoor localization with a hyper-reality helmet
 Yang Cai, USA

| **136** | **User Research**
Co-Chairs: Pedro Mendonca and Jarosław Tokarczyk, Portugal/Poland | ED |

16:00-18:00 - FAIRCHILD EAST

Research on human-computer interaction design of bed rehabilitation equipment for the elderly
Zhijuan Zhu, Wenzhen Pan, Xin Ai, Renjun Zheng, China

Comparative analysis of body measurement and morphology between subjects with different body mass index
Caelen Teger Silva, Maria Lucia Okimoto, Brazil

A new tool for cognitive workload assessment in system design prototypes
Pedro Mendonca, Manuel Abreu, Portugal

A study on the correlation of head and face data of Chinese adults
Linghua Ran, Chaoyi Zhao, Hong Luo, Xin Zhang, Taijie Liu, Huimin Hu, Zhongting Wang, China

Development of an ergonomically designed back pack for junior high school students
Emmanuel Oliver Porciuncula, Leonard Aquino, Daniel Araneta, Jeremiah Austria, Briant Angelo Censon, John Michael Cruz, Patrick Henry Fernandez, Kent Xaivery Moreno, Joshua Ng, Genhino Glenn Reyes, Aroma Santillan, Wendel Jimver De Guia, Philippines

Review of the research on car seating comfort
Xiaoli Fan, Chaoyi Zhao, Xuemei Chen, Yuwei Jiang, Yongjia Shen, Tong Shen, China

Ergonomics assessment criteria as a way to improve the quality and safety of people's transport in underground coal mines
Jarosław Tokarczyk, Dariusz Michalak, Magdalena Rozmus, Kamil Szewerda, Leszek Žyrek, Gregor Železnik, Poland/Slovenia

| **137** | **Medical Device Development**
Co-Chairs: Helen Fuller and Timothy Arnold, USA | EHMD |

16:00-18:00 - DU PONT

Multi-frameworks development for the medical device design process as a critical factor for innovation
Fabiola Cortes Chavez, Alberto Rossa-Sierra, Elvia Luz González-Muñoz, Carlos Aceves-Gonzalez, Paulina Manzano-Hernandez, Maria Giovanna Trotta, Mexico

Research on sleeping posture recognition method based on pressure sensor
Huabin Wang, Wan Chang Yuan, China

Finding health care usability and safety issues in consumer product reviews
Helen Fuller, Timothy Arnold, USA

A guide to drive medical devices development through human factors inclusion: Building a value proposition for local projects.
Ilse Ivette Reyes Bautista, Gloria Adriana Mendoza Franco, Angel Luis Rodriguez Morales, Mexico

Preventing chemotherapy-induced onycholysis with the use of an active local cooling device
Muriel De Boeck, Jochen Vleugels, Marc Peeters, Guido De Druyne, Belgium

A national coalition to address safe integration of complex healthcare technology
James Piepenbrink, USA

| **138** | **Transportation: Aviation**
Co-Chairs: Amelia Kinsella and Lauren Thomas, USA | AVI |

16:00-18:00 - COLUMBIA 1

Considering single piloted airliners for different flight durations: An issue of fatigue management
Daniela Schmid, Neville Stanton, Germany/UK

Ergonomic assessment of instructors' capability to conduct personality-oriented training for air traffic control personnel
Oleksii Reva, Sergii Borsuk, Valeri Shulgin, Serhiy Nedbay, Ukraine

The human element in performance based navigation: Air traffic controller acceptance of established on required navigation performance procedures
Lauren Thomas, Alicia Serrato, USA

How does national culture help pilots in navigating in different environment
Xiaoyu Wu, USA

Human reliability quantification in flight through a simplified CREAM method
Yundong Guo, Youchao Sun, China

An eye in the sky: Developing a novel framework for visual air traffic control tower tasks
Amelia Kinsella, Lori Smith, Rebecca Collins, Katherine Berry, USA

Monitoring performance measures for radar air traffic controllers using eye tracking techniques
Hong Jie Wee, Sun Woh Lye, Jean-Philippe Pinheiro, Singapore

139	**Workplace Safety and Human Factors II** Co-Chairs: Douglas Minnema and Yang Song, USA/China	SMHF

16:00-18:00 - COLUMBIA 2

Development of assistive technologies in additive manufacturing (AM) for people with disabilities
Eloiza Aparecida Silva de Matos, Ângela Paloma Zelli Wiedemann, Brazil

How ergonomics is contributing to overall equipment effectiveness: A case study
Isabel Loureiro, Celina Leão, Nelson Costa, Mariana Rodrigues, Portugal

A susceptibility model for organizational accidents
Douglas Minnema, Monique Helfrich, USA

Theory of safety quantification and equivalence oriented industrial system
Yang Song, Xuefei Yang, China

Determination of safe work practiced in a confine space work:
A case study research of an organization in Onne, Nigeria
Mercy Osato Omoifo-Irefo, Nigeria

Management of atmospheric hazards in a confined work space in Nigeria:
A case study research of an organization in River State, Nigeria
Mercy Osato Omoifo Irefo, Nigeria

Recognition and assessment of ergonomic stressors in VDT workstations
Namrata Arora Charpe, Vandana Kaushik, India

140	**Safety Culture, Climate, Training and Education** Co-Chairs: Jacky Yu Ki Ng and Andrew Kilner, China/France	SMHF

16:00-18:00 - COLUMBIA 3

Aggregate-level data characteristics of safety climate with different Likert-type scales
Siu Shing Man, Jacky Yu Ki Ng, Kar Ying Law, Alan Hoi Shou Chan, China

Next generation safety culture
Barry Kirwan, France

Role of human safety intervention on the impact of safety climate on workers safety behaviours in construction projects: A conceptual model
Emmanuel B. Boateng, Peter Davis, Manikam Pillay, Australia

Developing a safety culture index for construction projects in developing countries: A proposed fuzzy synthetic evaluation approach
Emmanuel Boateng, Manikam Pillay, Peter Davis, Australia

Safety culture as a team sport: The football metaphor
Frank Guldenmund, Dylan Smibert, The Netherlands

Safety training and occupational accidents – is there a link?
Susana Costa, Celina Leão, Portugal

Process safety competence of vocational students
Sari Tappura, Noora Nenonen, Sanna Nenonen, Jouni Kivistö-Rahnasto, Finland

141	**Road and Rail: Usability** Co-Chairs: Sabrina Moran and Kirsten Revell, USA/UK	RR

16:00-18:00 - COLUMBIA 4

Development of a prototype steering wheel for simulator-based usability assessment
James Brown, Neville Stanton, Kirsten Revell, UK

User-centered development of a public transportation vehicle operated in a demand responsive environment
Alexander Mueller, Stefanie Beyer, Oliver Deisser, Gerhard Kopp, Germany

Human factors concerns: drivers' perception on electronic side view system in 21st century cars
Bankole Fasanya, Yashwanth Avula, Kurra Sivaramakrishna, Bharath Kummari, Supraja Aragattu, Swetha Keshavula, USA

Should I stay or should I go? - Influencing context factors for users' decisions to charge or refuel their vehicles
Ralf Philipsen, Teresa Brell, Hannah Biermann, Waldemar Brost, Teresa Eickels, Martina Ziefle, Germany

Are you sitting comfortably? How current self-driving car concepts overlook motion sickness, and the impact this has on comfort and productivity
Joseph Smyth, Paul Jennings, Stewart Birrell, UK

142	**Social and Occupational Factors of Comfort, Risk Assessment and Pain** Co-Chairs: Alessio Silvetti and Z. Shaghayegh Bagheri, Italy/Canada	**SOE**

16:00-18:00 - COLUMBIA 9

Ergonomic risk assessment of sea fisherman part III: Manual handling and static posture
> Alessio Silvetti, Elio Munafò, Alberto Ranavolo, Antonella Tatarelli, Lorenzo Fiori, Sergio Iavicoli, Pasquale Di Palma, Francesco Draicchio, Italy

Comparisons of three observational ergonomic tools for risk assessment on upper extremities in a pump assembly plant – a pilot study
> Meng-Chuan Ho, Ei-Wen Lo, Taiwan

Reducing the risk of falls by 78% with a new generation of slip resistant winter footwear
> Z. Shaghayegh Bagheri, Jose Diaz Beltran, Paul Holyoke, Kenneth Hutchinson, Gioconda (Joco) Del Sole, Tilak Dutta, Canada

Ergonomics during the construction of the stations and the drilling of the tunnel in the metro of the city of Quito
> Esteban Carrera, Oswaldo Jara, Pablo Davila, Fanny Ballesteros, Pablo Suasnavas, Ecuador

The prediction models of the maximum power grip strength and pinch strength in Taiwan manufacturing workers
> Shu-Min Chao, Ei-Wen Lo, Yi-Chen Chiu, Taiwan

143	**Management of Productivity by Using Assistance Systems** Co-Chairs: Tim Jeske and Benjamin Adrian, Germany	**SYSI**

16:00-18:00 - COLUMBIA 10

Method for measuring the application potential of assembly assistance systems
> Sven Bendzioch, Benjamin Adrian, Sven Hinrichsen, Manfred Bornewasser, Germany

Automatic particle classification through deep learning approaches for increasing productivity in the technical cleanliness laboratory
> Ronny Zwinkau, Roman Möhle, Simon Frentrup, Jochen Deuse, Germany

Digital assembly assistance systems - a case study
> Alexander Nikolenko, Philip Sehr, Sven Hinrichsen, Sven Bendzioch, Germany

How to combine lean, human factors and digital manufacturing - a teaching concept
> Benjamin Adrian, Sven Hinrichsen, Alexander Nikolenko, Frederic Meyer, Germany

Automation configuration evaluation in adaptive assembly systems based on worker satisfaction and costs
> Peter Burggraef, Matthias Dannapfel, Tobias Adlon, Aaron Riegauf, Jessica Schmied, Germany

Towards a mobile assistance system to raise productivity in maintenance
> Michael Wächter, Thomas Löffler, Angelika C. Bullinger, Germany

Smart devices evaluation and dynamic cognitive assistance system for repair processes in production
> Rainer Müller, Leenhard Hoerauf, Attique Bashir, Christoph Speicher, Matthias Vette-Steinkamp, Ralf Mueller-Polyzou, Germany

144	**Management and Leadership of Company and Organizational Cultures** Co-Chairs: Aleksandra Polak-Sopinska and Zbigniew Wiśniewski, Poland	**HFBMS**

16:00-18:00 - COLUMBIA 11

The use of ergonomic methods for ensuring the competitiveness of business structures
> Yulia Salnikova, Larisa Namestnikova, Inna Marahovskaya, Antonina Pakhomova, Russia

Attracting tertiary international students to the EHEA: Does continent of origin matter?
> Tijmen Weber, Florentin Popescu, The Netherlands

The role of leadership in organizations managed in conformity with ISO 9001 quality management system standard
> Anna Walaszczyk, Aleksandra Polak-Sopinska, Poland

Computer-aided occupational risk assessment of physical workload in the Logistics 4.0
> Anna Maczewska, Aleksandra Polak-Sopinska, Zbigniew Wisniewski, Poland

Resistance in the change process
> Zbigniew Wisniewski, Aleksandra Polak-Sopinska, Anna Maczewska, Tomasz Berner, Poland

Selecting the business information security officer with ECU@Risk and the critical roles model
> Esteban Crespo-Martínez, Ecuador

145	**Human Factors, Business Management and Efficiency** Co-Chairs: Henrijs Kalkis and Zenija Roja, Latvia	HFBMS

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<td rowspan="1" style="writing-mode: vertical-lr">16:00-18:00 - COLUMBIA 12</td>
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Four conceptual perspectives of innovations components
    Jelena Salkovska, Liga Braslina, Daina Šķiltere, Anda Batraga, Aija Legzdina,
    Girts Braslins, Henrijs Kalkis, Latvia
Gossip and pro social behavior
    Eyal Eckhaus, Batia Ben-Hador, Israel
Lean manufacturing model based on knowledge management to increase
compliance in the production process in Peruvian SMEs in the textile garment
sector
    Camila Cortez, Nicole Di-Laura, Gino Viacava, Carlos Raymundo,
    Francisco Dominguez, Peru
Inno-Kinetic: Innovative approach for strategic management
    Varit Intrama, Gunthon Uiyamatiti, Pakpachong Vadhanasindhu, Thailand
The effect of macro environmental and firm-level factors on open innovations in
product development and their impact on firms' performance
    Afnan Zafar, Jussi Kantola, Finland
Customer experience in online-retailing – An analysis of the main segments in
German online-retailing
    Silvia Zaharia, Matthias Schmitz, Germany
Assessing the sustainability of crowdfunding in social media and Google trends
    Maria José Palma Lampreia Dos Santos, Manuel Mota, Maria Fátima Ferreiro,
    Nawaz Ahmad, Riwzan Raheem Ahmed, Carlos Machado-Santos, Emiliana Silva,
    Portugal

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146	**Service Design and Systems Engineering** Co-Chairs: Tingyi S. Lin and Victor K. Y. Chan, Taiwan/Macau	HFSSSE

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<td rowspan="1" style="writing-mode: vertical-lr">16:00-18:00 - CARDOZO</td>
<td>

A back-end method realizing the ergonomic advantage of modularized battery
systems: ICT equipment, electric vehicles and beyond
    Victor K. Y. Chan, Macau
Conceptualizing a sharing economy service through information design approach
    Tingyi S. Lin, Taiwan
Service model based on information technology outsourcing for the reduction of
unfulfilled orders in an SME of the Peruvian IT sector
    Renato Bobadilla, Alejandra Mendez, Gino Viacava, Carlos Raymundo,
    Javier M. Moguerza, Peru
Community slow transportation service system based on driverless vehicle
    Jintian Shi, Rensi Zheng, China
Online service quality measurement utilizing psychophysiological responses
    Peixian Lu, Li Lisha, Liang Ma, China

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147	**Human Factors and Simulated Agents and Social and Multi-Agent Network Simulations** Co-Chairs: Julia L. Wright and Shan G. Lakhmani, USA	HFSIM

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<tr>
<td rowspan="1" style="writing-mode: vertical-lr">16:00-18:00 - GUNSTON WEST</td>
<td>

Common ground and autonomy: Two critical dimensions of a machine teammate
    Corey Fallon, Leslie Blaha, Kristin Cook, Todd Billow, USA
Simulation for human-agent teaming research
    Nancy Cooke, USA
Exploring the effect of communication patterns and transparency on the attitudes
towards robots
    Shan Lakhmani, Julia Wright, Michael Schwartz, USA
The influence of signal presentation factors on the performance of an immersive,
continuous signal detection task
    Rhyse Bendell, Gabrielle Vasquez, Florian Jentsch, USA
A human factors approach to networked virtual reality and augmented reality
interactions with physiologically-driven believable agents
    Caroline Kingsley, Michael Jenkins, USA
Steady-state analysis of multi-agent collective behavior
    Hui Wei, Mingxin Shen, Xuebo Chen, China

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148	**Communication Design I** Co-Chairs: Laura Giraldi and Edward Chor Kin Hung, Italy/Hong Kong	HFCD

16:00-18:00 - EMBASSY

The historical context of Guangzhou time-honored catering brands' narration
　　Xiaobao Yu, Qian Peng, China
Kids at pre-school. Designing products and wayfinding systems to enhance kids' skills, facilitating well-being through communication
　　Laura Giraldi, Elisabetta Benelli, Marta Maini, Francesca Morelli, Italy
A comparative study on the language expressions of cultural and creative products in the east and west
　　Chen Cheng, Junnan Ye, Hui Gao, Guixiang Wu, China
3D scanning and visual dimension - Technological and creative evolution
　　Lai Man Tin, Hong Kong
Improvement of safety sign design based on analysis comprehensibility test result
　　Chuanyu Zou, Yongquan Chen, China
Research on design communication mode based on white BI theory
　　Xinying Wu, Minggang Yang, Xinxin Zhang, China

149	**Kansei Engineering I** Co-Chairs: Tetsuo Inoue and Jiayin Lu, Japan/China	KE

16:00-18:00 - GUNSTON EAST

Evaluation of feel of fishing reel by elucidating relationship between tactile sensation and gear vibration
　　Tetsuo Inoue, Syuhei Kurokawa, Japan
Investigation of happiness index by Kansei engineering and positive psychology
　　Toshio Tsuchiya, Japan
A case study on Turkish tea glasses and Kansei engineering
　　Müge Göken, Ekrem Cem Alppay, Turkey
A study on the perception of wireless headphone form design based on Kansei engineering
　　Huan Lin, Shijian Luo, Fangtian Ying, Ping Shan, Wenyin Zou, Huimin Yi, Chen Zhu, Hongzhuan Ding, Xiaolei Deng, Li Lin, China
Research on city brand identity design based on perception
　　Jiaying Lu, Jiong Fu, China
Intelligent recommendation system for eyeglass design
　　Ziyin Zhao, Lei Zhou, China
Virtual performance and evaluation system of garment design based on Kansei engineering
　　Yufei Zhang, Shijian Luo, Zhitong Cui, Ze Bian, Ping Shan, China

150	**Manufacturing Aspects of Work Improvement** Co-Chairs: Krzysztof Hankiewicz and Adam Górny, Poland	APMPC

16:00-18:00 - JAY

Use of quality management tools to identify ergonomic non-conformity in human activity
　　Adam Gorny, Poland
The method of ergonomic design of technological devices
　　Malgorzata Slawinska, Poland
Cognitive and emotional-motivational aspects of communication to improve work safety in production processes: case study
　　Joanna Sadłowska-Wrzesińska, Poland
Benefits in the field of ergonomics and work safety from the development of the information system in the enterprise
　　Krzysztof Hankiewicz, Andrzej Lasota, Poland
Eye movement analysis of craftsman for Japanese knife sharpening
　　Naoki Sugiyama, Hiroshi Ashi, Eiji Horiba, Shinichiro Nishiura, Miyako Takao, Kazuaki Yamashiro, Norimichi Nanami, Akihiko Goto, Hiroyuki Hamada, Yasumasa Komaki, Japan
Management of anthropopression factors in Poland in the context of the European union waste economy
　　Józef Frąś, Ilona Olsztynska, Sebastian Scholz, Poland

151	**Human Factors and Assistive Technology III** Co-Chairs: Hyung Nam Kim and Stijn Verwulgen, USA/Belgium	**HFAT**

16:00-18:00 - HOLMEAD EAST

Voice technology for self-care in older adults with visual impairments
    Hyung Nam Kim, USA
Abstract vocabulary as base for training with pattern recognition EMG control
    Erik Haring, Seth Van Akeleyen, Kristof Vaes, Steven Truijen, Stijn Verwulgen,
    Belgium
An eye tracking system to perform the Wechsler Intelligence Scale for children
(WISC-V) test
    Karla Andrade, Omar Alvarado, Patricia Margarita Ortega Chasi, Martha Cobos,
    Ecuador
Study of voice-based crowdsourcing platform for the enhancement of self-
support for the visually impaired
    Ga Ram Song, Jini Kim, HaYeong Kim, Eunseo Kim, South Korea
Design of health control applied to elderly people's resistance exercise device
    Tang-Yung Hsu, Fong-gong Wu, Hsi-Jen Chen, Taiwan

Sunday, July 28, 2019

153	**Affective Value and Kawaii Engineering** Co-Chairs: Michiko Ohkura and Hiroko Shoji, Japan	**APD**

8:00-10:00 - MORGAN

Age and gender differences in expression of two-color impressions
    Takashi Sakamoto, Toshikazu Kato, Japan
Gender differences in the influence of interaction with product information on
selection results
    Yuri Hamada, Kenta Fukuda, Hiroko Shoji, Japan
Communication in which ambiguity triggers value creation
    Hiroko Shoji, Yuri Hamada, Japan
Evaluation of kawaii feelings caused by stuffed animals to reduce stress
    Michiko Ohkura, Takafumi Tombe, Hina Arashina, Peeraya Sripian, Japan
The analysis of kawaii fashion in Thailand and Japan using colorfulness metrics
    Peeraya Sripian, Keiko Miyatake, Kejkaew Thanasuan, Michiko Ohkura, Japan
Sensory engineering in the IoT connected society
    Shuichi Fukuda, Japan

154	**Transportation: Aviation and Space** Co-Chairs: Daniela Schmid and Simon Cookson, Germany/Japan	**AVI**

8:00-10:00 - HOLMEAD WEST

Overwritten or unrecorded: A study of accidents & incidents in which cockpit
voice recorder data were not available
    Simon Cookson, Japan
Using human factors methods to optimise Sydney tower's digitisation
    Damien Armenis, Australia
Human factors evaluation of ATC operational procedures in relation to use of 3D
display
    Yisi Liu, Fitri Trapsilawati, Zirui Lan, Olga Sourina, Henry Johan, Fan Li,
    Chun-Hsien Chen, Wolfgang Mueller-Wittig, Singapore
Applying virtual and augmented reality to train air traffic controllers
    Jason Kring, Rafael Patrick, Michael Sawyer, USA
Predicting error on the flight deck: What can go wrong when dealing with an
aircraft engine oil leak?
    Victoria Banks, Katie Parnell, Katie Plant, Craig Allison, Neville Stanton, UK
Flight Eye Tracking Assistant (FETA): Proof of concept
    Christophe Lounis, Vsevolod Peysakhovich, Mickael Causse, France
Cognitive architecture based mental workload evaluation for spatial fine manual
control task
    Yanfei Liu, Zhiqiang Tian, Yuzhou Liu, Jusong Li, Feng Fu, China

155	**Mental State Assessment I** Co-Chairs: Hasan Ayaz and Matthias Ziegler, USA	CN

8:00-10:00 - FAIRCHILD EAST

Eye tracking-based workload and performance assessment for skill acquisition
Jesse Mark, Adrian Curtin, Amanda Kraft, Trevor Sands, William D. Casebeer, Matthias Ziegler, Hasan Ayaz, USA

Towards trustworthy man-machine synchronization
Johan de Heer, Paul Porskamp, The Netherlands

Promoting soldier cognitive readiness for battle tank operations through bio-signal measurements
Jari Laarni, Satu Pakarinen, Mika Bordi, Kari Kallinen, Johanna Närväinen, Helena Kortelainen, Kristian Lukander, Kati Pettersson, Jaakko Havola, Kai Pihlainen, Finland

A change in the dark room: Effects of human factors and cognitive loading issues for NextGen TRACON air traffic controllers
Sam Holley, Mark Miller, Bettina Mrusek, Linda Weiland, USA

Study on mental workload assessment of tank vehicle operators
Zhongtian Wang, Qianxiang Zhou, Yu Wang, China

Can you expand the mind? Examining the effectiveness of a digital cognitive intervention on working memory capacity and transfer to submarine tasks
Aaron Roberts, Neville Stanton, UK

Comparative analysis of machine learning techniques in assessing cognitive workload
Colin Elkin, Vijay Devabhaktuni, USA

156	**City Planning** Co-Chairs: Kin Wai Michael Siu and Anna Szopa, China/USA	ED

8:00-10:00 - DU PONT

Design ergonomics for human beings and wild animals in densely populated cities: A design case in Hong Kong country parks
Kin Wai Michael Siu, Yi Lin Wong, Chi Hang Lo, China

Influence of misdirecting of street orientation on identification speed of known street scape
Masaki Oshima, Yohsuke Yoshioka, Japan

Body movement while walking and spatial frequencies of corridor wall texture
Fuminori Ogawa, Yohsuke Yoshioka, Japan

Relationship with the self-position detection by using landmarks and peripheral vision
Mayu Kikuchi, Yohsuke Yoshioka, Japan

Exploring design requirements of outdoor fitness equipment for young people
Aylin Karadeniz, Melis Dursun, Gül en Töre Yargın, Turkey

Research on guiding sign ergonomic setting based on visual sensitivity in long and narrow passageway
Ling Luo, Zhongting Wang, Chuanyu Zou, Haimei Wu, Linghua Ran, China

157	**Patient Safety** Co-Chairs: Helen Fuller and Timothy Arnold, USA	EHMD

8:00-10:00 - COLUMBIA 1

Pattern of postural sway of diabetic peripheral neuropathy people
Byungjoon Kim, USA

Medical error disclosure: A Canadian perspective in improving quality of health care
Jay Kalra, Maria Campos-Baniak, Avani Saxena, Zoher Rafid-Hamed, Canada

Quality assessment and management: An overview of concordance and discordance rates between clinical and autopsy diagnoses
Jay Kalra, Patrick Seitzinger, Daniel Markewich, Canada

An interactive device for reducing risk of infusion therapy and blood transfusions
Nicholas Caporusso, USA

Towards a deeper understanding of conceptual models that incorporate patient safety
Timothy Arnold, Helen Fuller, USA

Research issues in blood bank management: A review and reflection
Kriti Karmakar, Pradip Kumar Ray, India

Analysis of the factors affecting occupational health of nursing personnel in Indian context
Rahul Mondal, Pradip Kumar Ray, India

158	**Social Design, Innovation and Ergonomics II** Co-Chairs: Nicos Souleles and Ana Margarida Ferreira, Cyprus/Portugal	SOE

8:00-10:00 - COLUMBIA 2

Threshold concepts and design for social change
  Nicos Souleles, Ana Margarida Ferreira, Stefania Savva, Cyprus/Portugal
Sustainable collaborative design practices: Circular economy and the new context for a fashion designer
  Lucinda Morrissey, Roberta Barban Franceschi, Ana Margarida Ferreira, Spain/Portugal
Cultural heritage, collaborative practices and sustainable fabric design: Ottoman sultans' life stories on jacquard design
  Pinar Arslan, Ana Margarida Ferreira, Hatice Feriha Akpinarli, Turkey/Portugal
The common-sense assessment of sustainability
  David Camocho, José Vicente, Ana Margarida Ferreira, Portugal
Analysis of the short-term absences of poultry slaughterhouse workers in Brazil
  Natália Fonseca Dias, Adriana Seára Tirloni, Diogo Cunha dos Reis, Antônio Renato Pereira Moro, Brazil
Construction ergonomics: Temporary works' manufacturers' perceptions and practices'
  John Smallwood, South Africa

159	**Workplace Safety and Human Factors III** Co-Chairs: Nelson Costa and Bettina Mrusek, Portugal/USA	SHMF

8:00-10:00 - COLUMBIA 3

Integrated management is disaster: A discussion of competences in a real simulation
  Salvador Ávila Filho, Ivone Cerqueira, Julio Nascimento, Pedro Arezes, Valter Conceição Mascarenhas Junior, Cassio Brunoro Ahumada, Camille Peres, Brazil
Implementing the REPAIRER human factors safety reporting system through MRM(MxHF) to meet SMS compliance in aviation maintenance
  Bettina Mrusek, Mark Miller, USA
Influence of the human factor on the risk of work on scaffolding
  Katarzyna Szaniawska, Krzysztof Czarnocki, Zbigniew Wisniewski, Malgorzata Wisniewska, Poland
Occupational psychosocial toxicology in health workers of radiological units in Bogotá-Colombia
  Olga Helena Piñeros Mora, Carlos Armando Marin Valencia, Colombia
Occupational exposure to heat in outdoor activities in building construction in southeastern Brazil
  Thais Santiago Barros, Adriana Amorim, Lucila Labaki, Paulo Maia, Alex Marcelo, Brazil
Flow down of safety influenced by working on commercial construction projects
  Ann Marie Dale, Bradley A. Evanoff, USA

160	**Social and Occupational Ergonomics Stress, Mental Factors and Musculoskeletal Disorders** Co-Chairs: Francesco Draicchio and Ardiyanto Ardiyanto, Italy/USA	SOE

8:00-10:00 - COLUMBIA 4

The contribution of myoelectric parameters to biomechanical overload risk assessment in an industrial printing plant
  Lorenzo Fiori, Alessio Silvetti, Antonella Tatarelli, Francesco Draicchio, Italy
Prevalence, risk factors and impact on low back pain among nurses in a Thai public hospital
  Manutchanok Jongprasithporn, Thailand
The development of a comprehensive list of risk factors for hip work-related musculoskeletal disorders: Delphi survey
  Ardiyanto Ardiyanto, Steven Lavender, Stephanie Di Stasi, Carolyn Sommerich, USA
Psychosocial risk and psychological attachment: The mediating role of job satisfaction
  Michael Ntow, Evans Sokro, Noble Osei-Bonsu, Ophelia Zungbey, Ghana
Mobbing in service companies in Colombia. A silent enemy
  Carlos Armando Marin Valencia, Olga Helena Piñeros Mora, Colombia
Neck and shoulder muscle fatigue in high performance aircraft pilots: A case study of effects of a training program
  Giorgia Chini, Alessio Silvetti, Marco Lucertini, Roberto Vitalone, Valeria Di Nuzio, Elena Lucertini, Francesco Draicchio, Italy
Comparative analysis of the assessment methods of the rehabilitative-prosthetic path of the patient with lower limb prosthesis
  Francesco Draicchio, Antonella Tatarelli, Simona Castellano, Ida Poni, Lorenzo Fiori, Alessio Silvetti, Patrizio Rossi, Italy

161	**Usability and User Experience Applications III** Co-Chairs: Xiuxia Wang and Tong Shen, China	UUE

8:00-10:00 - COLUMBIA 9

Research on electronic lock structure evaluation based on user experience
    Zhongting Wang, Na Lin, Ling Luo, Linghua Ran, Chaoyi Zhao, China
The usability of interactive interfaces design of intelligent household appliances: Take smart sweeping robots as an example
    Na Lin, Tong Shen, Chaoyi Zhao, China
Research on emotional design of electric power products in experience economy era
    Huajie Wang, Shanwei Zhang, Jingping Li, Jiaming Bao, Qingqin Zhu, China
Research on the regeneration of endangered traditional handicraft art in modern life: Taking the bamboo knitting art of Dongyang as an example
    Xiuxia Wang, Shanwei Zhang, Siyuan Zhang, Yuan Chen, China
Interface design of GIS system based on visual complexity
    Siyi Wang, Chengqi Xue, Jing Zhang, Junkai Shao, China, China
Enabling SMEs to conduct user research: experience with and adaption of UX concept exploration
    Doris Janssen, Nora Fronemann, Kathrin Pollmann, David Blank, Germany
Design principles for increasing the comprehensibility of Icons in HMIs through motion design
    David Blank, Ravi Kanth Kosuru, Germany

162	**Human Computer Interaction in e-Health and Environmental Applications** Co-Chairs: Jorge Luis Pérez Medina and Patricia Acosta-Vargas, Ecuador	SYSI

8:00-10:00 - COLUMBIA 10

Evaluation of the usability of a mobile application for public air quality information
    Jorge Luis Pérez Medina, Rasa Zalakeviciute, Yves Rybarczyk, Ecuador
User experience assessment of a tele-rehabilitation platform: The physiotherapist perspective
    Jorge Luis Pérez Medina, Karina Jimenes~Vargas, Patricia Acosta-Vargas, Yves Rybarczyk, Mario Gonzalez, Ecuador
Evaluation of smart phone open source applications for air pollution
    Rasa Zalakeviciute, Katiuska Alexandrino, Patricia Acosta-Vargas, Jorge Luis Pérez Medina, Wilmar Hernandez, Ecuador
Heuristic method of evaluating accessibility of mobile applications for air quality monitoring
    Patricia Acosta-Vargas, Luis Salvador-Ullauri, Jorge Luis Pérez Medina, Rasa Zalakeviciute, Wilmar Hernandez, Ecuador
Remote monitoring air quality in dangerous environments for human activities
    David Pozo, Santiago Solórzano, Jorge Luis Pérez Medina, Kevin Jaramillo, Ricardo-Armando López-Molina, Rasa Zalakeviciute, Ecuador
Improving web accessibility: Evaluation and analysis of a telerehabilitation platform for hip arthroplasty patients
    Patricia Acosta-Vargas, Mario Gonzalez, Jorge Luis Pérez Medina, Karina Jimenes Vargas, Yves Rybarczyk, Ecuador

163	**Usability of Learning Technology** Co-Chairs: Paweł Pietras and Yulia Salnikova, Poland/Russia	TELS

8:00-10:00 - COLUMBIA 11

Job interview game for high functioning autist
    Johan de Heer, Rafal Hrynkiewicz, Thomas de Groot, Emine Poyraz, The Netherlands
Antecedents to training engagement
    Nadiah Alimon, Roziana Shaari, Lily Suriani Mohd Arif, Shah Rollah Abdul Wahab, Nazry Yahya, Malaysia
The impact of employees' own knowledge on the effectiveness of project managers' development programs
    Paweł Pietras, Maciej Szczepańczyk, Poland
Students' independent learning activity as an effective method of acquiring professional competencies
    Yulia Salnikova, Margarita Salnikova, Valentina Stolyarova, Marina Soroka, Russia
Analysis of types, positioning and appearance of visualizations in online teaching environments to improve learning experiences
    Jessica Brandenburger, Manfred Constapel, Horst Hellbrück, Monique Janneck, Germany

164	**Global and Industrial Perspectives on People-Centered Design** Co-Chairs: Carlos Aceves-Gonzalez, Daniele Busciantella and Gian Andrea Giacobone, Mexico/Italy	DI

8:00-10:00 - COLUMBIA 12

A new approach for an inclusive yacht design
　　Paolo Ferrari, Italy
Human centered design and quality function deployment: understanding needs on a multidisciplinary automotive research
　　Gian Andrea Giacobone, Giuseppe Mincolelli, Italy
Accessibility evaluation of automated vending machines
　　Nicholas Caporusso, Kingsley Udenze, Asibi Imaji, Spencer Romeiser, Yanjun Li, Yangyang Cui, USA
Design of a wheelchair for low-income countries, the second stage of a project
　　Alberto Rossa-Sierra, Fabiola Cortes Chavez, David Vidana-Zavala, Maria Giovanna Trotta, Mexico
User attitudes towards wheelchairs - a Mexican case study with special focus on vulnerable wheelchair users and wheelchair assistants.
　　Paulina Manzano-Hernandez, Fabiola Cortes Chavez, Maria Giovanna Trotta, Alberto Rossa-Sierra, Carlos Aceves-Gonzalez, Mexico
Inclusion of children with Down Syndrome through the creation and use of a learning object
　　Rita Almendra, Mariana Elvas, Portugal
Understanding visual information processing for American vs. Saudi Arabian users
　　Yahya Alqahtani, Michael McGuire, Joyram Chakraborty, Jinjuan Feng, USA

165	**Applications in Software, Service and Systems Engineering II** Co-Chairs: Francesca de Rosa and Obaid Aljobaly, Italy/Saudi Arabia	HFSSSE

8:00-10:00 - CARDOZO

Evaluation of the Saudi construction industry for adoption of building information modeling
　　Abdulaziz Banawi, Obaid Aljobaly, Saudi Arabia
Cognitive ergonomic evaluation metrics and methodology for information interactive system
　　Yu Zhang, Ting Jiang, Jianhua Sun, China
Towards a coherent assessment of situational awareness to support system design in the maritime context
　　Francesca de Rosa, Anne-Laure Jousselme, Italy
Parametric study of pin-fins microchannel heat exchanger
　　Fadi Alnaimat, Bobby Mathew, Mohammed Ziauddin, UAE
Energy-efficient analysis in wireless sensor networks applied to routing techniques for internet of things
　　Carolina Del-Valle-Soto, Gabriela Durán-Aguilar, Fabiola Cortes Chavez, Alberto Rossa-Sierra, Mexico
Modelling an adjustable autonomous multi-agent internet of things system for elderly smart home
　　Salama A. Mostafa, Saraswathy Shamini Gunasekaran, Aida Mustapha, Mazin Abed Mohammed, Wafaa Mustafa Abduallah, Malaysia/Iraq
Internet of things: Analyzing the impact on businesses and customers
　　Mandeep Pannu, Iain Kay, Canada

166	**Communication Design II** Co-Chairs: Amic Ho and Sunny Sui Kwong Lam, China	HFCD

8:00-10:00 - GUNSTON WEST

Digital generation's meaning-making in web-based communication activities
　　Pui Wa Chau, China
Study on how television commercials affect the consumer reactions with specific visual strategies
　　Pik Ki Fung, Amic Ho, China
The advertising effects of typotectural: Associated learning factors and emotions
　　Man Yee Mak, Amic Ho, China
Viral marketing in political communication: Case study of John Tsang's campaign in the 2017 Hong Kong chief executive election
　　Poon Daren, Lam Sunny, Hong Kong
Research on branding of historic cities under the background of social change: A case study of Suzhou
　　Shan Huang, China

167	**Kansei Engineering II** Co-Chairs: Toshio Tsuchiya and Suresh Sethi, Japan/USA	KE

Five years of Hiroshima Kansei innovation council: Local government promotion activities of Kansei engineering and ergonomics to local industries
Shigekazu Ishihara, Hideki Harada, Futoshi Idei, Daisuke Ochi, Yayoi Watanabe, Koji Hashimoto, Noritsune Yokoyama, Kunihiro Shibata, Tsukasa Watari, Akira Maekawa, Takahide Nouzawa, Japan

2D FFT and AI-based analysis of wallpaper patterns and relations between Kansei
Shigekazu Ishihara, Mitsuo Nagamachi, Kosuke Morinaga, Keiko Ishihara, Taku Ishihara, Japan

Role of narratives in visualizing product form
Suresh Sethi, USA

Affective design of store window displays for selected Philippine retail brands: Guidelines for an affective visual merchandising
Maria Celine Salera, Eugene Julius Caliva, Angelica Jean Mari Tajonera, Abigail Rose Tan, Keneth Sedilla, Philippines

Improving garbage receptacles: Designing an affective garbage receptacle that influences human behavior towards littering
Marian Ysabelle Zuñiga, Billy Joe Balderas, Renzso Daniel Cabilzo, Keneth Sedilla, Philippines

Kansei engineering and quality function deployment: Development of methodology for the identification of user-centralized project improvements
Waldemar Freitas Neto, António Ramos Pires, Portugal

Research on dress style design for girls aged between 3 and 6 based on Kansei Engineering
Mei Xu, Yun Mu, Chenqi Yu, China

168	**Panel: Democratization of Augmented and Virtual Reality to Enable Mass Adoption** Co-Chairs: Nina M. Berry and Bill Prugh, USA	SYSI

The virtual immersive teaching and learning (VITaL) initiative at San Diego State University
Sean Hauze, USA

Democratization of augmented and virtual reality to enable mass adoption
Nina Berry, William Prugh, Leonel Garciga, USA

Lessons learned from the initial usage of augmented reality
William Prugh, Nina Berry, Leonel Garciga, John Masterson, USA

Vantage: Democratization of augmented and virtual reality to enable mass adoption
Jonathan Wilson, Joe Chimento, Drew Massey, USA

THERA Inc. How virtual reality can be used for psychotherapy and prevention of mental health issues
Erin Bogdanski, USA

169	**Ergonomics Design of Wearables** Co-Chairs: Hassan Iftikhar and Yan Luximon, China	PEHF

Exploring the balance between utilitarian and hedonic values of wearable products
Hassan Iftikhar, Parth Shah, Yan Luximon, China

A comparison of traditional and 3D scanning measurement in ear anthropometry
Fang Fu, Ameersing Luximon, Yan Luximon, China

A novel hybrid personal cooling system incorporated with dry ice and ventilation fans to mitigate the heat strain of mascot performers in a hot and humid environment
Cathy Sin Wei Chow, Faming Wang, China

Modern textile-based compression device for improving venous haemodynamics of lower extremities
Xinbo Wu, Rong Liu, China

170	**Human Factors and Assistive Technology IV** Co-Chairs: Hongliu Yu and Maria Lucia Okimoto, China/Brazil	HFAT

8:00-10:00 - HOLMEAD EAST

Development of a hand rehabilitation therapy system with soft robotic glove
> Julio Cesar Cabrera Hidalgo, Nathalia Michelle Peralta Vásconez,
> Vladimir Robles-Bykbaev, Angel Andrés Pérez Muñoz, Marco Vásquez Cabrera,
> Marco Esteban Amaya Pinos, Hernán Tenorio Carpio, Ecuador

Target of physiological gait: Realization of speed adaptive control for a prosthetic knee during swing flexion
> Hongliu Yu, Wujing Cao, China

Including users in the evaluation process of assistive technology:
Applied methods and techniques
> Kelli C. A. Silva Smythe, Maria Lucia Okimoto, Dominique Adam,
> Caelen Teger Silva, Brazil

Research and development in assistive technology: Academic Experience
> Maria Lucia Okimoto, Kelli C. A. Silva Smythe, Dominique Adam,
> Caelen Teger Silva, Brazil

The design of walking sticks: Use, manufacturing and abandonment
> Rebeca Cabral, Renata Vilanova, João Lutz, Luiza Rebello, Brazil

Requirements to design of directional signs in VR: The case of people with low visual
> Sabrina Oliveira, Francisco Rebelo, Maria Lucia Okimoto, Brazil

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10:00 - 10:30   Refreshments will be provided in Columbia West (Terrace Level)

172	**Ergonomics in Design: Applications I** Co-Chairs: Laura Giraldi and Aditya Jayadas, Italy/USA	ED

10:30-12:30 - MORGAN

Design for children - ergonomics in a ceramic tile's project
> Cristina Salvador, Portugal

Role of ergonomics and biophilic design on perceived comfort and stress when reading, writing and sitting at workstations
> Andre Ferreira, Courtney Coston, Aditya Jayadas, USA

Feasibility of low cost sensors to acquire 3D breast images
> Lucia Regina, Jose Aguiomar Foggiatto, Brazil

Can the synthesized 20 sociotechnical principles discriminate between winning and losing teams: A collaborative design project case study
> Amangul Imanghaliyeva, UK

Effects of distance between corner and step on pedestrian gazing pattern
> Kota Suzuki, Yohsuke Yoshioka, Japan

173	**Design Methods and Creativity** Co-Chairs: João Brandão and Byungsoo Kim, Portugal/USA	ED

10:30-12:30 - HOLMEAD WEST

Human factors engineering research on folding umbrellas design
> Xiaohan Zhou, Xiaoping Hu, China

The role of design in technology driven ergonomics product
> Byungsoo Kim, Sharon Joines, USA

Design, objects and memory: a sustainability-oriented project itinerary
> Myrla Torres, Paulo Maldonado, Leonor Ferrão, Brazil

Brand identity in motion. Structural models of brand identity on TV opening credits
> João Brandão, Ricardo Pestana, Daniel Raposo, Portugal

Teenagers postural effects through videogames therapeutic approach
> Ernesto Filgueiras, Gustavo Desouzart, Ana Silva, Portugal

174	**Agile Manufacturing and Competencies in Work Environment** Co-Chairs: Leif Goldhahn and Robert Eckardt, Germany	**MFG**

10:30-12:30 - FAIRCHILD EAST

Competency model for logistics employees in smart factories
> Markus Kohl, Carina Heimeldinger, Michael Brieke, Johannes Fottner, Germany

Competency profiles as a means of employee advancement for a resource-efficient chipping production
> Leif Goldhahn, Robert Eckardt, Christina Pietschmann, Sebastian Roch, Germany

Reflections on production working environments in smart factories
> Sebastian Pimminger, Werner Kurschl, Mirjam Augstein, Thomas Neumayr, Christine Ebner, Josef Altmann, Johann Heinzelreiter, Austria

Management system of intelligent, autonomous environment IAEMS: The methodological approach to designing the organizational structure of IAEMS
> Edmund Pawlowski, Krystian Pawlowski, Poland

175	**Safety Methods for Assessment and Evaluation** Co-Chairs: Jouni Kivistö-Rahnasto and Jerry Purswell, Finland/USA	**SMHF**

10:30-12:30 - CDU PONT

How workplaces actually carry out OSH-related risk assessment and management
> Noora Nenonen, Jouni Kivistö-Rahnasto, Sanna Anttila, Finland

Risk assessment of upper limb musculoskeletal disorders in a poultry slaughterhouse
> Diogo Cunha dos Reis, Adriana Seára Tirloni, Antônio Renato Pereira Moro, Brazil

Evaluation method for safety management characteristic of medical workers
> Haruna Yamazaki, Yusaku Okada, Kana Kimura, Risako Shiraishi, Japan

Hazard analysis of a handheld angle grinder
> Franchesca Montoya, Jerry Purswell, USA

An ergonomic assessment of lighting conditions of the pedestrian overpasses in Commonwealth Avenue, Quezon City: Commuter's perception of safety
> Hillary Chelsea Cruz, Alessandro Armani Aspi, Aurelio Banzon, Keneth Sedilla, Philippines

176	**Vulnerable Road Users** Co-Chairs: Rich McIlroy and Susanne Gruner, UK/Germany	**RR**

10:30-12:30 - COLUMBIA 1

Sharing the road: Experienced cyclist and motorist knowledge and perceptions
> Mary Still, Jeremiah Still, USA

Examination of corner shape for reducing mental stress by pedestrian appearing from blind spot of intersection
> Wataru Kobayashi, Yohsuke Yoshioka, Japan

Facilitating cyclists' commuter route choice into efficiency optimizations
> Susanne Grüner, Germany

Pedestrian attitudes to shared-space interactions with autonomous vehicles – a virtual reality study
> Christopher Burns, Vivien Hung, Luis Oliviera, Peter Thomas, Stewart Birrell, UK

177	**Human Factors, Sustainable Urban Planning and Infrastructure II** Co-Chairs: Christianne Falcao and Joanna Jablonska, Brazil/Poland	**SUPI**

10:30-12:30 - COLUMBIA 2

Village regeneration through cultural creativity. Polish case study
> Wojciech Bonenberg, Poland

Synergistic processes in functional-spatial development of communes in a metropolitan area
> Hanna Borucinska-Bienkowska, Poland

Planning regenerative infrastructure of the Szczecin Metropolitan Railway – Ad hoc urbanism and glocal activity development
> Leszek Świątek, Poland

Mountain home eco hotel - diversity and sustainability of green roofs
> Anjun Huang, Shengxuan Zhao, China

The perception reshaping strategy of campus public space
> Huifang Shang, Maiqi Lin, Yongtao Zheng, China

178	**System Interactions Design** Co-Chairs: Isabel L. Nunes and Kenneth Light, Portugal/USA	SYSI

10:30-12:30 - COLUMBIA 3

A dialogue system for elderly people considering impression formation and user's character
> Huta Takeda, Manabu Kurosawa, Hiroshi Yajima, Japan

Identifying design issues "beyond the checklist"
> Kenneth Light, USA

Design and evaluation methodology for cockpit human factor of civil transport aircraft
> Jin Zhe Feng, Dong DaYong, Zhang Yinbo, Meng Hua, China

Specificities of organizational communication in European universities' digitalized environments
> Olga Burukina, Russia

Towards the development of a universal testing environment for attention guiding techniques
> Max Bernhagen, Philipp Hein, Andre Dettmann, Angelika C. Bullinger-Hoffmann, Germany

179	**Human Factors, Business Management and Society: Employment Views** Co-Chairs: Estela Rodríguez and Kazuhiro Fujimura, Chile/Japan	HFBMS

10:30-12:30 - COLUMBIA 4

Constructing a work-motivation model based on "benefit delay" and "benefit enjoyment"
> Kazuhiro Fujimura, Japan

Benefits of employees social network sites profiles for job applicants
> Tom Sander, Biruta Sloka, Henrijs Kalkis, Germany

Econometric modeling of wage discrimination towards women in the accounting profession
> Estela Rodríguez, Cecilia Gallegos, Hanns De la Fuente-Mella, Chile

A leadership and demographic view of the nexus between emotional intelligence and job satisfaction in Ghana's banking sector
> Kwasi Dartey-Baah, Ghana

High-performance work systems and employee turnover intentions: Moderation effect of psychological attachment
> Ophelia Zungbey, Noble Osei-Bonsu, Michael Ntow, Evans Sokro, Ghana

180	**Instructional Design and Learning Strategies** Co-Chairs: Daniel Acosta-López and Joanna Bartnicka, Mexico/Poland	TELS

10:30-12:30 - COLUMBIA 9

Learning as a systemic activity
> Oleksandr Burov, Olga Pinchuk, Svitlana Lytvynova, Ukraine

Design of design: Learning dynamics in design
> Maria Delgado, Isabel Duarte de Almeida, Gianni Montagna, João Silva, Portugal

Converge of goals on learning operations research, case of a Mexican institute
> Guadalupe Hernández-Escobedo, Arturo Realyvásquez, Karina Arredondo-Soto, Daniel Acosta-López, Maria Elena Hernández-Guevara, Mexico

Educational training system for university students at initial levels through coaching strategies and student mentoring
> Ives Torriente, Rosa Inés Carrión, Eliane Fernández, Paulina Morales, Gardenia Silva, Ecuador

The application of clustering analysis in the assessment of eye movements during flight training intervention
> Nima Ahmadi, USA

181	**Designing for Inclusion in the Information Society** Co-Chairs: Giuseppe Mincolelli and Matteo Zallio, Italy/USA	DI

10:30-12:30 - COLUMBIA 10

Defining a shared platform in China to propose a social, cultural and technological bridge
    Avril Accolla, China

Collaborative quality function deployment. A methodology for enabling co-design research practice
    Giuseppe Mincolelli, Silvia Imbesi, Matteo Zallio, Italy

Usability analysis of the payment method with an application of digital parking meters with younger and older users
    Paula González-Torres, Ileana Chávez-Sánchez, Andrea Tejada-Gutiérrez, Claudia M. Fernández-Rivera, Carlos Aceves-González, Mexico

Methods and techniques used in the evaluation of interfaces in Brazilian studies focusing on visually impaired people
    Dominique Adam, Maria Lucia Okimoto, Brazil

The influence of screen brightness and moving speed of visual icons on visual acuity
    Linghua Ran, Xin Wu, Hong Luo, Chaoyi Zhao, Xin Zhang, China

Design of a 3D printed age simulator as a tool supporting the process of designing for seniors
    Beata Fabisiak, Robert Kłos, Poland

182	**Teamwork and Leadership Development** Co-Chairs: Salman Nazir and Leonie Webster, Norway/UK	HFML

10:30-12:30 - COLUMBIA 11

Evaluating the effectiveness of a novel team development intervention on teamwork
    Leonie Webster, Aaron Roberts, Neville Stanton, UK

A triangulated approach to measurement of teamwork
    Sarah Twist, Aaron Roberts, Leonie Webster, Neville Stanton, UK

ERP research on the influence of different types of leadership behavior on the performance of quality management
    Yunhong Zhang, Zhaohong Zheng, Jian Kang, Chaoyi Zhao, Hong Luo, Aixian Li, Na Liu, China

Mind matters 2: Engage and develop teams
    Johan de Heer, Rafal Hrynkiewicz, Edward Faber, Thomas de Groot, Tije Oortwijn, The Netherlands

Leader as an effective strategy implementer in public higher education institutions
    Joanna Mnich, Zbigniew Wisniewski, Poland

Leadership as a key component of competence model of medium-level managers in higher education institution
    Anna Stankiewicz-Mróz, Poland

Leadership styles and workplace wellness among Ghanaian SME workers
    Kwasi Dartey-Baah, Ghana

183	**Human Factors and Simulation: Transportation** Co-Chairs: Ellie Abdi and Xiaonan Yang, USA	HFSIM

10:30-12:30 - COLUMBIA 12

Pupillary response and EMG predict upcoming responses to collision avoidance warning
    Xiaonan Yang, Jung Hyup Kim, USA

Gender differences measured on driving performances in an urban simulated environment
    Chiara Ferrante, Valerio Veraldi, Maria Rosaria De Blasiis, Italy

Evaluating rear-end vehicle accident using pupillary analysis in a driving simulator environment
    Rui Tang, Jung Hyup Kim, China

Study on operation simulation and evaluation method in the ship limited space
    Zhang Yumei, Jiang Lei, Wang Songsha, Ding Li, China

184	**Human Factors in Virtual Environments III** Co-Chairs: Florentin Popescu and Jonathan Hurter, The Netherlands/USA	**HFGD**

10:30-12:30 - CARDOZO

Global virtual teams course at Arnhem Business School
> Florentin Popescu, Rob Warmenhoven, The Netherlands

A usability and workload investigation: Using video games to compare two virtual reality systems
> Crystal Maraj, Jonathan Hurter, USA

Virtual and augmented reality gamification technology on reinventing the F1 sponsorship model not purely focused on the team's and car's performance
> Evangelos Markopoulos, Panagiotis Markopoulos, Mika Liumila, Ya Chi Chang, Vasu Aggarwal, Jumoke Ademola, UK

Enhancing multimodal interaction for virtual reality using haptic mediation technology
> Ahmed Farooq, Grigori Evreinov, Roope Raisamo, Finland

Mapping the monetization challenge of gaming in various domains
> Evangelos Markopoulos, Panagiotis Markopoulos, Mika Luimula, Younus Almufti, Vasu Aggarwal, UK

185	**3D Printing Technology** Co-Chairs: Chor-Kheng Lim and Keun Park, Taiwan/South Korea	**AMMSP**

10:30-12:30 - GUNSTON WEST

Automatic design of 3D lightweight structures based on finite element mesh
> Keun Park, Young-Eun Lim, Jung-Hwan Park, South Korea

Kinematic optimization of a robot head movements for the evaluation of human-robot interaction in social robotics
> Jorge Alvarez, Mireya Zapata, Dennys Paillacho, Ecuador

EZ-print: Transparent string-like pottery design system
> Chor-Kheng Lim, Taiwan

3D printed hybrid flexible electronics with Direct Light Synthesis
> Andrei-Alexandru Popa, Brian Zellers, Simon Iversen, Dillon Kennedy, Pedro Cortes, Jerome Jouffroy, Lars Duggen, Kirk Rogers, Brett Conner, Eric MacDonald, Denmark

Personalized human factor and ergonomics: Usability design of 3D printed patient-specific fracture external fixator
> Hongwei Li, Feng Qiao, Dichen Li, Liang Jixiang, China

186	**Research-Driven Design** Co-Chairs: Adam Feld and Tufail Muhammad, USA/Pakistan	**IPID**

10:30-12:30 - EMBASSY

A critical usability problem-solving case of 'maze cube' through scientific experiment and design exploration
> Jihyeon Yang, Hwisu Jeon, Muhammad Tufail, Kwanmyung Kim, South Korea

Project pilot run: A sewn collaboration
> Adam Feld, USA

Discomfort with low-back pain relief exercise training for older adult women
> Muhammad Tufail, Sangjin Park, Haebin Lee, Yang gyu Moon, Kwanmyung Kim, South Korea

From digital to analogue: An interdisciplinary case study to enhance the communication of design products through physical constraints
> Simge Esin Orhun, Turkey

Innovative product design for hand-muscle weakness therapy in the elderly people
> Parichart Rattanapol, Thailand

The end of the freeze out: using digital modeling and rapid prototyping to mediate airflow in a cold studio environment
> Adam Feld, Liane Hancock, Thomas Cline, USA

187	**Design, Anthropometry and Posture** Co-Chairs: Jaimin Patel and Stijn Verwulgen, USA/Belgium	PEHF

10:30-12:30 - GUNSTON EAST

Comparative assessment of classroom desk dimensions with respect to students anthropometry for females middle schools
> Ahamed Altaboli, Aisha Akrim, Entsar Omar, Fatima Hamad, Sarah Ahmed, Libya

Incidence and postural risk factors for low back pain among informal garment female workers
> Sunisa Chaiklieng, Thanyawat Homsombat, Thailand

Ergonomic improvements in heavy duty four wheel cart with pelvis support
> Jaimin Patel, Guru Prasadh Rao, Nader Madkour, Jay Jani, Pawankumar Sharma, Yueqing Li, USA

The influence of the transformation between standing and cycling position on upper body dimensions
> Thomas Peeters, Jochen Vleugels, Stijn Verwulgen, Guido De Bruyne, Belgium

A study on the correlation of foot data with body height and weight of Chinese Adults
> Linghua Ran, Hong Luo, Chaoyi Zhao, Xin Zhang, Huimin Hu, Zhongting Wang, China

188	**Physical Ergonomics and Work-Related Musculoskeletal Disorders II** Co-Chairs: Antônio Renato Pereira Moro and Wang Wei, Brazil/China	PEHF

10:30-12:30 - JAY

Preschool children's product design based on heart flow theory
> Wang Wei, Li Fangyu, China

Ergonomic risk evaluation of the manual handling task of bovine quarters in a Brazilian slaughterhouse
> Adriana Seára Tirloni, Diogo Cunha dos Reis, Natália Fonseca Dias, Antônio Renato Pereira Moro, Brazil

To investigate the lower back muscle activity during cardiopulmonary resuscitation chest compression with or without exoskeleton
> Chun Lung Billy So, China

Dynamic response of seated human body exposed to whole body vibration: influence of tractor ride conditions on ride comfort in harrowing operation
> Amandeep Singh, Sarbjit Singh, Harwinder Singh, Chander Prakash, Lakhwinder Pal Singh, India

Whole body vibration exposure in powered two wheelers used for commuting: A study in India
> Sai Praveen Velagapudi, India

189	**Non-Traditional Sensing for Job Performance, Health and Well Being and Cognitive Constructs** Co-Chairs: Matthias Ziegler and Hasan Ayaz, USA	CN

10:30-12:30 - HOLMEAD EAST

Predictions of job performance and cognitive constructs using a combination of individual, interpersonal and environmental sensors
> Matthias Ziegler, Robert Ha, Amanda Kraft, Alison Perez, Alexander Danvers, Matthias Mehl, Esther Sternberg, Altaf Engineer, Erica Baranski, USA

A smartphone application for multi-sensor large scale data collection
> Brad Galego, Matthew Gerber, Laura Barnes, Mehdi Boukhechba, Peter Rokowski, USA

The use of human sensors in a human machine interface evaluation of a semi-autonomous vehicle
> Raquel Galvan, Sophia Mayne-DeLuca, Eric Shieh, USA

Association between physicians' burden and performance during interactions with electronic health records (EHRs)
> Natalie Grace Castellano, Lukasz Mazur, USA

Assessment of interface driven task difficulty and mental effort during interaction with electronic health record system
> Prithima Reddy Mosaly, Lukasz Mazur, USA

Towards better understanding of physician burnout: Can neurofeedback help?
> Alana Campbell, Lukasz Mazur, Mae Yefimov, Samantha Meltzer-Brody, Prithima Mosaly, Timothy Farrell, USA

A systems engineering analysis approach to understanding provider burden and identifying short- and long-term interventions
> Sara Stokes, Lukasz Mazur, Samantha Meltzer-Brody, USA

Lunch Break 12:30 - 13:30 •   Enjoy lunch at the restaurant of your choice

191	**Affective and Pleasurable Design** Co-Chairs: Eiichiro Tanaka and Lucas Paletta, Japan/Austria	APD

13:30-15:30 - MORGAN

Analysis of color language in poster design
> Qian Ji, Zhao Yiming, Lili Liu, China

Evaluating the interaction between human walking and two-dimensional emotion variation by using physiological signals
> Jyun-Rong Zhuang, Guan-Yu Wu, Ya-Jing Guan, Keiichi Muramatsu, Keiichi Watanuki, Eiichiro Tanaka, Japan

The influence of culture in product form preference as momentary experience in online shopping
> Chajoong Kim, Youngjun Park, James Self, South Korea

Emotion measurement from attention analysis on imagery in virtual reality
> Lucas Paletta, Amir Dini, Martin Pszeida, Austria

Case study: How to combine components of a design plan and a business plan for crowdfunding purposes
> Jose Rivera-Chang, USA

Engineering for tomorrow: Make it simpler and more enjoyable
> Shuichi Fukuda, Japan

Gamified sharing economy: The role of game elements in sharing economy
> Krity Gera, Peter Hasdell, China

192	**User Interface for Accessibility** Co-Chairs: Walter Correia and Jonysberg Quintino, Brazil	UUE

13:30-15:30 - HOLMEAD WEST

Being inclusive: Is it possible a blind person learn playing guitar in an [really] accessible app?
> Walter Correia, Weynner Kenneth, Walter Lima, Rodrigo Oliveira, Jonysberg P. Quintino, Fernanda Pellegrini, Marcelo Anjos, Fabiana Florentin, Valeska Alves, Tatiane Levrero, Daniele Zandona, André L M Santos, Fabio Q. B. Silva, Brazil

Virtual assistants: An accessibility assessment in virtual assistants for people with motor disability on mobile devices
> Walter Franklin Marques Correia, Jefté De Assumpção Macêdo, Marcelo Penha, Jonysberg Quintino, Fernanda Pellegrini, Marcelo dos Anjos, Fabiana Florentin, André Santos, Fabio Q. Silva, Brazil

Disabled user role on mobile accessible application development
> Bruno Ribeiro, Fernanda Pellegrini, Marcelo Anjos, Fabiana Florentin, Valeska Alves, Daniele Zandona, Tatiane Levrero, Walter Correia, Jonysberg Quintino, Jefté Macêdo, Brazil

How to overcome the challenges of developing responsive and accessible websites - a case study
> Fernanda Pellegrini, Marcelo dos Anjos, Fabiana Florentin, Bruno Ribeiro, Valeska Alves, Daniele Zandona, Walter Franklin Marques Correia, Jonysberg Quintino, Jefté De Assumpção Macêdo, Brazil

How to prioritize accessibility in agile projects?
> Fernanda Pellegrini, Marcelo Anjos, Fabiana Florentin, Bruno Ribeiro, Walter Correia, Jonysberg Quintino, Brazil

CasaE Xperience - creation method focused in accessibility
> Aender Ferreira, Luciano do Nascimento, Vitorio Kuroda, Daniele Zandona, Marcelo dos Anjos, Bruno Ribeiro, Fernanda Pellegrini, Walter Correia, Jefté Macêdo, Jonysberg Quintino, Brazil

193	**Interfaces and Interaction Design** Co-Chairs: Rafal Michalski and Xiaoli Fan, Poland/China	ED

13:30-15:30 - FAIRCHILD EAST

Research on optimization of information coding for car dashboard based on eye movement analysis
> Guilei Sun, Qin Li, Yanhua Meng, Linghua Ran, China

Effectiveness of coach marks or instructional overlay in smartphone apps interfaces
> Paulo Noriega, José Luís Alves, Diana Carvalho, Igor Correia, Tiago Oliveira, Francisco Rebelo, Portugal

Study on the effect of key-to-key distance on touch-sensitive key operation
> Xiaoli Fan, Huimin Hu, Chaoyi Zhao, Wei Zhang, China

Eye-tracking examination of the anthropological race, gender and verbal-pictorial relative positions on ergonomics of visual information presentation
> Rafał Michalski, Joanna Koszela-Kulińska, Poland

Research on standardization of public information guidance systems for railway stations
> Chuanyu Zou, Yongquan Chen, Ziding Chen, China

194	**Revitalizing Safety Management and Practice** Co-Chairs: Manikam Pillay and Andrew Enya, Australia	SMHF

13:30-15:30 - DU PONT

Who causes accident, employee or employer?
  Ercan Sahin, USA
Collective mindfulness as a preventive strategy against workplace incidents:
A comparative study of Australia and the United States
  Andrew Enya, Manikam Pillay, Shane Dempsey, Australia
The occupational risk assessment method: A tool to improve organizational
resilience in the context of occupational health and safety management
  Gael Morel, Manikam Pillay, France
Study on sleep disorder in gasoline service stations workers
  Rodrigo Dominguez, Hector Velasquez, Yuri Alvarado, Barbara Salas, Chile
Risk assessment of compressor gold mining at Camarines Norte, Philippines
  Isachar Bernaldez, Virginia Soriano, Philippines
The gap in the safety knowledge between the small-scale miners and local
mining monitoring body in the Philippines
  Virginia Soriano, Isachar Bernaldez, Philippines

195	**Road and Rail: Usability and Comfort** Co-Chairs: Sabrina Moran and James Brown, USA/UK	RR

13:30-15:30 - COLUMBIA 1

Using the lane change test to investigate in-vehicle display placements
  Sabrina Moran, Thomas Strybel, Kim-Phuong L. Vu, Gabriella Hancock, USA
Evaluating the impacts of real-time auditory travel information provision on driver
cognition using EEG spectrum analysis
  Shubham Agrawal, Irina Benedyk, Srinivas Peeta, USA
Investigation of the effectiveness of autostereoscopic 3D displays for parking
maneuver tasks with passenger cars
  Andre Dettmann, Angelika C. Bullinger-Hoffmann, Germany
Transport realities and challenges for low income peripheral located settlements
in Gauteng province: Are we witnessing the genesis of a new transport
  James Chakwizira, Peter Bikam, Thompson A. Adeboyejo, South Africa
Database driven ergonomic vehicle development via a fully parametric seating buck
  Johannes Tiefnig, Mario Hirz, Wilhelm Dietrich, Austria
Experimental investigation of the relationship between human discomfort and
involuntary movements in vehicle seat
  Junya Tatsuno, Japan
An ergonomic assessment of mass rapid transport trains in Metro Manila,
Philippines
  Anna Patricia F. Martinez, Angela Jasmin B. Caingat, Raine Alexandra S. Robielos,
  Benette P. Custodio, Philippines

196	**Information Systems** Co-Chairs: Sevgin Hunt and Pradip Ray, USA/India	EHMD

13:30-15:30 - COLUMBIA 2

Research on the construction method of the hospital information system
hourglass model
  Shifeng Zhao, Jie Shen, Huanzhen Weng, China
Electronic health records in hospitals: Preventing dosing errors in the medication
administration context
  Sevgin Hunt, Joyram Chakraborty, USA
Developing instructions for use that encourage safe behaviour
  Tina Medeiros, Karen Chitty, Fiona Haig, UK
Determining patient's interest in patient portal use in a primary care clinic to
improve portal adoption
  Martina Clarke, Kelly Karls, USA
The challenge of designing new work systems towards effective e-Health
interventions
  Isabel Duarte de Almeida, Maria João Delgado, Portugal
Modelling and analysis of prescription behaviour-based medicine inventory
management systems
  Esha Saha, Pradip Kumar Ray, India
Video task analysis of patient handling jobs at healthcare systems in India
  Sanjeet Kumar, Pradip Kumar Ray, Rahul Mondal, India

197	**Usability and User Experience Applications IV** Co-Chairs: Eyal Eckhaus and Yun He, Israel/China	UUE

13:30-15:30 - COLUMBIA 3

Interplay between usability and information system continuance: An extended model
> Aleksandra Sobodić, Igor Balaban, Croatia

Sustainable design based on user research
> Yun He, Bo Ouyang, China

Optimal design of smarter tourism user experience driving by service design
> Qing Xu, China

Research on user experience design of cross-border e-commerce platform based on CUBI model and NPS index in the context of expanding import
> Yun Yang, Wei Yu, China

Does the survey method affect the net promoter score?
> Jon Temple, Brenda Burkhart, Annette Tassone, USA

Effects of different environment illuminations on visual task
> Yingwei Zhou, Tuoyang Zhou, Zhen Liao, Xin Wang, China

Comparative analysis of user experience and usability of the public universities' web sites of Riobamba City in Ecuador
> Pablo Rosas-Chavez, Jorge Mora-Fernandez, Carlos Suarez, Ecuador

198	**System Accessibility Design** Co-Chairs: Sandra Sanchez-Gordon and Janio Jadán-Guerrero, Ecuador	SYSI

13:30-15:30 - COLUMBIA 4

Development of an accessible video game to improve the understanding of the test of Honey-Alonso
> Luis Salvador-Ullauri, Patricia Acosta-Vargas, Janio Jadán-Guerrero, Cesar Guevara, Sandra Sanchez-Gordon, Tania Calle-Jimenez, Patricio Lara-Alvarez, Ecuador

Accessibility assessment in mobile applications for Android
> Patricia Acosta-Vargas, Luis Salvador-Ullauri, Janio Jadán-Guerrero, César Guevara, Sandra Sanchez-Gordon, Tania Calle-Jimenez, Patricio Lara-Alvarez, Ana Medina, Isabel Nunes, Ecuador/Portugal

Fuzzy model for back posture correction during the walk
> Cesar Guevara, Janio Jadán-Guerrero, Patricia Acosta-Vargas, Tania Calle-Jimenez, Sandra Sanchez-Gordon, Luis Salvador-Ullauri, Patricio Lara, Diego Bonilla-Jurado, Ecuador

Building hybrid interfaces to increase interaction with young children and children with special needs
> Cesar Guevara, Janio Jadán-Guerrero, Sandra Sanchez-Gordon, Tania Calle-Jimenez, Luis Salvador-Ullauri, Patricia Acosta-Vargas, Diego Bonilla-Jurado, Patricio Lara, Ecuador

Implementation of controls for insertion of accessible images in open online editors based on WCAG guidelines. Case studies: TinyMCE and Summernote
> Sandra Sanchez-Gordon, Tania Calle-Jimenez, Jorge Villarroel-Ramos, Janio Jadán-Guerrero, Cesar Guevara, Patricio Lara-Alvarez, Patricia Acosta-Vargas, Luis Salvador-Ullauri, Ecuador

Application to guide people with visual disability on Internal buildings, using Beacon Bluetooth positioning systems
> Cesar Guevara, Patricio Lara-Alvarez, Janio Jadán-Guerrero, Sandra Sanchez-Gordon, Tania Calle-Jimenez, Luis Salvador-Ullauri, Patricia Acosta-Vargas, Wilmer Illescas Espinoza, Ecuador

Development of a programming code for image processing of nodular cast iron
> Victor Hidalgo, Carlos Díaz, Anibal Silva, José Erazo, Esteban Valencia, Ecuador

199	**HRI Applications in the Workplace and Exoskeletons** Co-Chairs: Henning Petruck and Sandra Groos, Germany	HFRUS

13:30-15:30 - COLUMBIA 9

Determination of the subjective strain experiences during assembly activities using the exoskeleton "Chairless Chair"
> Sandra Groos, Marie Fuchs, Karsten Kluth, Germany

Human-robot cooperation in manual assembly – interaction concepts for the future workplace
> Henning Petruck, Jochen Nelles, Marco Faber, Heiner Giese, Marius Geibel, Stefan Mostert, Alexander Mertens, Christopher Brandl, Verena Nitsch, Germany

Development of a standardized ergonomic assessment methodology for exoskeletons using both subjective and objective measurement techniques
> Michael Hefferle, Maria Lechner, Karsten Kluth, Marc Christian, Germany

A study on the design of companion robots preferred by the elderly
> Soo Yeon Kim, Young Hoon Oh, Da Young Ju, South Korea

Understanding the preference of the elderly for companion robot design
> Suyeon Oh, Young Hoon Oh, Da Young Ju, South Korea

A nursing robot for social interactions and health assessment
> Anja Richert, Michael Schiffmann, Chrunrong Yuan, Germany

200	**Visual Ergonomics and Visual Performance** Co-Chairs: Leonor Ferrão and João Neves, Portugal	ED

13:30-15:30 - COLUMBIA 10

Effects of screen brightness on visual performance under different environments
    Qi Tian, Linghua Ran, China
Influence of the restrictions on the range of view from the cockpit in operation of a hydraulic excavator
    Kazuyuki Matsumura, Masaru Ito, Seiji Saiki, Yoichiro Yamazaki, Yuichi Kurita, Japan
Color in glossolalia: Red in western culture (Part II)
    Leonor Ferrão, Portugal
Contribution of visual ergonomics to a holistic view of the symbols applied in touristic and cultural signage: The Portuguese case
    João Neves, Fernando Moreira da Silva, Daniel Raposo, Jose Silva, Portugal
Universal design for enhancing accessibility of the visually impaired in touristic environments
    Carlos Arce-lopera, Juan Jimenez, Camilo Montoya, Jose Giraldo, Colombia

201	**Applications in Software, Service and Systems Engineering III** Co-Chairs: Ronda Caswell and Xiaoli Wu, USA/China	HFSSSE

13:30-15:30 - COLUMBIA 11

The role of change readiness in determining existing relationship between TQM practices and employee performance
    Timothy Laseinde, Ifetayo Oluwafemi, Janharm Pretorius, Jesusetemi Oluwafemi, Ajayi Makinde, South Africa
Analysis on visual information structure in intelligent control system based on order degree and information characterization
    Linlin Wang, Xiaoli Wu, Weiwei Zhang, Yiyao Zou, Xiaoshan Jiang, China
An IT project management methodology generator based on an agile project management process framework
    Evangelos Markopoulos, UK
A modernization story – Sociotechnical challenges in the journey from legacy to modern systems
    Ronda Caswell, Alfred Shoetan, Megan Reiling, USA
An analysis of mobile questionnaire layouts
    Helge Nissen, Yi Zhang, Monique Janneck, Germany
Modelling decision-making with intelligent agents to aid rural commuters in developing nations
    Patricio Julián Gerpe, Evangelos Markopoulos, UK
Human interaction with the output of information extraction systems
    Erin Zaroukian, Justine Caylor, Michelle Vanni, Sue Kase, USA

202	**Physical, Mental and Social Effects in Simulation** Co-Chairs: Sylwia Kaduk and Martina Scafà, UK/Italy	HFSIM

13:30-15:30 - COLUMBIA 12

Surviving in Frankenstein's lab - how to build and use a laboratory that applies multiple physiological sensors
    Sylwia Kaduk, Aaron Roberts, Neville Stanton, UK
Assessment of students' cognitive conditions in medical simulation training: A review study
    Martina Scafà, Eleonora Brandoni Serrani, Alessandra Papetti, Agnese Brunzini, Michele Germani, Italy
Investigating human visual behavior by hidden Markov models in the design of marketing information
    Jerzy Grobelny, Rafał Michalski, Poland
Modeling of airflow and dispersion of aerosols in a thanatopraxy room
    Jihen Chebil, Geneviève Marchand, Maximilien Debia, Loïc Wingert, Stéphane Hallé, Canada
Dynamics of interactions
    Zbigniew Wisniewski, Aleksandra Polak-Sopinska, Malgorzata Wisniewska, Marta Jedraszek-Wisniewska, Poland
Three-dimensional finite element analysis of the finger exposed to handle vibration
    Alphin Masilamany Santha, Jain A R Tony B, India

203	**Human Factors and Wearable Technologies III** Co-Chairs: Xiangyu Ge and Zeeshan Shaukat, China	HFWT

13:30-15:30 - CARDOZO

Ergonomic evaluation of pilot helmet and neck injury
> Xiangyu Ge, Qianxiang Zhou, China

Eye tracking in the diagnosis of aggressive behaviors and emotions: A systematic review of the literature
> Gabriela Gómez-Ochoa, P. Ortega-Chasi, O. Alvarado-Cando, M. Cobos-Cali, M. Artega-Sarmiento, Ecuador

Research on smart wearable device design based on semiotic approach to product architecture design
> Lu Han, Huaxiang Yuan, Hongzhi Pan, China

Integrating Markov chain model in wireless body sensor networks for improving patients' remote monitoring systems
> Rabei Raad Ali, Salama A. Mostafa, Saraswathy Shamini Gunasekaran, Wafaa Mustafa Abduallah, Mazin Abed Mohammed, Malaysia/Iraq

204	**Human Reliability Analysis for Safety Critical Industries** Co-Chairs: Tun Liu and Ronald Boring, China/USA	HERRP

13:30-15:30 - GUNSTON WEST

Experimental research on measurement of team situation awareness in nuclear power plants
> Guimei Zuo, Jianhua Chen, Licao Dai, China

A simulator experimental study on individual SA and Team SSA in digital MCRs of NPPs
> Pengcheng Li, Xiao Jin, Yanxing Wang, Jianhua Chen, Licao Dai, China

Safety risk assessment of space launch site considering human reliability
> Tun Liu, Wenjin Zhang, Xing Pan, Xiaoxia Wang, China

Method for crew human reliability analysis based on CREAM
> Xiaoxia Wang, Wenjin Zhang, Xing Pan, Tun Liu, China

A model for automatically detecting and classifying human errors with procedural basis in nuclear power plants
> Jeeyea Ahn, Seung Jun Lee, South Korea

205	**Macro 3D Printing** Co-Chairs: Hemang Kumar Jayant and Nate Watson, India/USA	AMMSP

13:30-15:30 - EMBASSY

Evaluation of early-age concrete structural build-up for 3D concrete printing by oscillatory rheometry
> Wilson Ricardo Leal da Silva, Herve Fryda, Thomas Juul Andersen, Per Norelius, Jean-Noel Bousseau, Denmark

Induction heating based 3D metal printing of eutectic alloy using vibrating nozzle
> Hemang Kumar Jayant, Manish Arora, India

Additive manufacturing of Portland cement based cementitious materials
> Jonathon Piasente, Aleksandra Radlinska, Maryam Hojati, USA

Scaling from paste to mortar for 3D printing
> Scott Jones, Nicos Martys, USA

Safety and performance of reinforced concrete additive construction
> Eric Kreiger, Brandy Diggs-McGee, Tanner Wood, Bruce MacAllister, Megan Kreiger, USA

206	**Human Aspects in Industrial Environment** Co-Chairs: Akihiko Goto and A. A. M. Macias, Japan/Mexico	APMPC

13:30-15:30 - GUNSTON EAST

Cognitive analyses for the improvement of service orders completion in an information technology center: A case of study
> Aide Maldonado, Manuel Alejandro Barajas-Bustillos, Margarita Ortiz-Solís, Arturo Realyvásquez, Juan Luis Hernández-Arellano, Mexico

Motion analysis of manufacturing of large "Echizen Washi" Japanese traditional paper
> Yuji Kawamori, Hiroyuki Nakagawa, Kozo Igarashi, Yoshikiyo Yamada, Naoki Sugiyama, Kazuaki Yamashiro, Akihiko Goto, Hiroyuki Hamada, Japan

Cognitive and organizational criteria for workstation design
> Salvador Ávila Filho, Jade Avila, Beata Mrugalska, Magdalena K. Wyrwicka, Érica Cayres, Júlia Ávila, Maraísa Souza, Poland/Brazil

Job strain index by gender among middle and high managers of the Maquiladora industry Ciudad Juarez, Mexico
> Aide Maldonado, Margarita Ortiz-Solís, Oziely Armenta-Hernández, Karla Hernández-Luna, Jorge García-Alcaraz, Mexico

Organizational culture requirements for the achievement of world class manufacturing
> Zbigniew Wisniewski, Michal Paszkowski, Malgorzata Wisniewska, Poland

Evaluation of "Jiai" of large "Echizen Washi" Japanese traditional paper
> Hiroyuki Nakagawa, Yuji Kawamori, Kozo Igarashi, Yoshikiyo Yamada, Mitsunori Suda, Naoki Sugiyama, Kazuaki Yamashiro, Hiroyuki Hamada, Akihiko Goto, Japan

207	**Human Factors and Assistive Technology V** Co-Chairs: Stijn Verwulgen and Chor-Kheng Lim, Belgium/Taiwan	HFAT

13:30-15:30 - JAY

The design of the paediatric prosthesis: Questionnaire assessment of stigma-inducing factors in primary children school
> Steven Truijen, Kristof Vaes, Erik Haring, Hilde Feys, Anouche Van den Eynde, Emilie Meyvis, Eric van Breda, Evi Schaerlaken, Stijn Verwulgen, Belgium

Design of a low cost 3d scanner for anthropometric measurements
> Pablo Davila, Esteban Carrera, Oswaldo Jara, Horfayt Bassantes, Ecuador

Human factors product design for a prototype of hair loss prevention machine for cancer patients during chemotherapy treatments
> Nantakrit Yodpijit, Manutchanok Jongprasithporn, Thailand

An ergonomic assessment of accessible pedestrian signal sound types for the University of the Philippines Diliman
> Evander Del Rosario, Camilla Isabel Suarez, Alexander Go Tian, Philippines

Pillow fight: Application of conductive fabric technology in activities for dementia
> Chor-Kheng Lim, Taiwan

208	**Artificial Intelligence and Social Computing II** Co-Chairs: Rita Yi Man Li and Xinyu Cao, China	AISC

13:30-15:30 - HOLMEAD EAST

Fourth industrial revolution: An impact on health care industry
> Prisilla Jayanthi, V. Murali Krishna Iyyanki, Aruna Mothkuri, Prakruthi Vadakattu, India

Detection of cutaneous tumors in dogs using deep learning techniques
> Cesar Guevara, Matilde Lorena Zapata Saavedra, Ivan Ramirez-Morales, Fernando Aguilar-Galvez, Lorena Elizabeth Chalco Torres, Ecuador

Human-AI collaboration development: Interim communication rivalry of generation
> Olga Burukina, Finland/Russia

Multicriteria analysis in the proposed environmental management regulations for construction in Aurora, Guayas, Ecuador
> Christian Zambrano Murillo, Jesús Rafael Hechavarría Hernández, Maikel Leyva Vázquez, Ecuador

Random samplings using Metropolis Hastings algorithm
> Miguel Arcos-Argudo, Rodolfo Bojorque, Andrea Plaza, Ecuador

The research on automatic acquirement of the domain terms
> Liangliang Liu, Haitao Wang, Zhang Fan, Jing Zhao, Zhao Chao, Gang Wu, Xinyu Cao, China

15:30-16:00 Refreshments will be provided in Columbia West (Terrace Level)		

210	**Virtual Reality and Machine Learning for Neuroergonomics** Co-Chairs: Hasan Ayaz and Adrian Curtin, USA	**CN**

16:00-18:00 - MORGAN

Integration of virtual reality and motor imagery based brain computer interface
> Callan Powell, Hasan Ayaz, USA

A test setting to compare spatial awareness on paper and in virtual reality using EEG signals
> Sander Van Goethem, Kimberly Adema, Britt van Bergen, Emilia Viaene, Eva Wenborn, Stijn Verwulgen, Belgium

Multimodal fNIRS-EEG classification using deep learning algorithms for brain-computer interfaces purposes
> Marjan Saadati, Jill Nelson, Hasan Ayaz, USA

Convolutional neural network for hybrid fNIRS-EEG mental workload classification
> Marjan Saadati, Jill Nelson, Hasan Ayaz, USA

Impacts of the time interval on the choice blindness persistence: A visual cognition test-based study
> Qiuzhu Zhang, Yi Lu, Huayan Huangfu, Shan Fu, China

211	**Ergonomics in Design: Applications II** Co-Chairs: Luciana Cruz and Yumeng Zhang, Brazil/China	**ED**

16:00-18:00 - HOLMEAD WEST

Service mapping: Case study of university waste management system
> Flávia Azevedo, Luciana Cruz, Brazil

Current theoretical developments and applications of Fitts' Law: A literature review
> Rong Jiang, Zhenyu Gu, China

Ergonomic research in Civil aircraft external service design
> Yu Chen, China

Research on ergonomic design and evaluation of office backrest curve
> Yumeng Zhang, Ling Luo, China

A synthesis of sociotechnical principles for system design
> Amangul Imanghaliyeva, Pauline Thompson, Paul Salmon, Neville Stanton, UK

212	**Cross-Cultural Decision Making II** Co-Chairs: Atsuo Murata and Noriko Okabe, Japan	**CCDM**

16:00-18:00 - FAIRCHILD EAST

Cross-cultural motivations for information sharing in incident management at major events
> Guadalupe Hernández-Escobedo, David K. Allen, Alan D. Pearman, Claudia Alejandra Ituarte-González, Mexico

Cross-cultural difference of free agent system between MLB and NPB (Nippon Professional Baseball)
> Atsuo Murata, Japan

Design benchmarking study between Alessi products and Chinese commodities
> Lixia Hua, Junnan Ye, China

Language and cultural learning in a short-term study abroad: An Investigation of Japanese sojourners in Canada
> Chihiro Tajima, Japan

English education for young learners in China and Europe
> Jiali Du, Pingfang Yu, China

213	**Applications in Human Interaction and Design** Co-Chairs: Peter Thorvald and Fang Guo, Sweden/UK	ICEEP

16:00-18:00 - DU PONT

Embodied interactions in cognitive manufacturing
> Peter Thorvald, Jessica Lindblom, Ari Kolbeinsson, Sweden

Assessment of user interpretation on various vibration signals in mobile phones
> Giorgio Romero, Nikko Marcelo Palomares, Jean Louie Victor, Philippines

Hand gesture based control of NAO Robot using MYO armband
> Sara Ali, Mohammad Samad, Faisal Mehmood, Yasar Ayaz,
> Wajahat Mehmood Qazi, Muhammad Jawad Khan, Umer Asgher, Pakistan

Changing the role of design
> Fang Guo, Zaili Yang, Ian Jenkinson, Johanna Ender, UK

Effect of different visual stimuli on joint attention of ASD children using NAO robot
> Sara Ali, Faisal Mehmood, Yasar Ayaz, Umer Asgher, Muhammad Jawad Khan,
> Pakistan

214	**Designing Autonomy in Transportation: Age and Inclusion** Co-Chairs: Patrick Langdon and Nermin Caber, UK	RR

16:00-18:00 - COLUMBIA 1

Designing adaptation in cars: An exploratory survey on drivers' usage of ADAS and car adaptations
> Nermin Caber, Patrick Langdon, John Clarkson, UK

An inclusive, fully autonomous vehicle simulator for the introduction of human-robot interaction technologies
> Theocharis Amanatidis, Patrick Langdon, John Clarkson, UK

The impact of different human machine interface feedback modalities on older participants' user experience of CAVs in a simulator environment
> Iveta Eimontaite, Alexandra Voinescu, Chris Alford, Praminda Caleb-Solly,
> Phillip Morgan, UK

Supporting older drivers' visual processing of intersections - effects of providing prior information
> Matthias Beggiato, Franziska Hartwich, Tibor Petzoldt, Josef Krems, Germany

User experience in immersive VR-based serious game: An application in highly automated driving training
> Mahdi Ebnali, Cyrus Kian, Majid E Heidari, Adel Mazlomi, USA

Comparison of child and adult pedestrian perspectives of external features on autonomous vehicles using virtual reality experiment
> Shuchisnigdha Deb, Daniel Carruth, Muztaba Fuad, Laura Stanley, Darren Frey,
> USA

215	**Panel: Practical State of the Art Augmented and Virtual Reality for Operational Usage** Co-Chairs: Nina M. Berry and Bill Prugh, USA	SYSI

16:00-18:00 - COLUMBIA 2

Practical state of the art augmented and virtual reality for operational usage
> William Prugh, USA

SEE: Synthetic environment enhancement
> Vaughn Whisker, USA

The virtual standardized patient for medical education simulation
> Sean Hauze, USA

Vantage: Practical state of the art augmented and virtual reality for operational usage
> Jonathan Wilson, Drew Massey, Joe Chimento, USA

The challenges of mass adoption of AR/VR for nuclear security
> Tam Le, USA

216	**Human Factors, Sustainable Urban Planning and Infrastructure III** Co-Chairs: Christianne Falcao and Eduardo Navarro, Brazil/UK	**SUPI**

16:00-18:00 - COLUMBIA 3

A sociotechnical systems approach for assessing university campus developments
> Eduardo Navarro, Graeme Bowles, Guy Walker, UK

Current situation and countermeasures of Chinese street furniture design in intelligent development context
> Tongwen Wang, Wuzhong Zhou, China

Research on the transformation model of spiritual requirement in elderly-oriented design
> Maiqi Lin, Huifang Shang, Chuanshun Wang, Yongtao Zheng, China

The various factors affecting occupants' satisfaction in the open-plan shared office
> Shaoning Ren, Linong Dai, China

Effects of the urban form on the external thermal comfort in low-income settlements of Guayaquil, Ecuador
> Maria Virginia Ricaurte Romero, Byron Almeida,
> Jesús Rafael Hechavarría Hernández, Boris Forero, Ecuador

Identification of residential well-being factors in urban community design
> Xintong Wei, Guangtian Zou and Kin Wai Michael Siu, China

217	**Usability and User Experience Applications V** Co-Chairs: Yiwen Pan and Xin Chen, China	**UUE**

16:00-18:00 - COLUMBIA 4

Emotional effects of smart aromatherapeutic home devices
> Jiashan Pan, Tao Xi, Rong Jiang, China

Research on visitors experience of Chinese family group in domestic child-orientated exhibition
> Yiwen Pan, Ding-Bang Luh, China

Personalized design of food packaging driven by user preferences
> Yan Yan, Chen Tang, Liqun Zhang, China

The new thinking in emotional user experience: From visual metaphor to interactive affordance
> Xin Chen, China

Let's make this personal: Improving the user experience on support portals through personalization
> Jon Temple, Kenn Roberson, Paula Nezbedova, USA

System of recommendation and automatic correction of web accessibility using artificial intelligence
> Paulina Morillo, Diego Chicaiza Herrera, Diego Vallejo-Huanga, Ecuador

218	**Educational Strategies** Co-Chairs: Graziela Sousa and Martin Kröll, Portugal/Germany	**TELS**

16:00-18:00 - COLUMBIA 9

Entrepreneurship education and digitization
> Martin Kröll, Germany

Entrepreneurship education for fashion design
> Graziela Sousa, Ines Simoes, Paulo Maldonado, Portugal

Analyzing phonological factor criteria by measuring information processing traits contributed to effectiveness through educational support system
> Keiko Tsujioka, Japan

Educational strategies for coping with problems of stay up late based on the psychological characteristics of contemporary Chinese college students
> Lin Yueyi, Zhou Wuzhong, China

Manguinhos' shanty-town: Investigating low income students' education problems and their environmental and social context
> Nathalia Pompeu, Luiza Rebello, Arlene Pompeu, Brazil

219	**Theoretical Advances in Human Error and Performance** Co-Chairs: Beata Mrugalska and Kaveh Sheikhrezaei, Poland/USA	HERRP

16:00-18:00 - COLUMBIA 10

Relating the learning styles, dependency, and working memory capacity to performance effectiveness in collaborative problem solving
> Kaveh Sheikhrezaei, Craig Harvey, USA

Research on human error in operation task under the coupling of time of day and stress
> Xing Pan, Xianheng Zhao, Wenjin Zhang, Yuhang Jiang, China

Organizational risk dynamics archetypes for unmanned aerial system maintenance and human error shaping factors
> Yi Lu, Huayan Huangfu, Shuguang Zhang, Shan Fu, China

Time-reliability correlation for the human reliability analysis of a digitalized main control room
> Wondea Jung, Jinkyun Park, South Korea

Human performance in the simulated multiple asset routing testbed (SMART): An individual differences approach
> Noelle Brown, Joseph Coyne, Ciara Sibley, Cyrus Foroughi, USA

Shared spatial situation awareness as a team performance indicator in collaborative spatial orientation task
> Baptiste Prebot, Jean-Marc Salotti, Coralie Vennin, Bernard Claverie, France

220	**Human Factors for Textile Design/Engineering** Co-Chairs: Cristina Carvalho and Carla Morais, Portugal	HFATE

16:00-18:00 - COLUMBIA 11

Ancient handcraft improved by new material
> Isabel Bieger, Cristina Carvalho, Gianni Montagna, Portugal

Lean manufacturing model for the reduction of production times and reduction of the returns of defective items in textile industry
> Yanira Andrade, Leslie Cardenas, Gino Viacava, Carlos Raymundo, Francisco Dominguez, Peru

Apparels for comfort. Knitting for people
> Gianni Montagna, Cristina Carvalho, Carla Morais, Portugal

Cognitive behavior difference based on sensory analysis in tactile evaluation of fabrics
> Jun Zhang, Hui Tao, Xuewei Jiang, China

Changes in physical and technical characteristics of raw materials in the process of making a bra
> Ana Brígida Filipe, Cristina Carvalho, Gianni Montagna, Portugal

Human factors in apparel and fashion exhibition design
> Catarina Carreto, Rui Carreto, Portugal

221	**Human Factors in Aging and Gerontology II** Co-Chairs: Carlos Aceves-Gonzalez and Qiu Hongjun, Mexico/China	AGE

16:00-18:00 - COLUMBIA 12

Design of waist wear products for warm-up training for the elderly
> Xin Ye, Qian Ji, China

Design and strategy of senior tourism under the background of population aging
> Qiu Hongjun, Linong Dai, China

The design adaptation of the virtual assistant Anne for moderate dementia patients and their formal caregivers in protected environment tests
> Vera Stara, Michiel de Jong, Elisa Felici, Daniel Bolliger, Edith Birrer, Viviane von Dollen, Lorena Rossi, Marcel Heerink, Italy

Design and implementation of bed-exit alarm system for preventing elderly falling
> Ching Ta Wu, Chien-Hsu Chen, Taiwan

222	**Additive Manufacturing, New Materials and Industrial Processes** Co-Chairs: Paul Tallon and Siobhan Heiden, UK/USA	AMMSP

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<tr>
<td rowspan="2">16:00-18:00 - CARDOZO</td>
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Experimental evaluation of mechanical properties and machine process in fused deposition modelling printed polymeric elements
  Salvatore Brischetto, Roberto Torre, Carlo Ferro, Italy

Investigation of bioplastics for additive manufacturing
  Daniel Saloni, Nicole Mervine, USA

Human performance differences between drawing-based and model-based reference materials
  Eric Moyer, Siobhan Heiden, USA

A holistic approach to additive manufacturing: From design for additive manufacturing to part verification in product development
  Michael Wilson, Paul Tallon, UK

Case study analysis for development strategies of construction 3D printing
  Xiangcheng Meng, Xueqing Zhang, China

Design for additive manufacturing of mechanical connections toward hybrid products
  Álvaro M. Sampaio, Rita Gonçalves, André Lima, Paulo J. S. Cruz,
  Bruno Figueiredo, Sandra Carvalho, António J. Pontes, Portugal

Design of a set of geometries and templates for the analysis of surface in the process of fused filament fabrication
  Julian Aguilar-Duque, Juan Luis Hernández-Arellano,
  Cesar Balderrama-Armendariz, Liliana Avelar Sosa, Mexico

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224	**Organizational Complexity and Leadership Management** Co-Chairs: Józef Fráś and Zhang Zhang, Poland/China	HFML

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<td rowspan="2">16:00-18:00 - EMBASSY</td>
<td>

Oriental lifestyle construction and furniture design based on a means-end theory
  Zhang Zhang, Jianxin Cheng, Tengye Li, Qianqian Wu, China

Changes in the organizational culture of the university in mergers and acquisitions
  Lukasz Sulkowski, Andrzej Wozniak, Robert Seliga, Poland

Image and brand awareness in universities in consolidation processes
  Lukasz Sulkowski, Robert Seliga, Andrzej Wozniak, Poland

The impact of work environment in concurrence to productivity in higher institutions
  Timothy Laseinde, Ifetayo Oluwafemi, Janharm Pretorius, Jesusetemi Oluwafemi,
  South Africa

Evaluation and prediction of the financial and management indicators in SMEs with the use of artificial neural networks
  Ives Torriente, Arlys Michel Lastre, Clemencia Carrera Naranjo, Paulina Morales,
  Karla Quishpe, Ecuador

The role of creative curriculum planning in reducing early school leaving – applying service design in re-forming the pedagogical program of schools
  Tibor Barath, Hungary

The economics of intangible assets: From just value to value creation
  Aicha Dif, Zahra Hamdani, Abdelbaki Benziane, Algeria

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225	**Human Systems Engineering and User Centered Design** Co-Chairs: C. J. Hutto and Tanya Andrews, USA	**HFSSSE**

16:00-18:00 - GUNSTON EAST

A system for user centered classification and ranking of points of interest using data mining in geographical data sets
  Maximilian Barta, Dena Farooghi, Dietmar Tutsch, Germany

Model-based human systems engineering for HSI: Decision support for analysis of alternatives in the manpower, personnel, and training domains
  C. J. Hutto, USA

NASA Marshall Space Flight Center human factors engineering analysis of various hatch sizes
  Tanya Andrews, Becky Stewart, Walter Deitzler, USA

Improving the Blockchain user experience - An approach to address Blockchain mass adoption issues from a human-centred perspective
  Leonhard Glomann, Maximilian Schmid, Nika Kitajewa, Germany

An alternative graphic and mathematical method of dimensional analysis: Its application on 71 constructive models of social housing in Guayaquil
  Byron Almeida, Pamela Bermeo, Jesús Rafael Hechavarría Hernández, Jesús Anaya, Boris Forero, Ecuador

226	**Mental State Assessment II** Co-Chairs: José León-Carrión and Ryan McKendrick, Spain/USA	**CN**

16:00-18:00 - JAY

The neuromodulative effects of tiredness and mental fatigue on cognition, and the use of medication
  Jose Leon-Carrion, Umberto Leon-Dominguez, Maria del Rosario Dominguez-Morales, Spain

Affective state estimation for neuroergonomic applications with fNIRS and EEG: A narrative review of the literature
  Nina Rothstein, John Kounios, Hasan Ayaz, USA

Advanced and objective real-time drowsiness monitoring enables a new generation of fatigue risk management systems (FRMS)
  Clementine Francois, Eva Hansenne, Philippe Cabon, Jerome Wertz, Belgium

Time pressure: Effects of mental workload on mental effort mobilization and behavioral adaptability, a cardiovascular approach
  Charlotte Mallat, Julien Cegarra, Christophe Calmettes, Rémi Capa, France

Pilot workload during simulated remotely piloted aircraft: A multi-modal sensing approach
  Denny Yu, Chantale Wilson, Fredrick Webber, Eric Watz, Wink Bennett, USA

A cognitive analysis suite for enhancing recruitment and training of the cyber warfighter
  Ryan McKendrick, USA

227	**Digital Human Modeling and Applied Optimization III** Co-Chairs: Sudhakar Rajulu and André Kaiser, USA/Germany	**DHMAO**

16:00-18:00 - HOLMEAD EAST

Quantification of buttock deformation on a rigid seat
  Michael Harry, Russell Marshall, Michael Fray, UK

Dynamical model of muscle fatigue and recovery considering the roles of slow-twitch and fast-twitch muscles
  Hayato Miura, Isamu Nishida, Keiichi Shirase, Japan

Virtual human hand: grasps and fingertip deformation
  Esteban Peña-Pitarch, Neus Tico Falguera, Anas Al Omar, Iñaki Alcelay-larión, Jordi Vives Costa, Spain

Prediction of human maximum forces – a comparison of four approaches to calculate muscle-torque
  André Kaiser, Angelika C. Bullinger, Germany

Assessment of upper body posture with garment-embedded flexible strain sensors
  Linh Vu, Yaritza Hernandez, Elizabeth Benson, Eduardo Beltran, Han Kim, Sudhakar Rajulu, USA

Digital human updated: Merging the thermal layer with the 3D anthropometric model
  Consuelo Latorre Sánchez, Andrés Soler, Eduardo Parrilla, Jose Laparra, Jose Solaz, Alfredo Ballester, Spain

Interactive Poster Demonstrations

Posters will be displayed Friday, July 26, Saturday, July 27, and Sunday, July 28, 2019, during the designated timeslots listed below. Posters should be positioned 30 minutes prior to the designated start of the session and removed no later than 30 minutes after the end of the session.

POSTER/DEMONSTRATION SESSIONS, FRIDAY, JULY 26
Time: 10:00 - 12:30
Room: Columbia West (Terrace Level)

A1. Visions, concepts and applications in additive manufacturing for yacht design
Massimo Musio-Sale, Paolo Licinio Nazzaro, Eric Peterson, Italy/USA

A2. Trends of crash mitigation at high crash intersections in Nevada, US based on highway safety improvement program
Wanmin Ge, Haiyuan Li, USA

A3. Antenna technology in wireless biometric human systems
Rafal Przesmycki, Marek Bugaj, Marian Wnuk, Poland

A4. A pilot study of a hygienic mask sheet pattern to prevent air flow through gaps
Mika Morishima, Tamaki Mitsuno, Japan

A5. Comparative assessment of the risk of manual patient handling between standard method and job analysis
Pier Luigi Pavanelli, Silvio Falco, Giovanni La Valle, Cristiano Roscio, Giulia Ricciardi, Italy

A6. Risk factors identification for metal washing process based on QOC matrix the workers' voice and ergonomic mapping
Brenda Trujillo-Sandoval, Martha Roselia Contreras Valenzuela, Mexico

A7. Linguistic approach to support human reliability analysis and validation work in advanced radiotherapy technologies
Mariarosa Giardina, Pietro Buffa, Pablo Cirrone, Luigi Raffaele, Vincenzo Salamone, Italy

A8. Research on sampling inspection procedures for bank service time based on Bayes method
Jingjing Wang, Haitao Wang, Fan Zhang, Chao Zhao, Gang Wu, Jing Zhao, China

A9. Effects of mobile application icon complexity and border on college students' cognition
Yaqin Cao, Yi Ding, Yiming Deng, Xuefeng Zhang, China

A10. Ergonomic study in the productive process in civil construction in the external plastering activity
Ariel Michaloski, Juliano Stradioto, Antonio Xavier, Brazil

A11. Error in turnaround maintenance operations in the chemical and process industries (oil and gas sector)
Godswill Ekpe, Esther Ventura-Medina, Leo Lue, UK

A12. Driving Segway: A musculoskeletal investigation
Zavier Berti, Peter Rasche, Robert Chauvet, Matthias Wille, Vera Rick, Laura Barton, Tobias Hellig, Katharina Schäfer, Christina Bröhl, Sabine Theis, Christopher Brandl, Verena Nitsch, Alexander Mertens, Germany

A13. Training caregivers to reduce spine flexion using biofeedback
Megan Kamachi, Mohammad Owlia, Tilak Dutta, Canada

A14. Injury severity analysis of cyclists in two wheeler to taxi crashes: An application of vehicle black box data
Seonjung Kim, Younshik Chung, South Korea

A15. A study on exit strategies to enhance applications of new technology to safety management activity
Haruna Yamazaki, Naoko Sakata, Yusaku Okada, Risako Shiraishi, Japan

A16. A musculoskeletal discomfort survey for the visually impaired masseurs
Cheng-Lung Lee, Shu-Zon Lou, Peng-Cheng Sung, Yi-Tsong Pan, Taiwan

A17. Self-leadership development program in elite youth soccer players in Japan
Yasuyuki Hochi, Yasuyuki Yamada, Takumi Iwaasa, Tomoki Ebato, Takuya Ohsiro, Motoki Mizuno, Japan

A18. The effect of risk triggered commentary driving for preventing excessive speed
Ayanori Sato, Japan

Interactive Poster Demonstrations

A19. Improving illumination to lower slip-trip-fall injury risk for mobile surface mining equipment
Alan Mayton, USA

A20. The lean solution of hospice service design in the "internet+" era
Yang Zhao, Chengcheng Liu, China

A21. Failure classification: An exploratory auto-ethnographic case study of human factors in the K-12 classroom for resilient human-system integration
Nathan Sonnenfeld, USA

A22. Useful textile goods: Employing physical fit test results for hand-sewn facemasks -Proposal of material for teaching and manufacturing
Mika Morishima, Asuka Shibuya, Tamaki Mitsuno, Japan

A23. Study of 3D modeling and printing molded cup bra based on the chest feature curve
Mei Zhang, Jun Wang, China

A24. Analysis of driver's behavior on warning signals for take-over of automated driving vehicles
Jonghwa Kim, South Korea

A25. A study on the classification and standard body shape three-dimensional modeling of female adolescents in northeast China
Chun Yuan Zhang, Jun Wang, China

A26. Human factors and safety perspectives on the evolving rules for use of dockless e-Scooters
Raina Shah and Brian C. Grieser, USA

A27. Measurement for communication of intention by eye rotation
Hisaya Tanaka, Tomomi Ohkawa, Japan

A28. Validity of cognitive function decline level using BCI
Akihiro Fukushima, Hisaya Tanaka, Haruo Hanyu, Akito Tsugawa, Japan

A29. Advancement in orthopedics through an accessible wearable device
Troy Kelly, Jr., Behzad Mottahed, Ryan Integlia, USA

A30. Research on ride comfort of wheelchairs by difference of running side
Shoichiro Fujisawa, Katsuya Sato, Shin-ichi Ito, Jyunji Kawada, Jiro Morimoto, Mineo Higuchi, Masayuki Booka, Japan

A31. Prediction of ergonomic risks occurred by repetitive movements of the upper limbs through infrared thermography: A work in progress
André Luiz Soares, Antonio Xavier, Ariel Orlei Michaloski, Brazil

A32. Factors affecting physical activity among surgical nurses of University Hospital in Japan: Case study using plural wearable sensors
Hidenori Hayashi, Takumi Iwaasa, Yasuyuki Yamada, Yasuyuki Hochi, Motoki Mizuno, Japan

A33. An empirical study on special needs education coordinators at a school in Japan
Sugiura Takanori, Takumi Iwaasa, Motoki Mizuno, Japan

A34. A study on the roles of student coach in university baseball
Koya Kanno, Motoki Mizuno, Jun Egawa, Japan

A35. The design process of an ergonomic housing prototype
Francesco Spagnoli, Italy

Interactive Poster Demonstrations

B1.   The effect of anthropomorphization and gender of a robot on human-robot
       interactions
          Hongjun Ye, Haeyoung Jeong, Wenting Zhong, Siddharth Bhatt, Kurtulus Izzetoglu,
          Hasan Ayaz, Rajneesh Suri, USA
B2.   Anthropometric analyses of head and face shape to design protective head gear for U. S.
       Army personnel
          Hyegjoo Choi, Todd Garlie, Joseph Parham, USA
B3.   Proposal for empowering teams for the purpose of identification of deviations and
       elimination of accidents
          Ricardo Sousa, Diego Sousa, Cristiane Maia, Brazil
B4.   A study of the correlation between payload and whole-body vibration of a scooter rider
          Shih-Yi Lu, Yen-Hui Lin, Taiwan
B5.   The effect of visual cue on the sense of presence and simulator sickness in a flight
       simulator
          Jiwon Kim, Jinhyung Kim, Taezoon Park, South Korea
B6.   Ejection seat posture modeling: Constructing fidelity profiles for verified JPATS manikins in
       the RAMSIS digital human modeling system
          Jeffrey Hudson, Jennifer Whitestone, Max Grattan, Lori Brattin, Andrew Koch, USA
B7.   The investigation of developing a computer detective game for science education
          Fu-Hsing Tsai, Taiwan
B8.   Empirical validation of a checklist for heuristic evaluation of automated vehicle HMIs
          Yannick Forster, Sebastian Hergeth, Frederik Naujoks, Josef Krems,
          Andreas Keinath, Germany
B9.   Improvement of pointing operation ability of the cerebral palsies by adjustment of D/C ratio
          Hiromi Nishiguchi, Japan
B10.   Adaptive Serious Gaming for the acquisition of cognitive skills
          Gabrielle Teyssier-Roberge, Sébastien Tremblay, Canada
B11.   Improvements in a wearable device for sign language translation
          Francesco Pezzuoli, Dario Corona, Maria Letizia Corradini, Italy
B12.   Self-monitoring of blood glucose device interaction: The elderly user experience and
       clinicians perspective.
          Stephanie Daphne Prado-Jimenez, Rosa Rosales-Cinco, Carlos Aceves-Gonzalez,
          Alexandra Lang, Mexico/UK
B13.   Integrated sensor platform for human-centric performance measurement in cyber
       operations
          Harry Li, Sarah McGuire, Vincent Mancuso, Paul Picciano, Diane Staheli, USA
B14.   Mechanical mismatch in modern human simulants
          Emily Eickhoff, Kimberly Hallett, Rod Jose, USA
B15.   The influence of noise-stress factor in the environment on the human body
          Larisa Hambardzumyan, Armenia
B16.   Evaluation of range of motion and muscle performance while wearing different fire fighters
       station uniform
          Su-Young Son, Yutaka Tochihara, South Korea
B17.   The application of lifecycle design strategy in interaction design
          Chengcheng Liu, Yang Zhao, China
B18.   A new evaluation method for conceptualization and abstract reasoning using near infra-red
       spectroscopy
          Kota Kano, Hisaya Tanaka, Japan
B19.   An interaction evaluation of brain-computer interface using correlation analysis on
       information transfer rate and motor operating feeling
          Yuki Shimizu, Hisaya Tanaka, Japan
B20.   The relationship with communication network and healthy state using voice and attribute
       information in the nursing organization
          Yuki Mizuno, Motoki Mizuno, Yasuyuki Yamada, Yasuyuki Hochi, Emiko Togashi,
          Hidenori Hayashi, Kentaro Inaba, Hideko Aida, Aya Okada, Japan

B21. Developing a prototype of training task for acquiring knowledge for extracting hazards
Takayuki Masuda, Ayanori Sato, Japan

B22. Changes and differences in mental status of nurses: Using mind monitoring system by voice
Takumi Iwaasa, Yasuyuki Yamada, Yasuyuki Hochi, Yuki Mizuno, Emiko Togashi, Hidenori Hayashi, Aya Okada, Motoki Mizuno, Japan

B23. An empirical study of information visualization for decision support in an emergency department information system
Quaneisha Jenkins-Penha and Steven Jiang, USA

B24. Explicit forward glance duration hidden Markov model for inference of spillover detection
Hyoshin Park, Nigel Pugh, Larkin Folsom, Justice Darko, Siby Samuel, USA

B25. Influence of location and frequency variations of binaural electrostimulation on heart rate variability
Jing-Shia Tang, Nan-Ying Yu, Fang-Hsin Lee Lee, Chi-Wen Lung, Liang-Cheng Lee, Ben-Yi Liau, Chien-Liang Chen, Taiwan

B26. Test-retest differences in vigilance outcomes: Session effects on performance, stress, cerebral hemovelocity, and workload
Samantha Smith, William Helton, Gerald Matthews, Greg Funke, USA

B27. Graphic-semantic expressions map: A new tool on design teaching
Cátia Rijo, Portugal

B28. A measurement system for delay-time of gait event due to a dual task during walking
Jinseung Choi, Jeongwoo Seo, Jinsoo Lee, Gunggil Kim, Taeho Kim, Gyerae Tack, South Korea

B29. Prefilled pen for convenient self-injection by patients with rheumatoid arthritis: Results of a usability study and compliance survey
Tomohiko Yoshida, Akira Sagawa, Ikuko Masuda, Takaaki Fukuda, Toshihiko Hibino, Japan

B30. A research on floor slip resistance of long-term care institution in Taiwan
Chingchung Chen, Zhi Xuan Chen, Chih-Yong Chen, Liwen Liu, Ei-Wen Lo, Taiwan

B31. Characterization of trunk movement patterns in warehouse workers using wearable inertial measurement units: A case study
Micaela Porta, Simone Arena, Pier Francesco Orrù, Massimiliano Pau, Italy

B32. The effects of university student's physical activity experience on communication skills and anxiety
Jun Egawa, Yasuyuki Hochi, Takumi Iwaasa, Emiko Togashi, Kentaro Inaba, Motoki Mizuno, Japan

B33. Review of followership in sports
Kentaro Inaba, Takumi Iwaasa, Motoki Mizuno, Japan

B34. Communication skill and form of nursing organization in Japan
Motoki Mizuno, Yuki Mizuno, Yasuyuki Yamada, Yasuyuki Hochi, Emiko Togashi, Takumi Iwaasa, Aya Okada, Japan

Interactive Poster Demonstrations

C1. Self-similarity based multi-layer DEM image upsampling algorithm
Xin Zheng, Ziyi Chen, Qinzhe Han, Xiaodan Deng, Xiaoxuan Sun, Qian Yin, China

C2. Organizational resilience model in a nuclear power plant
Licao Dai, China

C3. Affective design of a tailor made product led by insights from big data
Yan Li, Pei Liang, Peiguo Wang, Danqing Shi, Kai Cheng, China

C4. Designing telemedicine technology to improve medication adherence for elderly cancer patients
Karthik Adapa, Lukasz Mazur, Prithima Mosley, USA

C5. Physiological indicators of mental workload in visual display terminal work
Yi Ding, Yaqin Cao, Yi Wang, China

C6. Simulated marksmanship performance methodology: Assessing lethality, mobility, and stability across the preparation, execution and recovery stages of a military field training exercise
Stephanie A. T. Brown, Jose Villa, Erika Hussey, John Ramsay, K. Blake Mitchell, USA

C7. Study on interaction design of SANGFOR Institute based on mental model
Honglei Wang, Long Ren, Chenyue Sun, Hongzhi Pan, Jiali Zhang, China

C8. Universal signaling based on the articulation between the ergonomic practices and the perception of the visually impaired
Luís Rocha, Thaila dos Santos Lima, Brazil

C9. Using gamified solutions in pediatric diabetes self-management: A literature review
Maryam Attef, Eileen Harris, Canada

C10. Preliminary development of an integrated mobility, lethality, and survivability soldier performance testing platform
Stephanie Brown, K. Blake Mitchell, USA

C11. Professional portfolio of the preschool teacher: What is the real content?
Petra Trávníčková, Czech Republic

C12. Study on the perception characteristics of different populations to thermal comfort
Wang Rui, Wei Li, Chaoyi Zhao, Qi Yun, China

C13. Social media competition for user satisfaction: A niche analysis of Facebook, Instagram, YouTube, Pinterest, and Twitter
Sang Hee Kweon, Boyoung Kang, Se-Jin Kim, Liyao Ma Ma, South Korea

C14. Physiological evaluation of a non-invasive wearable vagus nerve stimulation (VNS) device
Park Se Jin, Hong Seung Hee, Kim Da Mee, Seo Young, Iqram Hussain, Min Kyu Kim, South Korea

C15. Research on thermal comfort equation of comfort temperature range based on Chinese thermal sensation characteristics
Wang Rui, Chaoyi Zhao, Wei Li, Qi Yun, China

C16. Mapping digital media content
Stella Angova, Svetla Tsankova, Martin Ossikovski, Maria Nikolova, Ivan Valchanov, Bulgaria

C17. Smartphone map application for preventing distracted walking in towns
Mitsuhiko Karashima, Tomoki Kamiyama, Hiromi Nishiguchi, Japan

C18. Applied cognitive ergonomics to human error reduction in the supply chain: The case of the picking operation of a food distribution company
Martha Caro, Leonardo Quintana, Juan Castillo, Colombia

C19. Follow me - Collaboration between human workers and autonomous transport vehicles for better process integration
Thomas Kirks, Jana Jost, Jan Finke, Preity Gupta, Germany

C20. Injury severity analysis in truck-involved crashes using ordered probit model
Chanmo Kang, Younshik Chung, South Korea

C21. A data mining and knowledge discovery model for improving strategic decisions in education sector: Jordan case
Suad Alramouni, Saudi Arabia

POSTER/DEMONSTRATION SESSIONS, SATURDAY, JULY 27
Time: 10:00 - 12:30
Room: Columbia West (Terrace Level)

C22. Experience of the development of computer break reminders for prolonged-sitting computer users.
Sy-Chyi Wang, Jin-Yuan Chern, Taiwan

C23. Impact of origami/kirigami light-filtering blinds on user cognition and affect
Denise A. Baker, Samuel Cacy, Emily Jeanise, USA

C24. An eye tracking study on gender aspects in the ergonomics of human-computer interaction
Jenny Stein, Lilia Lajmi, Germany

C25. Microstructure and mechanical properties of additively manufactured hierarchical Fe-Cr-Mn alloys
Byoungchul Hwang, South Korea

C26. Identification of the relationships between a vocal attribute and a personality
Kimberly Brotherton, Jangwoon Park, Dugan Um, Mehrube Mehrubeoglu, USA

C27. Development of a sleep monitoring system by using a depth sensor: A pilot study
Jangwoon Park, Jungyoon Kim, Jaehyun Park, Alaa Sheta, Christina Murphey, Dugan Um, USA

C28. Future research methods of landscape design based on big data
Jingcen Li, China

C29. Promoting the international competitiveness of Beijing cultural brands: The place-of-origin perspective
Maggie Wenjing Liu, China

C30. Assessment of wellbeing parameters in the factories of the future – Comparison between levels of automation and activity level
Maria Kreusslein, Sebastian Mach, Franziska Schmalfuß, Michael Bojko, Ralph Riedel, Matthias Beggiato, Josef Krems, Germany

C31. Facial recognition on cloud for android based wearable devices
Zeeshan Shaukat, Chuangbai Xiao, M. Saqlain Aslam, Qurat ul Ain Farooq, Sara Aiman, China

C32. A study on exposure of workers to the risks arising from physical agents in the olive sector in Andalusia (South Spain)
Raquel Nieto-Álvarez, María Dolores Martínez-Aires, Diego P. Ruiz, María Luisa de la Hoz-Torres, Antonio J. Aguilar-Aguilera, Spain

C33. Perceptions of multilevel safety and health outcomes in two rail company divisions differentiated by novel objective safety indicators
Michael Steer, James Morgan, Matteo Curcuruto, UK

C34. Accident analysis of human causal factors in the oil and gas industry from 2013 to 2017 using the HFACS-OGI framework
Chizaram Nwankwo, UK

Interactive Poster Demonstrations

D1.   Fuzzy modeling for decision-making of behaviors corresponding to industrial accidents involving hazardous materials
        Jianfeng Zhou, China

D2.   Ontological description of the basic skills of surgery
        Kazuhiko Shinohara, Japan

D3.   Measurement of public light pollution on human subjective perception
        Tzu-Ying Chuang, Shih-Yi Lu, Yen-Hui Lin, Taiwan

D4.   Robotic monocular SLAM in wastewater treatment plants with a sampling device
        Edmundo Guerra, Yolanda Bolea, Rodrigo Munguia, Antoni Grau, Spain/Mexico

D5.   The influence of mixed reality applied to industrial design education for students' different learning styles
        Po Ying Chu, Li-chieh Chen, Kuan-Ming Wang, Taiwan

D6.   A study on tea drinking experience factors of Kong Fu tea in Southern Fujian Province of China
        Biyun Hong, Taiwan

D7.   Automated design of competence-oriented student models using the tutoring integrated expert systems
        Galina Rybina, Elena Fontalina, Russia

D8.   A study of user experience of angle recognition designed to correct people's poor posture when using smart phones
        Shuyuan Zhang, Zhanxun Dong, China

D9.   The ergonomic design of wearable robot based on the shoulder kinematic analysis by walking speed
        Seung-Min Mo, Jaejin Hwang, Jae Ho Kim, Myung-Chul Jung, South Korea

D10. Usability evaluation of different interaction modes based on washing machine controlled area
        Yuan Cao, Renke He, China

D11. Countries development status and driver behavior
        Manon Limousis-Gayda, Rami Hashish, Felix Lee, USA

D12. Influence of work boot style on stair climbing
        Lydia Kocher, Jonisha Pollard, USA

D13. Effects of working posture on force perception during manual pushing tasks
        Atsushi Sugama, Akiko Takahashi, Akihiko Seo, Japan

D14. Application of economic and legal instruments at the stage of transition to bioeconomy
        Nazariy Popadynets, Valentyna Yakubiv, Olena Panukhnyk, Yana Fedotova,
        Iryna Hryhoruk, Yuliia Maksymiv, Svitlana Shults, Iryna Bilyk, Rostyslav Bilyk, Ukraine

D15. Use of active test objects in security systems
        Marina Boronenko, Yuri Boronenko, Vladimir Zelenskiy, Elizabeth Kiseleva, Russia

D16. Satisfying product features of a dementia care support smartphone app and potential users' willingness to pay: Web-based survey among older adults
        Robert Chauvet, Peter Rasche, Zavier Berti, Matthias Wille, Laura Barton,
        Katharina Schäfer, Christina Bröhl, Sabine Theis, Christopher Brandl, Verena Nitsch,
        Alexander Mertens, Germany

D17. Application of SHERPA in boarding procedure of blind passengers in airports
        Natalha Carvalho, Rapinder Sawhney, Claudia Lysia Araujo, Bernardo da Fonseca,
        Nelson Matias, Brazil

D18. Exploring the relationship between shape of smartphone and identity
        Koki Chiba, Namgyu Kang, Japan

D19. Identification of cognitive feature functions according to changes of vibration stimuli

Mi-hyun Choi, South Korea

D20. The power of game in inclusive education
Francesca Bozza, Italy

D21. NAVAIR human systems 4.6 digital human modeling project update
Lori Brattin Basham, Andrew Koch, Barry S. Shender, Jeffrey Hudson, Jennifer Whitestone, Max Grattan, USA

D22. Effect of working posture and mental workload on computer workers physiological responses
Hsieh-Ching Chen, Taiwan

D23. Proposal of information analysis system on latent human error
Tatsuya Shimada, Riku Tsunori, Kasumi Koike, Yusaku Okada, Japan

D24. The teacher's role before the new era of technology in education
Selene Margarita Vázquez Soto, Miguel Ángel Cruz Domínguez Hernández, Abelardo Rivera Corsi, Mexico

D25. Evaluating human factors for drone operations using simulations and standardized tests
Daniela Doroftei, Hans De Smet, Belgium

D26. Social and economic principles of single mothers' support in Ukraine
Oxana Kravchenko, Natalia Koliada, Alla Voitovska, Ukraine

D27. Invasive medical device for cardiovascular surgery
Ene Alexandra, Carmen Mihai, Romania

D28. A method for the inclusion of human factors in system design via use case definition
Christina Dent, Shahram Sarkani, Thomas Mazzuchi, USA

D29. A systematic review of healthcare-associated infectious organisms in medical radiation science departments: Initial findings
D'arcy Picton-Barnes, David Lyall, Manikam Pillay, Australia

D30. Study on the changes of physical status under the condition of lacking food and water on oxygen-deficient plateau
Xingwei Wang, Lue Deng, Hailiang Zhou, Qin Yao, Heqing Liu, Weiping Bu, Yongchang Luo, China

D31. A featured based approach to assess visual discriminate capability for industrial applications
Enas Aref, Tycho Fredericks, Lee Wells, USA

D32. Effects of non-driving-related tasks on driver fatigue in automated driving
Sang Min Ko, Jong Kyu Choi, Yong Gu Ji, South Korea

D33. Assessment of the hospital disaster staffing plan: Vactors affecting purposeful/involuntary absence and late arrival
Taro Kanno, Kazumi Kajiyama, Ryoko Ikari, Sachika Sharikura, Japan

D34. Automatic assessment of upper limb work-related musculoskeletal risk based on wearable sensors data
Marcela Aguirre, Alejandro Lavado, Mauricio Cerda, Chile

Interactive Poster Demonstrations

E1. The development of the theory of quality assessment of the information, taking into account its structural component
> Olga Popova, Boris Popo, Yury Shevtsov, Vladimir Karandey, Vladimir Klyuchko, Russia

E2. Blindsided by music: A driving simulator study employing eye tracking with music background
> Dana Olivieri, Eugene Chekaluk, Warren Brodsky, Israel

E3. Design and research of outdoor rescue products based on vital signs and cognitive orientation
> Wenjing Wang, China

E4. Design research on storage space product service system for automobile passenger transport
> Wanqiang Li, Jie Zhou, China

E5. Robots and human interaction in a furniture manufacturing industry - risk assessment
> Ana Colim, Susana Costa, André Cardoso, Pedro Arezes, Cláudia Silva, Portugal

E6. Quality of labor life in workers of the informal economy in Guadalajara, Mexico
> Raquel Gonzalez-Baltazar, Monica I. Contreras-Estrada, Silvia G. Leon-Cortes, Brenda J. Hidalgo-Gonzalez, Gustavo Hidalgo-Santacruz, Mexico

E7. Identifying influencing factors affecting pedestrians' willingness to interact with driverless vehicles
> Mattie Milner, Scott Winter, Stephen Rice, Connor Rice, Nadine Ragbir, Bradley S. Baugh, USA

E8. "Should we allow him to pass?" Increasing cooperation between truck drivers using anthropomorphism
> Jana Fank, Leon Santen, Christian Knies, Frank Diermeyer, Germany

E9. The diffusion of news applying sentiment analysis and impact on human behavior through social media
> Myriam Peñafiel, Rosa Navarrete, Maritzol Tenemaza, Stefanie Vasquez, Diego Vásquez, Sergio Luján-Mora, Ecuador

E10. Gait monitoring system for stroke prediction of aging adults
> Hongkyu Park, Seunghee Hong, Iqram Hussain, Damee Kim, Young Seo, Se Jin Park, South Korea

E11. Mental health, trust, and robots: Towards understanding how mental health mediates human-automated system trust and reliance
> Jordan Reece Crawford, Ella-Mae Hubbard, Yee Mey Goh, UK

E12. Driving simulator validation of surface electromyography controlled driving assistance for bilateral transhumeral amputees
> Edric John Nacpil, Tsutomu Kaizuka, Kimihiko Nakano, Japan

E13. Text entry performance on an expandable socket attached smartphone in stationary and mobile settings
> Satvik Kulshreshtha, Ahmed Arif, USA

E14. The role of individual differences in cognitive focus and control on medication procedural performance following clinical task interruptions
> Craig Williams, Phillip Morgan, UK

E15. Clarifying the concept of OHS culture: Literature review and concept map
> Geneviève Jourdain, Canada

E16. Digital-age consumers' retail brand loyalty: Do physical stores matter?
> Benjamin Larson, Wi-Suk Kwon, USA

E17. Aircraft systems and passenger willingness to fly in autonomous air taxis
> Kenneth Ward, Scott Winter, Stephen Rice, USA

E18. The effect of various handling tasks for musculoskeletal system of care workers
> Shu-Zon Lou, Cheng-Lung Lee, JiaYuan You, YuChi Chen, Taiwan

E19. The evolution of pre-school and elementary school teachers' career trajectories – career beginnings and ambitions
Beata Deutscherova, Adriana Wiegerova, Czech Republic

E20. A study on the accuracy improvement of traffic flow estimation using ADAS cameras with VISSIM
Hoe Kyoung Kim, Minjeong Kim, Dae Han Jeong, Kim Ah Reum, South Korea

E21. The importance of didactic toys in kindergarten educational process
Barbora Petrů Puhrová, Hana Navratilova, Czech Republic

E22. Fictional space in movies and video-games: Similarities and approaches in their fictional world's conception
Carlos Figueiredo, Inês Coimbra, Portugal

E23. Development of ergonomic swimming goggles based on benchmarking and 3D facial scan
Jangwoon Park, Waranya Khamnasak, Jared Crawford, Justin Bonds, Elsy Hernandez, Mehrube Mehrubeoglu, USA

E24. Crisis management and human resource development: Towards research agenda
Nor Amira Syairah Zulkarnaini, Roziana Shaari, Azlineer Sarip, Malaysia

E25. NeuroSquare: A flow-based visual programming tool for neurofeedback application development
Ajay Mehul, Bryan Hernandez, Chris Crawford, USA

E26. Validation of employee engagement framework
Abdulmohsan Almotawa, Roziana Shaari, Malaysia

E27. Spatial degradation of color discrimination in augmented reality
Brian Flowers, Arthur Wollocko, Caroline Kingsley, Elizabeth Thiry, Michael Jenkins, USA

E28. A framework to improve evaluations of novel decision support tools
Jesslyn Alekseyev, USA

E29. Visionaria. An open design approach for the regeneration of historical urban heritage
Daniele Rossi, Michele Calvano, Davide Paciotti, Italy

E30. Towards an accessible UX for people with disabilities in open educational resources websites
Rosa Navarrete, Myriam Peñafiel, Maritzol Tenemaza, Sergio Luján-Mora, Ecuador

E31. "Possible but improbable spaces:" From interior design experience to jewelry creation
Mónica Romãozinho, Portugal

E32. In-class competition-based assessment for effective learning
Mei King Yang, Ki Lam, China

E33. Serrated and finned glazed facades' impact on the user's visual comfort
Marcin Brzezicki, Poland

E34. How ergonomics is contributing to overall equipment effectiveness: A case study
Isabel Loureiro, Celina Leão, Nelson Costa, Mariana Rodrigues, Portugal

E35. Cybersickness among gamers: An online survey
Stanislava Rangelova, Daniel Motus, Elisabeth André, Germany

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Applied Human Factors and Ergonomics

Proceedings of the 10th International Conference on Applied Human Factors and Ergonomics
(AHFE 2019) and the Affiliated Conferences
July 24-28, 2019, Washington Hilton, Washington D.C. USA

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This set of 25 volumes gathers the proceedings of the 10th International Conference on Applied Human Factors and Ergonomics (AHFE 2019) and the Affiliated Conferences, held July 24-28, 2019, at Washington Hilton, Washington D.C. USA. By highlighting the latest theories and models, as well as cutting-edge technologies and applications, and by combining findings from a range of disciplines including engineering, design, robotics, healthcare, transportation, simulation, management and computer science, the set provides researchers and practitioners alike with a comprehensive, timely guide on human factors research and applications. It also offers an excellent source of innovative ideas to stimulate future discussions, collaborations and developments.

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C. Or, Hong Kong
L. Page, USA
S. Prineas, Australia
E. Suhir, USA
P. Trucco, Italy

CROSS-CULTURAL DECISION MAKING

A. Murata, Japan

J. Appleget, USA
M. Alama, USA
U. Asgher, Pakistan
E. Cakit, Turkey
V. Cavojova, Slovakia
A. Divakaran, USA
T. Doi, Japan
C. Fidopiastis, USA
J. Frank, USA
M. Hail, USA
A. Heaton, USA
M. Hoffman, USA
A. Itoh, Japan
D. King, USA
M. Kruger, USA
S. Numrich, USA
N. Okabe, Japan
J. Pfautz, USA
P. Picucci, USA
E. Raybourn, USA
E. Reitz, USA
A. Ruvinsky, USA
L. Saner, USA
D. Scapin, France
S. Schatz, USA
J. Stodd, UK
R. Taiar, France
J. Urakami, Japan

USABILITY & USER EXPERIENCE

C. Falcão, Brazil
T. Ahram, USA

H. Alnizami, USA
W. Friesdorf, Germany
S. Fukuzumi, Japan
S. Hignett, UK
W. Hwang, S. Korea
Y. Ji, Korea
B. Jiang, Taiwan
G. Joyce, UK
C. Khong, Malaysia
Z. Li, PR China
N. Matias, Brazil
A. Moallem, USA
B. Mrugalska, Poland
F. Rebelo, Portugal
V. Rice, USA
E. Rossi, Italy
J. Sheikh, Pakistan
A. Yeo, Malaysia
W. Zhang, PR China

HUMAN FACTORS AND SIMULATION

D. Cassenti, USA

H. Alnizami, USA
J. Arora, USA
R. Bhatt, USA
P. Craven, USA
B. Eiter, USA
B. Gore, USA
J. Irizarry, USA
T. Jastrzembski, USA
C. Neubauer, USA
D. Patton, USA
B. Perelman, USA
J. Ralph, USA
T. Sotomayor, USA
S. Su, USA
M. Sun, USA
J. Wright, USA
Z. Yang, USA

HUMAN FACTORS IN MANAGEMENT AND LEADERSHIP

S. Nazir, Norway

N. Baporikar, India
T. Barath, Hungary
C. Barsky, USA
R. Batko, Poland
R. DeCoster, UK
S. Donovan, USA
S. Glazek, Poland
W. Grudzewski, Poland
I. Hejduk, Poland
T. Kesting, Germany
M. Kitada, Sweden
Y. B. Kurata, Philippines
K. Makino, Japan
A. Meszaros, Hungary
M. Nowak, Poland
S. Pickl, Germany
A. Rucinski, USA
A. Szopa, Poland
P. Vilarinho, Portugal
T. Winkler, Poland

INDUSTRIAL COGNITIVE ERGONOMICS AND ENGINEERING PSYCHOLOGY	NEUROERGONOMICS AND COGNITIVE ENGINEERING	ERGONOMICS IN DESIGN
U. Asgher, Pakistan	**H. Ayaz, USA**	**M. Soares, Brazil** **F. Rebelo, Portugal**

U. Asgher, Pakistan

E. Abdi, USA
J. Arzola-Ruiz, Cuba
Y. Ayaz, Pakistan
V. Babenko, Ukraine
V. V. Estrela, Brazil
F. B. Guo, UK
I. Jurčić, Bosnia and Herzegovina
M. J. Khan, Pakistan
T. Kim, Norway
R. Moraru, Romania
N. Naseer, Pakistan
H.-D. Nguyen, Vietnam
N. Oka, Japan
A. Przegalinska, USA
R. B. Rusli, Malaysia
H. Santosa, USA
S. Serino, Italy
S. Shirayama, Japan
S. B. Sial, Pakistan
S. Stankovic, France
R. Taiar, France
J. Wang, China
D. Zhang, P. R. China

H. Ayaz, USA

H. Adeli, USA
C. Baldwin, USA
W. Bennett, USA
A. Burov, Ukraine
P. Choe, Qatar
M. Cummings, USA
F. Dehais, France
C. Forsythe, USA
X. Fang, USA
Q. Gao, China
K. Gramann, Germany
Y. Guo, USA
P. Hancock, USA
D. Kaber, USA
K. Kotani, Japan
B. Lawson, USA
S. Lee, Korea
H. Liao, USA
Y. Liu, USA
R. McKendrick, USA
J. Murray, USA
A. Ozok, USA
O. Parlangeli, Italy
S. Perrey, France
R. Proctor, USA
A. Savoy, USA
K. Vu, USA
T. Waldmann, Ireland
T. Ward, Ireland
B. Winslow, USA
G. Zacharias, USA
L. Zeng, USA
M. Ziegler, USA

M. Soares, Brazil
F. Rebelo, Portugal

P. Arezes, Portugal
A. Arruda , Brazil
E. Attaianese, Italy
E. Brangier, France
R. Bruder, Germany
M. Cairrão, Brazil
J. Canãs, Spain
M. Carvalho, Portugal
F. da Silva, Portugal
J. da Silva, Brazil
E. Duarte, Portugal
J. Duarte, Portugal
E. Filgueiras, Portugal
M. Goebel, South Africa
S. Karmakar, India
L. Macedo, Brazil
B. Mrugalska, Poland
M. Nagamachi, Japan
A. Neves, Brazil
P. Noriega, Portugal
M. Okimoto, Brazil
L. Paschoarelli, Brazil
L. Prado, Mexico
D. Raposo, Portugal
P. Ray, India
S. Singh, India
P. Soni, Thailand
S. Summerskill, UK
M. Sun, USA
P. Thaneswer, India
B. Thomas, The Netherlands
S. Ward, Australia
T. Yamaoka, Japan

HUMAN FACTORS IN AGING AND GERONTOLOGY

J. Kalra, Canada

J. Arora, USA
G. Montagna, Portugal
Y. Zhang, China

HUMAN FACTORS IN ENERGY: OIL, GAS, NUCLEAR AND POWER INDUSTRIES	HUMAN FACTORS IN SPORTS, INJURY PREVENTION AND OUTDOOR RECREATION	HUMAN FACTORS FOR APPAREL AND TEXTILE ENGINEERING
P. Fechtelkotter, USA	**R. Goossens, The Netherlands**	**G. Montagna, Portugal** **C. Carvalho, Portugal**

P. Fechtelkotter, USA

S. Al Rawahi, Oman
R. Boring, USA
P. Carvalho, Brazil
S. Cetiner, USA
D. Desaulniers, USA
G. Lim, USA
P. Liu, China
E. Perez, USA
L. Reinerman-Jones, USA
K. Söderholm, Finland

R. Goossens, The Netherlands

C. Dallat, Australia
C. Lung, Taiwan
R. Maciej Kalina, Poland
D. Morgan, Australia
T. Neville, Australia
E. Salas, USA
D. Simmons, UK
N. Stanton, UK
S. Talpey, Australia
G. Walker, UK
P. Waterson, UK

G. Montagna, Portugal
C. Carvalho, Portugal

L. Almeida, Portugal
A. C. Broega, Portugal
C. Figueiredo, Portugal
S. Heffernan, New Zealand
A. C. Marr, UK
C. Morais, Portugal
F. Moreira da Silva, Portugal
D. G. G. Ramos, Portugal
M. A. Sbordone, Italy

AFFECTIVE AND PLEASURABLE DESIGN

S. Fukuda, Japan

A. Aoussat, France
S. Bahn, Korea
L. Chen, Taiwan
K. Cho, Korea
S. Choi, USA
D. Coelho, Portugal
O. Demirbilek, Australia
M. Feil, USA
A. Freivalds, USA
Q. Gao, China
R. Goonetilleke, Hong Kong
B. Henson, UK
A. Ho, Hong Kong
W. Hwang, Korea
Y. Ji, Korea
E. Jung, Korea
J. Kim, Korea
K. Kim, Korea
K. Kotani, Japan
S. Minel, France
K. Morimoto, Japan
M. Ohkura, Japan
T. Park, Korea
P. Rau, China
S. Schutte, Sweden
D. Shin, USA
A. Warell, Sweden
M. Yun, Korea

DIGITAL HUMAN MODELING AND APPLIED OPTIMIZATION

T. Alexander, Germany
S. Rajulu, USA

K. Bengler, Germany
C. Blais, USA
D. Bonin, Germany
B. Bradtmiller, USA
E. Brolin, Sweden
L. Fritzsche, Germany
S. Frohriep, Germany
B. Goldberg, USA
L. Hanson, Sweden
A Haslbeck, Germany
D. Högberg, Sweden
W. Huiskamp, The Netherlands
T. Huysmans, The Netherlands
M. Jones, USA
S. Pickl, Germany
M. Reed, USA
D. Regazzoni, Italy
S. Scataglini, Belgium
R. Sottilare, USA
M. Spitzhirn, Germany
A. Upmann, Germany
X. Wang, France
H.-J. Wirsching, Germany
S. Wischniewski, Germany

HUMAN FACTORS, SOFTWARE, AND SYSTEMS ENGINEERING

T. Ahram, USA

A. Al-Rawas, Oman
T. Alexander, Germany
S. Belov, Russia
O. Bouhali, Qatar
H. Broodney, Israel
A. Cauvin, France
S. Cetiner, USA
P. Fechtelkotter, USA
F. Fischer, Brazil
S. Fukuzumi, Japan
C. Grecco, Brazil
N. Jochems, Germany
G. J. Lim, USA
D. Long, USA
M. Mochimaru, Japan
C. O'Connor, USA
C. Orłowski, Poland
H. Parsaei, Qatar
S. Pickl, Germany
S. Ramakrishnan, USA
J. San Martin Lopez, Spain
K. Santarek, Poland
M. Shahir Liew, Malaysia
D. Speight, UK
M. Stenkilde, Sweden
T. Winkler, Poland
H. Woodcock, UK

DESIGN FOR INCLUSION

G. Di Bucchianico, Italy

A. Accolla, China
C. Aceves-Gonzalez, Mexico
D. Al Thani, Qatar
M. Carvalho, Portugal
R. De Coster, Portugal
R. Gheerawo, UK
J. Gilbert, USA
J. Herssens, Belgium
K. Kawahara, Japan
P. Kercher, Italy
T. Liu, USA
G. Mincolelli, Italy
F. Nickpour, UK
M. Zallio, Ireland

HUMAN FACTORS IN COMMUNICATION OF DESIGN

A. G. Ho, Hong Kong

S. H. Cha, Korea
E. Hung, Hong Kong
K. Kim, Korea
S. Lam, Hong Kong
K. H. Shim, USA
J. B. Shin, USA
M. Siu, Hong Kong
X. Y. Xin, Macau
J. Yeo, Singapore
C. J. Yun, USA

INTERDISCIPLINARY PRACTICE IN INDUSTRIAL DESIGN

C. Shin, USA
S. Shim, USA

Y. Choi, USA
K. Kim, Korea
M. Kim, USA
Y. Kim, USA
J. Park, USA
S. Shim, USA

Human Factors in Robots and Unmanned Systems

J. Chen, USA

M. Barnes, USA
P. Bonato, USA
G. Calhoun, USA
R. Clothier, Australia
N. Cooke, USA
L. Elliott, USA
D. Ferris, USA
J. Fraczek, Poland
J. Geeseman, USA
J. Gratch, USA
S. Hill, USA
E. Holder, USA
M. Hou, Canada
C. Johnson, UK
T. Kelley, USA
M. LaFiandra, USA
J. Lyons, USA
K. Neville, USA
J. Norris, USA
J. Pons, Spain
C. Stokes, USA
P. Stütz, Germany
R. Taiar, France
J. Thomas, USA
A. Trujillo, USA
A. Tvaryanas, USA
H. Van der Kooij, The Netherlands
H. Widlroither, Germany
H. Zhou, UK

Human Error, Reliability, Resilience, and Performance

R. Boring, USA

H. Blackman, USA
Y. Chang, USA
D. Gertman, USA
K. Groth, USA
X. He, Sweden
S. Hendrickson, USA
Y. Kim, Korea
B. Kirwan, France
K. Laumann, Norway
Z. Li, China
P. Liu, China
R. McLeod, UK
M. Merad, France
N. Meshkati, USA
A. Obenius-Mowitz, Sweden
J. Park, Korea
M. Pillay, Australia
A. Salway, Canada
C. Smidts, USA
O. Straeter, Germany
C. Taylor, Norway
P. Trbovich, Canada
M. Weinger, USA
A. Whaley, USA

Human Factors in Artificial Intelligence and Social Computing

T. Ahram, USA

A. Al-Rawas, Oman
T. Alexander, Germany
S. Belov, Russia
O. Bouhali, Qater
H. Broodney, Israel
A. Cauvin, France
S. Cetiner, USA
P. Fechtelkotter, USA
F. Fischer, Brazil
S. Fukuzumi, Japan
R. Goonetilleke, Hong Kong
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G. J. Lim, USA
S. Koley, India
D. Long, USA
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C. O'Connor, USA
C. Orłowski, Poland
H. Parsaei, Qatar
S. Pickl, Germany
S. Ramakrishnan, USA
J. S. M. Lopez, Spain
K. Santarek, Poland
M. Shahir Liew, Malaysia
D. Speight, UK
M. Stenkilde, Sweden
T. Winkler, Poland
H. Woodcock, UK

Social & Occupational Ergonomics

R.H.M. Goossens, The Netherlands

J. Charytonowicz, Poland
D. Horn, USA
S. Hwang, Taiwan
J. Kantola, Finland
B. Kleiner, USA
L. Pacholski, Poland
M. Robertson, USA
S. Saito, Japan
M. Smith, USA
H. Vanharanta, Finland
Z. Wisniewski, Poland
R. Yu, China

Human Factors and Wearable Technologies

T. Ahram, USA
C. Falcão, Brazil

A. Alomainy, UK
W. Asghar, USA
W. Friesdorf, Germany
S. Fukuzumi, Japan
S. Hignett, UK
W. Hwang, S. Korea
M. Ismail, Qatar
Y. Ji, Korea
B. Jiang, Taiwan
G. Joyce, UK
C. Khong, Malaysia
Z. Li, PR China
N. Matias, Brazil
V. Rice, USA
E. Rossi, Italy
M. ur Rehman, UK
A. Yeo, Malaysia
W. Zhang, PR China

Human Factors, Business Management and Society

J. Kantola, Finland
V. Salminen, Finland

T. Barath, Hungary
A. Bikfalvi, Spain
J. Bilbao, Spain
Y. Chang, Korea
T. Eklund, Finland
P. Helo, Finland
H. Kalkis, Latvia
C. Makatsoris, UK
E. Markopoulos, Greece
M. Naaranoja, Finland
P. Odrakiewicz, Poland
T. Reunanen, Finland
A. Segev, South Korea
A. Sivula, Finland

Human Factors in Transportation

N. Stanton, UK

Road and Rail

C. Allison, UK
G. Balbinotti, Brazil
K. Bengler, Germany
S. Birrell, UK
G. Burnett, UK
P. Chapman, UK
F. Chen, Sweden
D. Coelho, Portugal
B. Colucci Rios,
Puerto Rico
G. Craveur, France
L. Dickson-Bull, USA
L. Dorn, UK
I. Glendon, Australia
I. Grabarek, Poland
R. Grice, USA
R. Happee,
The Netherlands
S. Jamson, UK
D. Kaber, USA
J. Krems, Germany
M. Lenné, Australia
E. Macioszek, Poland
F. Mars, France
D. McAvoy, USA
A. Mills, UK
R. Philipsen, Germany
K. Revell, UK
R. Risser, Austria
P. Salmon, Australia
G. Sierpiński, Poland
S. ur Rehman, Sweden
D. Valdes Diaz,
Puerto Rico
G. Walker, Scotland
K. Young, Australia

Aviation

V. Banks, UK
M. Biella, Germany
C. Borst, The
Netherlands
T. Edwards, USA
M. Feary, USA
A. Haslbeck, Germany
B. Hooey, USA
J. Huddlestone, UK
D. Kaber, USA
A. Majumdar, UK
L. Martin, USA
J. Mercer, USA
M. Mulder,
The Netherlands
K. Plant, UK
J. Syversen, Norway
S. Verma, USA
K. Vu, USA
D. Yacht, USA

Maritime

A. Alkan, Turkey
D. Andrews, UK
G. Di Bucchianico, Italy
D. Gray, USA
M. Grootjen, The Netherlands
T. Koester, Denmark
S. MacKinnon, Canada
M. Musio Sale, Italy
S. Parisi, Greece
G. Praetorius, Sweden
A. Ratti, Italy
A. Roberts, UK
A. Vallicelli, Italy

Space
G. Musso, Italy
N. Currie-Gregg, USA

D. Bedini, Italy
J. Beierle, USA
T. Bernard, USA
R. Capra, Italy
M. Ferrino, Italy
E. Gaia, Italy
S. Hauplick, Austria
K. Latorella, USA
K. Nieuwenhuis,
The Netherlands
R. Ricci, Italy
A. Salatino, Italy
I. Schlacht, Italy
D. Tedone, Italy

Advanced Production Management and Process Control

B. Mrugalska, Poland

S. Ávila Filho, Brazil
M. Dragomir, Romania
M. Gibson, USA
A . Goto, Japan
A. Hamrol, Poland
A .A. M. Macias, Mexico
J. Niemann, Germany
T. Ota, Japan
S. Simani, Italy
Y. Tansel İÇ, Turkey
M. Wyrwicka, Poland

Additive Manufacturing, Modeling Systems and 3D Prototyping

M. Di Nicolantonio, Italy
E. Rossi, Italy

P. Barcarolo, Italy
M. Calvano, Italy
J. Keist, USA
J. Lagatta, Italy
F. O. Medola, Brazil
R. Narayan, USA
E. Pei, UK
P. Rao, USA
F. E. Sandnes, Norway
M. Wilson, UK

Kansei Engineering

M. Nagamachi, Japan
S. Ishihara, Japan

A. M. Lokman, Malaysia
Y. Matsubara, Japan
T. Tsuchiya, Japan

COGNITIVE COMPUTING AND INTERNET OF THINGS	HUMAN FACTORS IN TRAINING, EDUCATION, AND LEARNING SCIENCES	HUMAN FACTORS, ARCHITECTURE, SUSTAINABLE URBAN PLANNING AND INFRASTRUCTURE
H. Ayaz, USA	**S. Nazir, Norway**	**J. Charytonowicz, Poland** **C. Falcão, Brazil**
H. Alnizami, USA T. Alexander, Germany C. Baldwin, USA O. Bouhali, Qater H. Broodney, Israel F. Dehais, France K. Gramann, Germany R. McKendrick, USA S. Perrey, France S. Pickl, Germany S. Ramakrishnan, USA D. Speight, UK M. Stenkilde, Sweden A. Visa, Finland T. Ward, Ireland M. Ziegler, USA	S. Abramovich, USA D. Al Thani, Qatar T. Alexander, Germany T. Barath, Hungary J. Bartnicka, Poland J. Castro-Alonso, Chile R. D. Roper, USA J. Elliott, USA M. Freeman, USA A. Gronstedt, USA C. Madinger, USA S. Mallam, Norway B. Mansoor, Qatar C. McClernon, USA K. Moore, USA K. Orvis, USA B. Pokorny, USA D. Sampson, Greece J. Smith, Canada J. Syversen, Norway	C. Aigbavboa, South Africa A. Bonenberg, Poland W. Bonenberg, Poland B. Branowski, Poland A. Burov, Ukraine A. Drapella-Hermansdorfer, Poland K. Fross, Poland A. Jaglarz, Poland B. Kapitaniak, France L. Klimatskaya, Russia V. Kolbanov, Russia R. Masztalski, Poland A. Szpakov, Belarus R. Tarczewski, Poland E. Trocka-Leszczyńska, Poland J. Tymkiewicz, Poland E. Tytyk, Poland

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Conference
Track Chairs 2019

Conference Track	Chair/Co-Chairs
1st International Conference on Industrial Cognitive Ergonomics and Engineering Psychology	U. Asgher
1st International Conference on Human Factors for Apparel and Textile Engineering	G. Montagna C. Carvalho
2nd International Conference on Human Factors in Artificial Intelligence and Social Computing	T. Ahram
2nd International Conference on Kansei Engineering	M. Nagamachi S. Ishihara
2nd International Conference on Interdisciplinary Practice in Industrial Design	C. Shin S. Shim
2nd International Conference on Human Factors in Aging and Gerontology	J. Kalra
2nd International Conference on Additive Manufacturing, Modeling Systems and 3D Prototyping	M. Di Nicolantonio E. Rossi
2nd International Conference on Advanced Production Management and Process Control	B. Mrugalska
2nd International Conference on Human Factors and Assistive Technology	M. Okimoto
3rd International Conference on Human Factors and Wearable Technologies	T. Ahram C. Falcão
3rd International Conference on Human Error, Reliability, Resilience, and Performance	R. L. Boring
3rd International Conference on Human Factors in Communication of Design	A. G. Ho
3rd International Conference on Human Factors in Virtual Environments and Game Design	C. Falcao
4th International Conference on Human Factors and Simulation	D. Cassenti
4th International Conference on Cognitive Computing and Internet of Things	H. Ayaz
4th International Conference on Design for Inclusion	G. Di Bucchianico
4th International Conference on Human Factors in Management and Leadership	S. Nazir
5th International Conference on Human Factors in Cybersecurity	T. Ahram
5th International Conference on Human Factors, Business Management and Society	J. Kantola V. Salminen
5th International Conference on Human Factors and Systems Interaction	I. L. Nunes
5th International Conference on Human Factors in Robots and Unmanned Systems	J. Chen
5th International Conference on Human Factors in Sports, Injury Prevention and Outdoor Recreation	R. H. M. Goossens
5th International Conference on Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries	P. Fechtelkotter
5th International Conference on Human Factors in Training, Education, and Learning Sciences	S. Nazir
6th International Conference on Safety Management and Human Factors	P. Arezes
6th International Conference on Human Factors in Service, Software and Systems Engineering	T. Ahram
6th International Conference on Human Factors, Sustainable Urban Planning and Infrastructure	J. Charytonowicz C. Falcão
7th International Conference on Affective and Pleasurable Design	S. Fukuda
7th International Conference on Ergonomics In Design	M. Soares F. Rebelo
7th International Conference on Human Factors in Transportation	N. Stanton
7th International Conference on Human Factors in Transportation: Space	G. Musso N. Currie-Gregg
8th International Conference on Human Factors and Ergonomics in Healthcare and Medical Devices	N. Lightner
8th International Conference on Cross-Cultural Decision Making	A. Murata
8th International Conference on Digital Human Modeling and Applied Optimization	T. Alexander S. Rajulu
10th International Conference on Physical Ergonomics and Human Factors	R. Goonetilleke
10th International Conference on Usability & User Experience	C. Falcão T. Ahram
10th International Conference on Neuroergonomics and Cognitive Engineering	H. Ayaz
10th International Conference on Social & Occupational Ergonomics	R. Goossens
20th International Conference on The Human Aspects of Advanced Manufacturing (HAAMAHA): Manufacturing Enterprises in a Digital World	S. Trzcielinski W. Karwowski

Exhibits

Exhibit Space	Company Name and Web Site
111-112	Springer International Publishing AG - www.springer.com
106-107	CRC Press - Taylor & Francis - www.taylorandfrancis.com
110	3dMD - www.3dmd.com
104	BIOPAC Systems & fNIR Devices - www.biopac.com
105	Smart Eye - www.smarteye.se
108	Noldus Information Technology - www.noldus.com
109	TEA - Tech Ergo Applications - teaergo.com
103	AHFE 2020 - www.ahfe.org
102	MEDIKNOX - www.mediknox.com
101	IHSED 2019 - www.ihsed.org
101	IHSI 2020 - www.ihsint.org

Layout
Conference Exhibition and Poster Sessions

Exhibition Schedule

Exhibition Setup:
Thursday, 25 July, 12:00 to 16:00
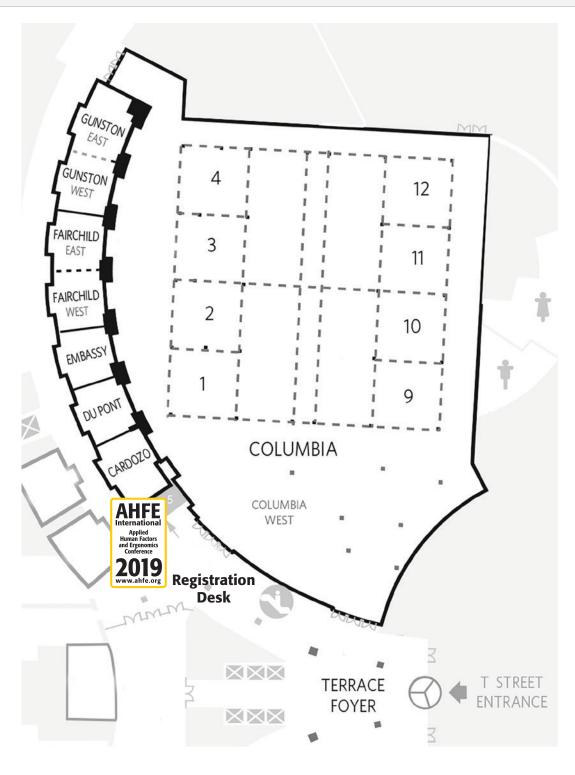Friday, 26 July, 8:00 -10:00

Exhibition Hours:
Thursday, 25 July, 19:00 to 21:00 (Optional)
Friday, 26 July, 10:00 to 17:00
Saturday, 27 July, 10:00 to 17:00
Sunday, 28 July, 10:00 to 14:00

Exhibition Closing/Dismantle:
Sunday, 28 July, 14:00 to 16:00

All conference exhibits, posters/demonstrations, and conference refreshment breaks will be held in the **Columbia West** (Terrace Level) at Washington Hilton.
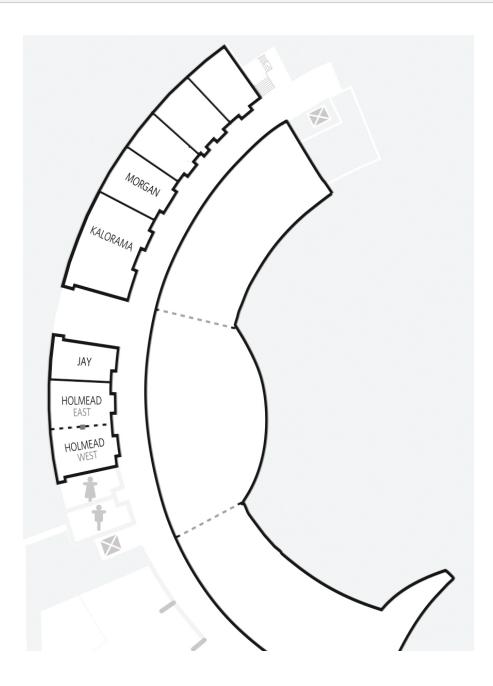

COLUMBIA WEST
(TERRACE LEVEL)

Terrace Level
Washington Hilton

LOBBY LEVEL
WASHINGTON HILTON

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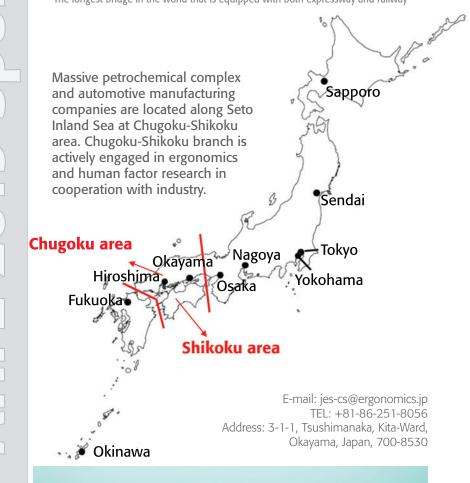
Notes

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Massive petrochemical complex and automotive manufacturing companies are located along Seto Inland Sea at Chugoku-Shikoku area. Chugoku-Shikoku branch is actively engaged in ergonomics and human factor research in cooperation with industry.

Sapporo

Sendai

Chugoku area

Okayama · Nagoya · Tokyo

Hiroshima · Osaka · Yokohama

Fukuoka ·

Shikoku area

Okinawa

E-mail: jes-cs@ergonomics.jp
TEL: +81-86-251-8056
Address: 3-1-1, Tsushimanaka, Kita-Ward,
Okayama, Japan, 700-8530

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