

Human Factors and Ergonomics Society Annual Meeting 2019

Seattle, Washington, USA
28 October - 1 November 2019

Volume 1 of 4

ISBN: 978-1-7138-1040-7

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Published by Sage Publications USA

Copyright© (2019) by Transportation Research Board of the National Academies
All rights reserved.

ISBN (Print) 978-1-7138-1040-7

Printed with permission by Curran Associates, Inc. (2020)

For permission requests, please contact sagepub.com/journals-permissions

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

A1 - PANEL ON AGING-IN-PLACE WITH DISABILITY

A PANEL DISCUSSION ON HUMAN FACTORS CONSIDERATIONS FOR PERSONS AGING-IN-PLACE WITH DISABILITY	1
<i>Jenay M. Beer, Wendy A. Rogers, Jon A. Sanford, Elena T. Remillard, Carolyn Phillips, Margaret Campbell</i>	

A2 - AGING-IN-PLACE AND HOME (HEALTH) MANAGEMENT

AN AGING-FOCUSED HEURISTIC EVALUATION OF HOME AUTOMATION CONTROLS.....	6
<i>Jeremy Lopez, Claire Textor, W. Braxton Hicks, Makenzie Pryor, Anne Collins McLaughlin, Richard Pak</i>	
PERCEPTIONS FROM PEOPLE AGING WITH A MOBILITY IMPAIRMENT TOWARDS USING TELE-TECHNOLOGY FOR EXERCISE.....	11
<i>George Mois, Taylor E. Mackin, Amber Datta, Lyndsie M. Koon, Wendy A. Rogers, Tracy L. Mitzner, Jenay M. Beer</i>	
COMBINING HEALTH COACHING WITH TELEHEALTH: A SCOPING REVIEW	16
<i>Carl Markert, Arjun H. Rao, Farzan Sasangohar</i>	
CONCEPTUALIZING CAREGIVER WORKLOAD: AN EXPLORATORY STUDY GUIDED BY NASA TLX.....	17
<i>R.A. Rutkowski, S. Ponnala, J. Gonzalez-Vargas, A. Gilmore-Bykovskyi, L. Block, A.J. Kind, N.E. Werner</i>	

A3 - DRIVING, OCCUPATIONAL, AND CONVERSATIONAL/SPEECH SYSTEMS FOR OLDER ADULTS

DRIVEN TO COMMENT: LEARNING FROM OLDER DRIVERS IMPRESSIONS OF IN-VEHICLE TECHNOLOGIES.....	22
<i>Clara Louise Lopes, Gus G. Erickson, Joel M. Cooper, Camille L. Wheatley, David L. Strayer</i>	
OLDER DRIVERS' DIFFERENTIAL PERFORMANCE ACROSS HAZARDOUS SCENARIOS	27
<i>Jonathan Kasko, HeeSun Choi, Jing Feng</i>	
THE INFLUENCE OF DIFFERENT WEIGHT CARRYING METHODS ON HUMAN GAIT AND BALANCE DURING OBSTACLE NEGOTIATION	32
<i>Fang Yang, Junxia Zhang, Wayne Giang, Mustafa Yerebakan, Boyi Hu</i>	
THE EFFECT OF EXTERNAL WEIGHT DISTRIBUTION ON MUSCLE ACTIVATION PATTERN DURING OBSTACLE NEGOTIATION FOR MALE PARTICIPANTS	37
<i>Guofu Yi, Xinting Wang, Junxia Zhang, Shuai Hao, Boyi Hu</i>	
AUTOMATED SPEECH RECOGNITION SYSTEMS AND OLDER ADULTS: A LITERATURE REVIEW AND SYNTHESIS.....	42
<i>Lauren Werner, Gaojian Huang, Brandon J. Pitts</i>	

CONVERSATIONAL SYSTEMS FOR FAMILY HEALTH HISTORY COLLECTION FOR GERIATRIC POPULATION.....	47
<i>Amal Ponathil, Necmettin Firat Ozkan, Jeffrey Bertrand, Brandon Welch, Kapil Chalil Madathil</i>	

AC1 - AUGMENTING COGNITION: FROM STATE DETECTION TO INTERVENTION

IMPROVING PUPIL DIAMETER MEASUREMENT ACCURACY IN A REMOTE EYE TRACKING SYSTEM.....	49
<i>Joseph T Coyne, Noelle Brown, Cyrus K. Foroughi, Ciara M Sibley</i>	

ADDITIONAL EVIDENCE FOR PUPIL SIZE AS A MEASURE OF WITHIN-TASK LEARNING.....	54
<i>Ciara Sibley, Cyrus K. Foroughi, Cory M. Moclair, Kenneth M. King, Noelle L. Brown, Joseph T. Coyne</i>	

EFFICACY OF DRY ELECTROENCEPHALOGRAPHY AND COGNITIVE ASSESSMENT IN IDENTIFYING NORMOBARIC HYPOXIA IN DESIGNATED AVIATORS	59
<i>Sabrina Drollinger, Steve Linnville, Jeff Phillips, Dallas Snider, Lee W. Sciarini</i>	

UTILIZING STEERING ENTROPY AS A MEASURE OF PERFORMANCE IN HEAD-MOUNTED AUGMENTED REALITY	63
<i>Kelly A. Sprehn, Tristan C. Endsley, Kimberly J. Ryan</i>	

DIAGNOSIS BEHAVIORS OF PHYSICIANS AND NON-PHYSICIANS WHEN SUPPORTED BY AN ELECTRONIC DIFFERENTIAL DIAGNOSIS AID	68
<i>Makenzie Pryor, Doug Ebert, Vicky Byrne, Khalaeb Richardson, Qua Jones, Richard Cole, Anne Collins McLaughlin</i>	

CONFIRMATION BIAS ESTIMATION FROM ELECTROENCEPHALOGRAPHY WITH MACHINE LEARNING	73
<i>Micah N. Villarreal, Alexander J. Kamrud, Brett J. Borghetti</i>	

AC2 - TRUST IN AUTOMATION

TRUST IN AUTOMATION AS A FUNCTION OF TRANSPARENCY AND TEAMING.....	78
<i>N/A</i>	

NEURAL CORRELATES OF TRUST DURING AN AUTOMATED SYSTEM MONITORING TASK: PRELIMINARY RESULTS OF AN EFFECTIVE CONNECTIVITY STUDY.....	83
<i>Nathan Sanders, Sanghyun Choo, Nayoung Kim, Chang S. Nam, Edward P. Fitts</i>	

DETECTING HUMAN TRUST CALIBRATION IN AUTOMATION: A DEEP LEARNING APPROACH.....	88
<i>Sanghyun Choo, Nathan Sanders, Nayoung Kim, Wonjoon Kim, Chang S. Nam, Edward P. Fitts</i>	

AS1 - DISPLAY DESIGN FOR EMERGING TECHNOLOGIES

PILOT PERCEPTIONS ON THE INTEGRATION OF ELECTRONIC FLIGHT BAG INFORMATION IN NEW FLIGHT DECK DESIGNS	91
<i>Michelle Yeh, Joseph Jaworski, Stephanie Chase</i>	

EFFECTS OF VISUAL COMPLEXITY LEVELS AND INFORMATION DECLUTTERING METHODS FOR COCKPIT DISPLAYS ON HUMAN SEARCH PERFORMANCE	96
<i>Sung Ho Kim, Ji Hwan Lee, Donggun Park, Yushin Lee, Myung Hwan Yun</i>	

USABILITY TEST OF A PROTOTYPE UAS AWARENESS INTERFACE FOR PUBLIC USERS	101
<i>Lynne Martin, Kimberly Jobe, Faisal Omar, Cesar Ramirez, Jeffrey Homola</i>	

AS2 - AVIATION SAFETY

MANAGING A DATA-LINK FAILURE OF A SINGLE-PILOTED AIRLINER DURING FLIGHT: A SYSTEM-THEORETIC PROCESS ANALYSIS	106
<i>Daniela Schmid, Bernd Korn, Matthias Wies, Neville A. Stanton</i>	

ANALYZING PILOTS' FATIGUE FOR PROLONGED FLIGHT MISSIONS: MULTIMODAL ANALYSIS APPROACH USING VIGILANCE TEST AND EYE TRACKING	111
<i>Salem Naeeri, Saptarshi Mandal, Ziho Kang</i>	

CONFRONTING FUNCTIONAL COMPLEXITY FAILURES: THE CASE OF A RUNWAY EXCURSION IN MUNICH	116
<i>Robert Mauro, Lance Sherry</i>	

IMPACT OF THE FREQUENCY OF LOST LINKS ON AIR TRAFFIC CONTROLLERS' PERFORMANCE AND ACCEPTABILITY RATINGS	121
<i>Kim-Phuong L. Vu, Jillian Keeler, Lisa Fern, Natassia Mattoon, R. Conrad Rorie, Vernol Battiste, Robert J. Shively, Thomas Z. Strybel</i>	

MODELING HUMAN FACTORS TOPICS IN AVIATION REPORTS	126
<i>Beth Lyall-Wilson, Nicolas Kim, Elizabeth Hohman</i>	

AS3 - TRAINING AND PHYSIOLOGY IN AVIATION

ANALOG AND DIGITAL CLOCK REFRESHER TRAINING FOR IMPROVEMENT IN IDENTIFYING AVIATION TRAFFIC	131
<i>Andrew R. Dattel, Andrew Henry, Godfrey D'Souza, Tianxin Zhang, Rebecca L. Perini, Beathia Tagoe, Ji Yeon Song, Andrew K. Babin, Bee-Ling Lim</i>	

A BOOTSTRAP METHOD FOR THE ANALYSIS OF PHYSIOLOGICAL DATA IN UNCONTROLLED SETTINGS	136
<i>Jordan R. Hill, Barrett S. Caldwell</i>	

EVALUATION OF MUSCULAR FORCES THAT CAN BE APPLIED TO FLIGHT CONTROLS	141
<i>Dennis B. Beringer, Robert E. Joslin</i>	

C1 - COMMUNICATIONS

TEAM COORDINATION OF TEAM SITUATION AWARENESS IN HUMAN-AUTONOMY TEAMING	146
<i>Mustafa Demir, Nathan J. McNeese, Manrong She, Nancy J. Cooke</i>	

A LONGITUDINAL STUDY ON QUALITY OF EXPERIENCE (QOE) MEASURES TO PREDICT CUSTOMER'S LIKELIHOOD TO RECOMMEND (L2R) A SERVICE	148
<i>Amin Azad, Mark Chignell, Leon Zucherman</i>	

CE1 - HUMAN-ROBOT TEAMING

AN EMPIRICAL EXPLORATION OF RESILIENCE IN HUMAN-AUTONOMY TEAMS OPERATING REMOTELY PILOTED AIRCRAFT SYSTEMS.....	153
<i>Mustafa Demir, Nathan J. McNeese, Nancy J. Cooke, David A. Grimm, Jamie C. Gorman</i>	
TRAINING MACHINES TO RECOGNIZE NEURAL CORRELATES OF TEAM AND TEAM MEMBER UNCERTAINTY	155
<i>Ronald Stevensa, Trysha Galloway</i>	
EXPLORING THE EFFECT OF COMMUNICATION PATTERNS AND TRANSPARENCY ON PERFORMANCE IN A HUMAN-ROBOT TEAM	160
<i>Shan G. Lakhmani, Julia L. Wright, Michael R. Schwartz, Daniel Barber</i>	
LAYERED DYNAMICS AND SYSTEM EFFECTIVENESS OF HUMAN-AUTONOMY TEAMS UNDER DEGRADED CONDITIONS.....	165
<i>David A. Grimm, Mustafa Demir, Jamie C. Gorman, Nancy J. Cooke, Nathan J. McNeese</i>	
ENHANCING TRANSPARENCY IN HUMAN-AUTONOMY TEAMING VIA THE OPTION-CENTRIC RATIONALE DISPLAY	166
<i>Ruikun Luo, Na Du, Kevin Y. Huang, X. Jessie Yang</i>	

CE10 - HUMAN IN FOCUS: FEATURE RESEARCH AND APPLICATIONS OF UBIQUITOUS USER MONITORING

HUMAN IN FOCUS: FUTURE RESEARCH AND APPLICATIONS OF UBIQUITOUS USER MONITORING	168
<i>Nathan Lau, Michael Hildebrandt, Tim Althoff, Linda Ng Boyle, Shamsi T. Iqbal, John D. Lee, Ranjana K Mehta, Joshua C. Poore</i>	

CE11 - ARTIFICIAL AND HUMAN COGNITION

USING THE LENS MODEL AND COGNITIVE CONTINUUM THEORY TO UNDERSTAND THE EFFECTS OF COGNITION ON PHISHING VICTIMIZATION	173
<i>Kylie A. Molinaro, Matthew L. Bolton</i>	
HOW ANALYSTS THINK: A PRELIMINARY STUDY OF HUMAN NEEDS AND DEMANDS FOR AI-BASED CONVERSATIONAL AGENTS.....	178
<i>Sam Hepenstal, B.L. William Wong, Leishi Zhang, Neesha Kodogoda</i>	
EFFECTS OF ANTHROPOMORPHIC PHISHING DETECTION AIDS, TRANSPARENCY INFORMATION, AND FEEDBACK ON USER TRUST, PERFORMANCE, AND AID RETENTION.....	183
<i>Scott Mishler, Cody Jeffcoat, Jing Chen</i>	
MENTAL MODELS OF AI-BASED SYSTEMS: USER PREDICTIONS AND EXPLANATIONS OF IMAGE CLASSIFICATION RESULTS	184
<i>Nathan Bos, Kimberly Glasgow, John Gersh, Isaiah Harbison, Celeste Lyn Paul</i>	

CE12 - PHYSIOLOGICAL MEASURES

CUE UTILIZATION PREDICTS THE IMPACT OF INTERRUPTIONS DURING A RAIL SIMULATION TASK.....	189
<i>Emma C. Falkland, Mark W. Wiggins, Johanna I. Westbrook</i>	
CEREBRAL HEMOVELOCITY AND THE VIGILANCE DECREMENT: SAMPLE-LEVEL DATA MAY NOT REPRESENT INDIVIDUALS	194
<i>Samantha L. Smith, William S. Helton, Gerald Matthews, Gregory J. Funke</i>	
TOWARD REAL-TIME ASSESSMENT OF WORKLOAD: A BAYESIAN INFERENCE APPROACH.....	196
<i>Ruikun Luo, Yifan Wang, Yifan Weng, Victor Paul, Mark J. Brudnak, Paramsothy Jayakumar, Matt Reed, Jeffrey L. Stein, Tulga Ersal, X. Jessie Yang</i>	
EXAMINING THE VISUAL ATTENTION OF PAIRS OF OPERATORS DURING A LOW TO HIGH WORKLOAD CHANGE	201
<i>Shannon P. Devlin, Jake R. Flynn, Sara L. Riggs</i>	

CE13 - TRUST IN AUTOMATION

GENERATIONAL DIFFERENCES IN TRUST IN DIGITAL ASSISTANTS	206
<i>Benjamin Noah, Arathi Sethumadhavan</i>	
ATTRIBUTION BIASES AND TRUST DEVELOPMENT IN PHYSICAL HUMAN-MACHINE COORDINATION: BLAMING YOURSELF, YOUR PARTNER OR AN UNEXPECTED EVENT	211
<i>Chi-Ping Hsiung, Erin Chiou</i>	
SUBJECTIVE MEASUREMENT OF TRUST: IS IT ON THE LEVEL?	212
<i>Jiajun Wei, Matthew L. Bolton, Laura Humphrey</i>	
POSITIVE BIAS IN THE ‘TRUST IN AUTOMATED SYSTEMS SURVEY’? AN EXAMINATION OF THE JIAN ET AL. (2000) SCALE	217
<i>Robert S. Gutzwiller, Erin K. Chiou, Scotty D. Craig, Christina M. Lewis, Glenn J. Lematta, Chi-Ping Hsiung</i>	
THE CONSEQUENCES OF PURPOSEFULNESS AND HUMAN-LIKENESS ON TRUST REPAIR ATTEMPTS MADE BY SELF-DRIVING VEHICLES.....	222
<i>Spencer C. Kohn, Ali Momen, Eva Wiese, Yi-Ching Lee, Tyler H. Shaw</i>	

CE2 - MOVING OUR UNDERSTANDING OF TEAM DYNAMICS FROM THE SIMULATION ROOM TO THE OPERATING ROOM

MOVING OUR UNDERSTANDING OF TEAM DYNAMICS FROM THE SIMULATION ROOM TO THE OPERATING ROOM.....	227
<i>Trysha Gallowaya, Ron Stevensa, Steven Yulec, Jamie Gormane, Ann Willemsen-Dunlap, Roger Dias</i>	

CE3 - TEAMING AND COMMUNICATION

THE EFFECT OF SOCIAL CONTEXT ON THE MIND PERCEPTION OF ROBOTS	230
<i>Rebecca Butler, Zoe Pruitt, Eva Wiese</i>	

THE EFFECTS OF AUTOMATION AND ROLE ALLOCATION ON TEAM PERFORMANCE.....	235
<i>Murat Dikmen, Yeti Li, Philip Farrell, Geoffrey Ho, Shi Cao, Catherine Burns</i>	
TESTING AN INTEGRATED TEAM EFFECTIVENESS FRAMEWORK IN LEAGUE OF LEGENDS.....	240
<i>Joshua A. Eaton, David J. Mendonça</i>	
APPLYING WORK DOMAIN ANALYSIS TO AUGMENTATIVE AND ALTERNATIVE COMMUNICATION SYSTEMS	247
<i>Kaela Shea, Tom Chau, Olivier St-Cyr</i>	

CE4 - WORKLOAD, RISK, AND DECISION MAKING

THE FEELING IS REAL: EMOTION ELICITATION IN VIRTUAL REALITY	252
<i>Sahinya Susindar, Mahnoosh Sadeghi, Lea Huntington, Andrew Singer, Thomas K. Ferris</i>	
APPLICATION OF NATURAL LANGUAGE PROCESSING IN PROCEDURE DESIGN	257
<i>N/A</i>	
COGNITIVE TASK ANALYSIS METHODS IN ENVISIONED TACTICAL COMMAND DECISION MAKING	262
<i>Nicolette M. McGeorge, Stephanie Kane, Chris Muller</i>	
THREE DIMENSIONS OF USER RISK-TAKING: INDIVIDUAL DIFFERENCES IN THE TRIRB	267
<i>Noam Ben Asher, Joachim Meyer</i>	
COGNITIVE LOAD AND SITUATION AWARENESS FOR SOLDIERS: USING AN AUDITORY DETECTION RESPONSE TASK.....	272
<i>Tzvi Spivak, Justin G. Hollands, Eric W. Kramkowski</i>	

CE5 - COGNITIVE ENGINEERING AT WORK AND IN THE FIELD

SPEECH WORKLOAD ESTIMATION FOR HUMAN-MACHINE INTERACTION	277
<i>Jamison Heard, Julian Fortune, Julie A. Adams</i>	
STAGES OF DECISION AUTOMATION: IMPACT ON OPERATORS' ROLE, AWARENESS AND MONITORING.....	282
<i>Linda Onnasch, Steffen Hösterey</i>	
DOES ADAPTIVE MODE TRANSITION CONTRIBUTE TO BETTER DRIVER INTERVENTION IN HIGHLY AUTOMATED DRIVING?.....	287
<i>Huiping Zhou, Makoto Itoh, Satoshi Kitazaki</i>	
ENVISIONING AN ANALOG WORK DOMAIN ACROSS DEEP-OCEAN EXPLORATION AND HUMAN-ROBOT SPACEFLIGHT EXPLORATION	292
<i>Matthew J. Miller, Zara Mirmalek, Darlene S.S. Lim</i>	

CE6 - INFORMATION ORGANIZATION AND VISUALIZATION

RISK SURFACE: A VISUALIZATION OF DATA SHARING RISK FOR ENTERPRISE USERS	297
<i>Mark F. St. John, Woodrow Gustafson, April Martin, Ronald A. Moore, Christopher A. Korkos</i>	

THE EFFECT OF INFORMATION ORGANIZATION ON COGNITIVE WORKLOAD AND VISUAL SEARCH PERFORMANCE	302
<i>Jeffrey C. Joe, Casey R. Kovesdi, Andrea Mack, Tina Miyake</i>	

THE INTERPLAY OF PLANS AND INTENTIONS: A PLEDGE-BASED INTERVENTION TO REDUCE PARTICIPATION IN A SINGLE HAZARDOUS EVENT	307
<i>Ellen J. Bass, Polly A. College, Susan Bruce</i>	

FEEDBACK ON SYSTEM OR OPERATOR PERFORMANCE: WHICH IS MORE USEFUL FOR THE TIMELY DETECTION OF CHANGES IN RELIABILITY, TRUST CALIBRATION AND APPROPRIATE AUTOMATION USAGE?.....	312
<i>Yidu Lu, Nadine Sarter</i>	

VISUALIZING PURPOSE AND FUNCTIONALITY OVERLAPS OF HEALTH IT SYSTEMS USING AN ABSTRACTION HIERARCHY	317
<i>Ida Löscher, Thomas Lind</i>	

CE7 - TRUST ENGINEERING IN HUMAN-AI TEAMS

TRUST ENGINEERING FOR HUMAN-AI TEAMS.....	322
<i>Neta Ezer, Sylvain Bruni, Yang Cai, Sam J. Hepenstal, Christopher A. Miller, Dylan D. Schmorow</i>	

CE8 - TRAINING AND THE WORKPLACE

METACOGNITION BASED TRAINING: A BETTER WAY TO TACKLE MEDICAL DEVICE ALARMS	327
<i>Mani Shanmugham, Lesley Strawderman, Deborah Eakin</i>	

IDENTIFYING AND QUANTIFYING PERSONNEL SKILL GAPS	332
<i>Martin J. McKenney, Holly A. Handley</i>	

PROTOTYPICAL WORK SITUATIONS: A ROBUST, FLEXIBLE MEANS FOR REPRESENTING ACTIVITY IN A WORK DOMAIN	337
<i>Natalie C. Benda, Ann M. Bisantz</i>	

WORK DOMAIN ANALYSIS FOR CONTROL OF MEDICAL SIMULATION TRAINING	342
<i>Michael W. Smith, David Abarca, Daniel T. Nystrom</i>	

MODIFICATIONS TO THE DECISION LADDER TO MATCH FRONTLINE WORKERS' CRITICAL DECISION MAKING.....	347
<i>Christopher M. Lilburne, Maureen E. Hassall</i>	

CE9 - TEAMING AND TRUST

A TRADESPACE FRAMEWORK FOR EVALUATING CREWING CONFIGURATIONS FOR FUTURE VERTICAL LIFT	352
<i>Christen E. Sushereba, Julie B. Diiulio, Laura G. Militello, Emilie Roth</i>	

DEVELOPMENT APPROACH OF PLAYBOOK INTERFACE FOR HUMAN-AUTONOMY TEAMING IN SINGLE PILOT OPERATIONS	357
<i>Güliz Tokadlı, Michael C. Dorneich, Michael Matessa</i>	

PRACTICAL GUIDANCE FOR EVALUATING CALIBRATED TRUST.....	362
<i>Patricia L. McDermott, Ronna N. ten Brink</i>	
A CONTEXT-DRIVEN FRAMEWORK FOR SELECTING MENTAL MODEL ELICITATION METHODS.....	367
<i>Samantha Harper, Stephen Dorton</i>	
HOW TO PREVENT PLAYERS FROM TEAMING UP IN FREE-FOR-ALL GAMES: THE IMPORTANCE OF INITIAL CONTACT.....	372
<i>Hansol Rheem, Vipin Verma, Yang Seok Cho</i>	

CS1 - HOW TO SUCCEED IN INDUSTRY (AS A UX RESEARCHER): STRATEGIES AND SKILLS TO MAXIMIZE YOUR IMPACT

HOW TO SUCCEED IN INDUSTRY (AS A UX RESEARCHER): STRATEGIES AND SKILLS TO MAXIMIZE YOUR IMPACT.....	377
<i>Kapil Chalil Madathil, Claudia Ziegler Acemyan, Michael C. Bartha, Melroy D'Souza, Rochelle Edwards, Sumonthip C. Gmitro, Christy Harper</i>	

CS2 - MARC RESNICK BEST PAPER AWARD COMPETITION

BOTH SIDES NOW: BOTH HEIGHT AND WIDTH OF THE TARGET MATTER FOR APPLYING FITTS' LAW TO POINTING USING A MOUSE.....	381
<i>Douglas J. Gillan</i>	
MEMORIES OF VIDEO: IMPACT OF SEQUENCING ON RATED TECHNICAL QUALITY FOR VIEWED AND VISUALIZED DISRUPTIONS.....	386
<i>Thomas He, Chelsea DeGuzman, Leon Zucherman, Tiffany Tong, Mark Chignell</i>	
EFFECTS OF CONTROL-DISPLAY MAPPING AND SPATIALLY DEPENDENT GAIN ON SUPPORTED FREE-HAND GESTURE POINTING PERFORMANCE.....	391
<i>Sreemannarayana Kota, Justin G. Young</i>	
IMMERSIVENESS AND PERCEPTIBILITY OF CONVEX AND CONCAVE DISPLAYS.....	396
<i>Mark Chignell, Henrique Matulis, Bella Zhang, Jacqueline Urakami, Shio Miyafuji, Zhengqing Li, Hideki Koike</i>	
ONLINE PRODUCT REVIEWS: EFFECTS OF STAR RATINGS AND VALENCE ON REVIEW PERCEPTION AMONG THOSE HIGH AND LOW IN NEED FOR COGNITION.....	401
<i>Jacquelyn L. Schreck, Matthew G. Chin</i>	

CS3 - INPUT METHODS AND VISUALIZATIONS

ROBOT KNOWS BEST? A COMPARISON OF COMPLIANCE WITH HUMAN AND ROBOTIC COACHES.....	406
<i>Kelly Satterfield, Victor Finomore, Vincent Mancuso, Joseph Lyons, Ewart de Visser, Kerstin Haring, Sarah Pruznick, Ariana Mosley, Gregory Funke</i>	
APPLYING A USER-CENTERED METHOD TO DEVELOP 3D GESTURAL INPUTS FOR IN- VEHICLE TASKS.....	408
<i>Patrik T. Schuler, Katherina A. Jurewicz, David M. Neyens</i>	

SYSTEMATIC EVALUATION OF A CONVERSATIONAL VOICE USER INTERFACE FOR DECISION-MAKING.....	413
<i>Kiana Alikhademi, Brianna Richardson, Joshua Martins, Veena Chattaraman, Wi-Suk Kwon, Juan E. Gilbert</i>	

VISUALIZATION DESIGN FOR HUMAN-COLLECTIVE TEAMS.....	417
<i>Karina A. Roundtree, Jason R. Cody, Jennifer Leaf, H. Onan Demirel, Julie A. Adams</i>	

CYB1 - RESEARCH SPONSORS PANEL

PANEL: RESEARCH SPONSORS FOR CYBERSECURITY RESEARCH AND THE HUMAN FACTOR.....	422
<i>Robert S. Gutzwiller, Dan Cosley, Kimberly Ferguson-Walter, Dustin Frazee, Robert Rahmer</i>	

CYB2 - UNDERSTANDING ATTACKERS, DEFENDERS, AND VICTIMS

ARE CYBER ATTACKERS THINKING FAST AND SLOW? EXPLORATORY ANALYSIS REVEALS EVIDENCE OF DECISION-MAKING BIASES IN RED TEAMERS.....	427
<i>Robert S. Gutzwiller, Kimberly J. Ferguson-Walter, Sunny J. Fugate</i>	

“HELP, I’VE BEEN HACKED!”: INSIGHTS FROM A CORPUS OF USER-REPORTED CYBER VICTIMIZATION CASES ON TWITTER.....	432
<i>Margaret Gratian, Darshan Bhansali, Michel Cukier, Josiah Dykstra</i>	

OBSERVING CYBER SECURITY INCIDENT RESPONSE: QUALITATIVE THEMES FROM FIELD RESEARCH.....	437
<i>Megan Nyre-Yu, Robert S. Gutzwiller, Barrett S. Caldwell</i>	

CYB3 - PANEL ON HUMAN-MACHINE TEAMING

OPPORTUNITIES AND CHALLENGES FOR HUMAN-MACHINE TEAMING IN CYBERSECURITY OPERATIONS	442
<i>Celeste Lyn Paul, Leslie M. Blaha, Corey K. Fallon, Cleotilde Gonzalez, Robert S. Gutzwiller</i>	

CYB4 - IMPROVING CYBER DEFENSES

GRAPHICAL AUTHENTICATION PASSCODE MEMORABILITY: CONTEXT, LENGTH, AND NUMBER	447
<i>Ashley A. Cain, Jeremiah D. Still</i>	

PASSWORD RECALL FOLLOWING EMPLOYMENT OF A STORY-BASED MNEMONIC STRATEGY	452
<i>Isis Chong, Robert W. Proctor, Ninghui Li, Jeremiah Blocki</i>	

TRAINING TO DETECT PHISHING EMAILS: EFFECTS OF THE FREQUENCY OF EXPERIENCED PHISHING EMAILS	453
<i>Kuldeep Singh, Palvi Aggarwal, Prashanth Rajivan, Cleotilde Gonzalez</i>	

BREAKING BAD SYSTEMS WITH HUMAN FACTORS AND ERGONOMICS: USING WORK DOMAIN ANALYSIS TO IDENTIFY STRATEGIES TO DISRUPT TRADING IN DARK NET MARKETPLACES	458
<i>Paul M. Salmon, Ben R. Lane, Dennis Desmond, Adrian Cherney, Gayan Kulatilleke, Anita Matthews, David Lacey, Neville A. Stanton</i>	

D1 - DEMONSTRATIONS

DEVELOPMENT OF A DECISION SUPPORT SYSTEM FOR ANKLE-FOOT ORTHOSIS (AFO) DESIGN BASED ON LUMPED PARAMETER MODELS FOR HUMAN LOCOMOTION PREDICTION.....	463
<i>Qianyí Fu, Thomas J. Armstrong, Albert Shih</i>	
DESIGNING FOR ASTRONAUT-CENTRIC PLANNING AND SCHEDULING AIDS.....	468
<i>Jessica J. Marquez, Steven Hillenius, Jimin Zheng, Ivonne Deliz, Bob Kanefsky, Jack Gale</i>	
UTILIZING THE GENERALIZED INTELLIGENT FRAMEWORK FOR TUTORING (GIFT) FOR HUMAN FACTORS EDUCATION	470
<i>Anne M. Sinatra, Benjamin Goldberg, Michael Boyce</i>	
SYNQUESTICON: AN ENVIRONMENT FOR AUTHORIZING AND CONDUCTING MICRO TASK STUDIES	475
<i>Michael Hildebrandt, Hoa T. Nguyen, Jens-Patrick Langstrand</i>	
SMALL MODULAR REACTOR CONTROL ROOM WORKSTATION DEMONSTRATION.....	479
<i>Jessica Stevens, Kevin LaFerriere, Ryan Flamand NuScale</i>	

E1 - PANEL: UNDERSTANDING DIFFERENT CAREER PATHS FOR HUMAN FACTORS/ERGONOMICS ENGINEERS

UNDERSTANDING DIFFERENT CAREER PATHS FOR HUMAN FACTORS/ERGONOMICS ENGINEERS.....	481
<i>Dr. Deepthi Surabattula</i>	

E2 - MOVING FORWARD FROM THE MID-CAREER: PATH OPTIONS AND STRATEGIES FOR MID-CAREER ACADEMICS

MOVING FORWARD FROM THE MID-CAREER: PATH OPTIONS AND STRATEGIES FOR MID-CAREER ACADEMICS.....	484
<i>Ellen J. Bass, Ann Bisantz, Caroline G. L. Cao, Pascale Carayon, Nancy Cooke, Amy R. Pritchett</i>	

E3 - A HUMAN FACTORS ENGINEERING EDUCATION PERSPECTIVE ON DATA SCIENCE, MACHINE LEARNING AND AUTOMATION

A HUMAN FACTORS ENGINEERING EDUCATION PERSPECTIVE ON DATA SCIENCE, MACHINE LEARNING AND AUTOMATION.....	488
<i>Daniel Hannon, Esa Rantanen, Ben Sawyer, Raymond Ptucha, Ashley Hughes, Katherine Darveau, John D. Lee</i>	

E4 - EDUCATION

THE INTERFACE DESIGN OF A COLLABORATIVE COMPUTER SCIENCE LEARNING ENVIRONMENT FOR ELEMENTARY AGED STUDENTS.....	493
<i>Amanda Bradbury, Eric Wiebe, Jessica Vandenberg, Jennifer Tsan, Collin Lynch, Kristy Boyer</i>	

HUMAN FACTORS CAPSTONE RESEARCH AT THE UNITED STATES AIR FORCE ACADEMY	498
<i>Chad Tossell, Bianca Donadio, Amanda Stewart, Nathan Tenhundfeld, Elizabeth Phillips, Jade Driggs, Kerstin Haring, Ewart de Visser</i>	

**E5 - NETWORKING: THE GOOD, THE BAD AND THE UGLY - AN INTERACTIVE
DISCUSSION PANEL ON NETWORKIN**

NETWORKING: THE GOOD, THE BAD, AND THE UGLY AN INTERACTIVE DISCUSSION PANEL ON NETWORKING	503
<i>Federico Scholcover, Sarah Beadle, Gabriella M. Hancock, Ashley Hughes, Anne McLaughlin, Aideen Stronge, C. Travis Bowles</i>	

**E6 - PANEL - INSTRUCTIONAL TECHNOLOGY IN HFE: SYSTEMS AND STRATEGIES
FOR PROMOTING LEARNING AND TEACHING**

PUTTING THE APPLIED IN APPLIED PSYCHOLOGY: EXPERIENTIAL LEARNING PROJECTS IN THE HFE CLASSROOM	506
<i>Heather C. Lum, Gabriella M. Hancock, Grace E. Waldfohle, Federico Scholcover, Nicholas Kelling</i>	

ED1 - ENVIRONMENTAL DESIGN POTPOURRI

A STUDY ON HEAD FLEXION DURING MOBILE DEVICE USAGE: AN EXAMINATION OF SITTING, STANDING, AND LYING DOWN POSITIONS.....	511
<i>Gabriela Flores-Cruz, Valerie K. Sims, Daphne E. Whitmer</i>	
SMALL MODULAR REACTOR HUMAN-SYSTEM INTERFACE AND CONTROL ROOM LAYOUT DESIGN	516
<i>Kevin LaFerriere, Jessica Stevens, Ryan Flamand NuScale</i>	
GALO: A TOOL FOR COMMAND SPACE LAYOUT OPTIMIZATION USING A GENETIC ALGORITHM.....	521
<i>Wenbi Wang, Jonathan Lin</i>	
ACCESSIBLE DESIGN OF LOW-SPEED AUTOMATED SHUTTLES: A BRIEF REVIEW OF LESSONS LEARNED FROM PUBLIC TRANSIT	526
<i>Kamolnat Tabattanon, Nicholas Sandhu, Clive D'Souza</i>	
WHAT IS THE ROLE OF DESIGN AND ARCHITECTURE IN SLIP, TRIP, AND FALL ACCIDENTS?.....	531
<i>Randy Atlas</i>	

F1 - FORENSIC PROFESSIONAL 1

MEASURING THE STATIC COEFFICIENT OF FRICTION OF NON-FLUID CONTAMINANTS	537
<i>Hunter DeBusk, Levi Dixon, Joellen Gill, Richard Gill</i>	
SYNTHESIS OF VIDEO AND 3D LASER METROLOGY TO RECONSTRUCT A VEHICLE VS PEDESTRIAN COLLISION: A CASE STUDY	542
<i>Charles R. King, Justin F. Morgan</i>	

CHARACTERIZATION OF VISUAL ACUITY AND CONTRAST SENSITIVITY USING HEAD-MOUNTED DISPLAYS IN A VIRTUAL ENVIRONMENT: A PILOT STUDY.....	547
<i>David Sproule, Rosemarie Figueroa Jacinto, Steve Rundell, Jacob Williams, Sam Perlmutter, Steve Arndt</i>	

APPLICATION OF STEREOSCOPIIC HEAD-MOUNTED DISPLAYS AND INTERACTIVE VIRTUAL REALITY ENVIRONMENTS TO AN “OPTICAL ILLUSION” MISSTEP AND FALL CASE.....	552
<i>Rosemarie Figueroa Jacinto, David Sproule, Jacob Williams, Sam Perlmutter, Steve Arndt, Steve Rundell</i>	

F2 - CHILDREN'S SAFETY WORKSHOP: A DEMONSTRATION OF HUMAN FACTORS PROFESSIONALS' PREPARATION WITH PRACTICING ATTORNEYS

CHILDREN’S SAFETY WORKSHOP: A DEMONSTRATION OF HUMAN FACTORS PROFESSIONALS’ PREPARATON WITH PRACTICING ATTORNEYS	557
<i>Stephanie Borzendowski, Michael Vredenburgh, Catherine Darlson, Michael Hersh, Alison Vredenburgh, Ilene Zackowitz</i>	

F3 - FORENSIC PROFESSIONAL 2

SKYLIGHT FALL CASE STUDY: CONSPICUITY AND PERCEPTUAL SET.....	558
<i>Benjamin R. Stephens, Margaret J. Tutaj, Elizabeth R. Cox, Morgan Kivler, George S. Pearl</i>	

A CASE STUDY OF A 5-YEAR-OLD’S ELEVATOR MISHAP: CONSPICUITY, COGNITIVE CAPABILITY, AND PARENTAL SUPERVISION	563
<i>Benjamin R. Stephens, Margaret J. Tutaj, Elizabeth R. Cox, Morgan Kivler</i>	

KITCHEN RANGE FIRES AND EXPLOSIONS: USABILITY VERSUS SAFETY	568
<i>Jay Pollack</i>	

APPLICATION OF AFFORDANCE THEORY TO THE FORENSIC INVESTIGATION OF A PERSONAL INJURY	573
<i>Leah S. Hartman, Stephanie A. Whetsel Borzendowski, Alan O. Campbell</i>	

GS1 - THE LIFE AND LEGACY OF PROFESSOR JOHN SENDERS

THE LIFE AND LEGACY OF PROFESSOR JOHN SENDERS	577
<i>P.A. Hancock, Gabriella Hancock, Abigail Sellen, John Lee, Benjamin Sawyer, Thomas Sheridan, Paul Milgram, Penelope Sanderson</i>	

VOLUME 2

GS10 - INVITED SYMPOSIUM - THE ROLE OF HUMAN FACTORS STANDARDS IN ADVANCING SCIENCE AND PRACTICE: SOME EXAMPLES FROM AUTOMOTIVE, NUCLEAR, HEALTHCARE, AND PETROCHEMICAL INDUSTRIES

SAE AUTOMOTIVE HUMAN FACTORS STANDARDS: FINDING THEM AND WHAT THEY CONTAIN	582
<i>Paul Green</i>	

IEEE HUMAN FACTORS STANDARDS FOR NUCLEAR FACILITIES: THE DEVELOPMENT PROCESS, AVAILABLE STANDARDS, CURRENT ACTIVITIES, AND THE FUTURE.....	587
<i>David R Desaulniers, Stephen Fleger</i>	

MEDICAL DEVICE HUMAN FACTORS STANDARDS: FINDING THEM AND WHAT THEY CONTAIN.....	592
<i>Molly Follette Story, Sanofi</i>	

SYMPOSIUM: THE ROLE OF HUMAN FACTORS STANDARDS IN ADVANCING SCIENCE AND PRACTICE: SOME EXAMPLES FROM AUTOMOTIVE, NUCLEAR, HEALTHCARE, AND PETROCHEMICAL INDUSTRIES.....	597
<i>Paul Green</i>	

GS11 - PREVENTING AND EVALUATING ACCIDENTS

THE INTEGRATIVE COMPLEXITY OF MEDIA REPORTS OF NATURAL DISASTERS: A PRELIMINARY ANALYSIS.....	601
<i>Hayley McCullough, Michael J. Kalsher</i>	

SYSTEMATIC INVESTIGATION OF THE ASIANA AIRLINES 214 AIR CRASH USING THE ACCIMAP METHODOLOGY.....	606
<i>Maryam Tabibzadeh, Vivek Shapeti, Mohammad Mokhtari</i>	

EVALUATING OPERATOR FATIGUE STATES DURING THE 2018 KILAUEA VOLCANO: IMPLICATIONS FOR HUMAN-ROBOTIC INTERACTIONS DURING DISASTERS.....	611
<i>N/A</i>	

FAILING TO PLAN IS PLANNING TO FAIL: CAPTURING THE PRE-INCIDENT PLANNING NEEDS OF FIREFIGHTERS.....	612
<i>Katelynn A. Kapalo, Joseph J. LaViola Jr.</i>	

OBSERVABILITY OF INTER-ORGANIZATIONAL CRISIS MANAGEMENT CAPABILITY.....	617
<i>Per-Anders Oskarsson, Magdalena Granåsen, Mari Olsén</i>	

GS12 - HEFORSHE IN HFE: STRATEGIES FOR ENHANCING EQUALITY IN LEADERSHIP FOR ALL ALLIES

HEFORSHE IN HFE: STRATEGIES FOR ENHANCING EQUALITY IN LEADERSHIP FOR ALL ALLIES.....	622
<i>Kimberly Stowers, Gabriella M. Hancock, Alexis Neigel, Jackie Cha, Isis Chong, Francis T. Durso, S. Camille Peres, Nancy J. Stone, Baron Summers</i>	

GS2 - SOCIAL AND BEHAVIORAL SCIENCES RESEARCH AGENDA FOR ADVANCING INTELLIGENCE ANALYSIS

SOCIAL AND BEHAVIORAL SCIENCES RESEARCH AGENDA FOR ADVANCING INTELLIGENCE ANALYSIS.....	625
<i>Sujeeta Bhatt, Barbara Wanchisen, Nancy Cooke, Kathleen Carley, Carmen Medina</i>	

GS3 - NAVIGATING THE CROSSROADS: CAREER TRANSITIONS IN HUMAN FACTORS

NAVIGATING THE CROSSROADS: CAREER TRANSITIONS IN HUMAN FACTORS 628
Christy Harper, Cynthia Rando, Melissa Meingast, Rochelle Edwards, Jeff Graley

GS4 - THE NATIONAL ACADEMIES BOARD ON HUMAN SYSTEM INTEGRATION (BOHSI) PANEL: EXPLAINABLE AI, SYSTEM TRANSPARENCY, AND HUMAN MACHINE TEAMING

THE NATIONAL ACADEMIES BOARD ON HUMAN SYSTEM INTEGRATION (BOHSI) PANEL: EXPLAINABLE AI, SYSTEM TRANSPARENCY, AND HUMAN MACHINE TEAMING..... 631
Toby Warden, Pascale Carayon, Emilie M. Roth, Jessie Chen, William J. Clancey, Robert Hoffman, Marc L. Steinberg

GS5 - HFE IN DIVERSITY, INCLUSION AND SOCIAL JUSTICE: A PRACTICAL PRIMER

HFE IN DIVERSITY, INCLUSION AND SOCIAL JUSTICE: A PRACTICAL PRIMER..... 636
Abigail R. Wooldridge, Natalie Benda, Tonya L. Smith-Jackson, Theresa Nguyen, Kylie Gomes, Rupa Valdez, Deliya B. Wesley, Jacklin Stonewall

GS7 - FIRST AND IMMEDIATE RESPONDERS: CURRENT CAPABILITY NEEDS AND RESEARCH CHALLENGES

FIRST AND IMMEDIATE RESPONDERS: CURRENT CAPABILITY NEEDS AND RESEARCH CHALLENGES 640
Erik G. Prytz, Susan Hallbeck, Craig Goolsby, Carl-Oscar Jonson, Ronald Langhelm, Ranjana K Mehta, S. Camille Peres, Darren P. Wilson

GS8 - HFE GOES TO WASHINGTON

HFES GOES TO WASHINGTON..... 642
Mica Endsley, Nick Saab, Caroline Cao, Holly Handley, Carisa Harris-Adamson

HC1 - TEAMWORK AND COMMUNICATION IN HEALTHCARE

DEVELOPMENT OF A MULTI-LAYER SYSTEMS ENGINEERING VISUALIZATION FOR DIABETES TEAM COORDINATION 643
Michelle Jahn Holbrook, Barrett S. Caldwell

TEAM COGNITION AS A BARRIER AND FACILITATOR IN CARE TRANSITIONS: IMPLICATIONS FOR WORK SYSTEM DESIGN..... 648
Abigail R. Wooldridge, Pascale Carayon, Peter Hoonakker, Bat-Zion Hose, Thomas B. Brazelton, Ben Eithun, Shannon M. Dean, Michelle M. Kelly, Jonathan E. Kohler, Joshua C. Ross, Deborah Rusy, Ayse P. Gurses

ASSESSING MENTAL MODELS FROM COMMUNICATIONS: PATIENT, FAMILY, AND CARE TEAM MESSAGING WITHIN THE HOSPITAL 653
Rebecca R. Carter, Clayton D. Rothwell, Cynthia J. Sieck, Ann Scheck McAlearney

EVALUATION OF TACTILE CUES FOR SIMULATED PATIENTS' STATUS UNDER HIGH AND LOW WORKLOAD	658
<i>Nuphar Katzman, May Gellert, Joseph J. Schlesinger, Tal Oron-Gilad, Jeremy R. Cooperstock, Yuval Bitan</i>	

HC10 - COGNITION AND WORKLOAD

SPEARCONS FOR PATIENT MONITORING: PROGRAM OF LABORATORY-BASED FEASIBILITY STUDIES	663
<i>Simon Y. W. Li, Chun-Wan Yeung, Thomas Davidson, Younji Ryu, Monika Srbinovska, Isaac Salisbury, Robert G. Loeb, Penelope M. Sanderson</i>	

THE IMPACT OF CONCURRENT LINGUISTIC TASKS ON PARTICIPANTS' IDENTIFICATION OF SPEARCONS	668
<i>Thomas J. Davidson, Younji Ryu, Birgit Brecknell, Robert G. Loeb, Penelope M. Sanderson</i>	

MULTIPLE PATIENT MONITORING IN HIGH DEPENDENCY UNITS: A FIELD STUDY	669
<i>Marie-Lys F. A. Deschamps, Penelope M. Sanderson</i>	

MIDDLE CEREBRAL ARTERY BLOOD FLOW VELOCITY AS AN INDICATOR OF ATTENTIONAL LOAD AND ATTENTIONAL RESOURCE DEPLETION IN THE LAPAROSCOPIC TRAINING ENVIRONMENT	670
<i>Martina I. Klein, Eric T. Greenlee, Theresa Nguyen, Krishnanath Gaitonde, John Griswold, Dixon Santana</i>	

HC12 - HF APPLICATION IN SURGERY

COMMUNICATION PATTERNS IN REMOTE, INTERACTIVE SURGICAL TRAINING	672
<i>Claire S. Shah, Valerie L. Shalin, Kristy Pugh, Lorreen Agandi, Adam Puche, Sam Tisherman</i>	

A TAXONOMY OF DISTRACTION MITIGATION STRATEGIES FOR OPERATING ROOMS	677
<i>Suzan Ayas, Birsen Donmez</i>	

SURGICAL SPECIALTY AND CASE NUMBER MAY INFLUENCE SURGEON WORKLOAD	678
<i>Madeline K. Niichel, Bethany R. Lowndes, Anna R. Linden, Renaldo C. Blocker, M. Susan Hallbeck, Katherine E. Law</i>	

OUTCOMES FOLLOWING INITIAL PERIOPERATIVE SURGICAL HOME INTEGRATION AT A RURAL COMMUNITY HOSPITAL	682
<i>Bernadette McCrory, Jessica A. Hoge, Rhyana Whiteley, James Bryce Wiley, Srinivasan Sridhar, Jiahui Ma</i>	

ERGONOMIC EDUCATION AND TRAINING FOR SURGICAL ASSISTANT TRAINEES	687
<i>Anna R. Linden, M. Susan Hallbeck, Melissa Morrow, Helga Olson, Bethany R. Lowndes</i>	

HC2 - WHAT MAKES A DIFFERENCE IN PATIENT SAFETY WHEN DESIGNING, IMPLEMENTING AND EVALUATING CLINICAL DECISION SUPPORT SYSTEMS?

WHAT MAKES A DIFFERENCE IN PATIENT SAFETY WHEN DESIGNING, IMPLEMENTING AND EVALUATING CLINICAL DECISION SUPPORT SYSTEMS?	692
<i>Mustafa Ozkaynak, Ann Bisantz, Laura Militello, Kristen Miller, Michael Rayo, Jason Slagle</i>	

HC3 - HEALTH IT AND PATIENT SAFETY

INFORMATION TECHNOLOGY SYSTEMS AT THE SHARP END OF MEDICATION THERAPY MANAGEMENT	697
<i>Reicelis Casares Li, Rodrigo Arcuri Marques Pereira, Alessandro Jatobá, Mario Cesar Rodríguez Vidal, Paulo Victor Rodrigues de Carvalho, Kelly Grindrod, Catherine Burns</i>	
WHERE ARE HEALTH IT PATIENT SAFETY EVENT REPORTS HIDING? IDENTIFYING HEALTH IT PATIENT SAFETY EVENTS IN SELF-REPORTED DATABASES	702
<i>Katharine T. Adams, Jessica L. Howe, Michael J. Gaunt, Raj M. Ratwani, Allan Fong</i>	
HOW NURSE EXPERIENCE INFLUENCES THE PATTERNS OF ELECTRONIC MEDICAL RECORD DOCUMENTATION IN AN INTENSIVE CARE UNIT	707
<i>Wenbin Guo, Jung Hyup Kim, Benjamin Smith, Laurel Despins</i>	
WHAT DID YOU ORDER? DEVELOPING MODELS TO MEASURE THE IMPACT OF USABILITY ON EMERGENCY PHYSICIAN ACCURACY USING COMPUTERIZED PROVIDER ORDER ENTRY	712
<i>Swaminathan Kandaswamy, Aaron Z Hettinger, Raj M. Ratwani</i>	
EVERYTHING BUT THE KITCHEN SINK: A MIXED METHODS APPROACH TO HEALTH IT USABILITY TESTING.....	717
<i>Laura Schubel, Robin Littlejohn, Ronald Romero Barrientos, Ryan Arnold, Muge Capan, Kristen Miller</i>	
INVESTIGATING NURSES' PREFERENCE FOR DROWSY DRIVING MITIGATION TECHNOLOGIES.....	722
<i>Alec Smith, Anthony McDonald, Farzan Sasangohar</i>	

HC4 – 2019 TOWN HALL ON HUMAN FACTORS AND ERGONOMICS FOR PATIENT WORK

2019 TOWN HALL ON HUMAN FACTORS AND ERGONOMICS FOR PATIENT WORK.....	724
<i>Richard J. Holden, Rupa S. Valdez</i>	

HC5 - HUMAN FACTORS AND ERGONOMICS IN HEALTH CARE SYSTEMS: IDENTIFYING ROLES AND STRATEGIES FOR SUCCESS

HUMAN FACTORS AND ERGONOMICS IN HEALTH CARE SYSTEMS: IDENTIFYING ROLES AND STRATEGIES FOR SUCCESS.....	728
<i>Siddarth Ponnala, A. Joy Rivera, Edmond Ramly, Ken Catchpole, Shanqing Yin</i>	

HC6 - HUMAN FACTORS IN HEALTHCARE TRAINING

RAPID PREPARATION OF EYE TRACKING DATA FOR DEBRIEFING IN MEDICAL TRAINING: A FEASIBILITY STUDY	732
<i>E. Wolf, R. Heinrich, A. Michalek, D. Schraudt, A. Hohm, R. Hein, T. Grundgeiger, O. Happel</i>	
A TALE OF TWO PATIENT SAFETY PROGRAMS: COMPARING TOOLS AND SKILLS IN TWO PROGRAMS FOR INTEGRATION INTO INTERPROFESSIONAL CLINICAL SIMULATION-BASED TRAINING.....	737
<i>Victoria Kennel, Julie Fedderson, Nicole Skinner, Bethany Lowndes</i>	

UNDERSTANDING THE USE OF HEALTH INFORMATION TECHNOLOGY FOR MATERNAL AND CHILD HEALTH PRACTITIONER TRAINING IN LOW AND MIDDLE INCOME COUNTRIES	742
<i>Michelle Rogers, Janice Masud-Paul, Rania El Desoki</i>	

THE EFFECT OF DEVICE (VIDEO VS. DIRECT LARYNGOSCOPY) AND EXPERIENCE (JUNIOR VS. SENIOR) ON SITUATION AWARENESS DURING SIMULATED ENDOTRACHEAL INTUBATION	746
<i>Tobias Grundgeiger, Timo Egenolf, Christian Markus, Oliver Happel</i>	

HC7 - HF APPLICATION IN SPECIAL AREAS: REHABILITATION, DIALYSIS, AND CHILD CARE

AUGMENTED REALITY FOR REHABILITATIVE THERAPY: PATIENT EXPERIENCES AND PRACTITIONER PERSPECTIVES.....	747
<i>Rua M. Williams, Kiana Alikhademi, Emma Drobina, Juan E. Gilbert, Tommy Sutor</i>	

HOMES OF CHILDREN WITH MEDICAL COMPLEXITY AS A COMPLEX WORK SYSTEM: OUTCOMES ASSOCIATED WITH INTERACTIONS IN THE PHYSICAL ENVIRONMENT.....	752
<i>Nadejda Doutcheva, Hannah Thomas, Reid Parks, Ryan Collier, Nicole Werner</i>	

USER-CENTERED DESIGN FOR A CUSTOMIZED MOBILE DIALYSIS DEVICE FOR PATIENTS WITH ESRD: AN INTERVIEW STUDY	757
<i>Zach McCauley, Itsumi Niiyama, Larry Kessler, Ji-Eun Kim</i>	

HC8 - HEALTHCARE WORKFLOW AND MACROERGONOMICS

BRIDGING THE GAP: WORKFLOW ANALYSIS EVALUATING “WORK-AS-IMAGINED” VERSUS “WORK-AS-DONE” FOR CARDIAC RISK CALCULATION	762
<i>Laura Schubel, Lucy Stein, Ronald Romero Barrientos, Carolina Valdiviezo, Mark Townsend, Peter Basch, William Weintraub, Zach Hettinger, Christine Laccay, Kevin Chaney, Kristen Miller</i>	

ASSESSING WORKFLOW OF EMERGENCY PHYSICIANS IN THE USE OF CLINICAL DECISION SUPPORT	767
<i>Megan E. Salwei, Pascale Carayon, Peter Hoonakker, Ann Schoofs Hundt, Clair Novak, Yudi Wang, Douglas Wiegmann, Brian Patterson</i>	

TRANSITIONAL CARE PLANNING: A PILOT STUDY TO EXPLORE PATIENT, HOSPITAL, AND PRIMARY CARE PERSPECTIVES.....	772
<i>Kara G. Hall, Huei-Yen Winnie Chen, Sharon Hewner</i>	

A SYSTEMS APPROACH INTO UNNECESSARY ADMISSIONS AND READMISSIONS IN EMERGENCY DEPARTMENTS	777
<i>Samuel A. Bonet, Farzan Sasangohar</i>	

SYSTEM MODELING OF TELEBEHAVIORAL HEALTH RESOURCE ALLOCATION	780
<i>Julie Hammett, Carly McCord, Mark Lawley, Farzan Sasangohar</i>	

SELF-MANAGEMENT TASKS OF ADULT PATIENTS WITH PHENYLKETONURIA: NEEDS ASSESSMENT FOR A FOOD TRACKING APPLICATION.....	782
<i>John P. Corbett, Himika Rahman, Anthony Peters, Margaret Eastham, Rupa Valdez</i>	

HP1 - MODELING METHODS FOR ACTIVITY CONTEXT, PERCEPTION, AND AUTOMATION TRANSPARENCY

APPLICATION OF THE DEEPSENSE DEEP LEARNING FRAMEWORK TO DETERMINATION OF ACTIVITY CONTEXT FROM SMARTPHONE DATA..... 787
Bethany K. Bracken, Shashank Manjunath, Stan German, Camille Monnier, Mike Farry

THE 3-MINUTE PSYCHOMOTOR VIGILANCE TASK (PVT) EMBEDDED IN A WRIST-WORN DEVICE: TIME OF DAY EFFECTS 792
Panagiotis Matsangas, Nita Lewis Shattuck, Katherine Mortimore, Christopher Paghastian, Frances Greene

AUDITORY WARNINGS INVOKING STARTLE RESPONSE CAUSE FASTER AND MORE INTENSE NECK MUSCLE CONTRACTIONS PRIOR TO HEAD IMPACTS..... 797
Mohammad Homayounpour, Jonathan D Mortensen, Andrew S Merryweather

HP2 - MODELING METHODS FOR TEST CASE AND SITUATION AWARENESS

TASK-BASED AUTOMATED TEST CASE GENERATION FOR HUMAN-MACHINE INTERACTION 802
Meng Li, Matthew L. Bolton

USING AN INTEGRATED COGNITIVE ARCHITECTURE TO MODEL THE EFFECT OF ENVIRONMENTAL COMPLEXITY ON DRIVERS’ SITUATION AWARENESS 807
Umair Rehman, Shi Cao, Carolyn MacGregor

CAN YOU FEEL IT? WHAT DOES IT MEAN? NOTIFICATIONS FOR OPERATORS OF UNMANNED GROUND VEHICLES (UGVS) DURING OPERATIONAL MISSIONS 812
Nuphar Katzman, Tal Oron-Gilad

HP3 - MODELING METHODS FOR AUTOMATION TRUST AND WORKLOAD

A SYSTEM DYNAMICS MODEL FOR HUMAN TRUST IN AUTOMATION UNDER SPEED AND ACCURACY REQUIREMENTS..... 817
Aya Hussein, Sondoss Elsayah, Hussein Abbass

A CAPACITY COEFFICIENT METHOD FOR CHARACTERIZING THE IMPACTS OF AUTOMATION TRANSPARENCY ON WORKLOAD EFFICIENCY..... 822
Corey K. Fallon, Leslie M. Blaha, Brett Jefferson, Lyndsey Franklin

SYSTEMATIC APPROACH FOR THE DESIGN OF FLIGHT SIMULATOR STUDIES 828
Klaas Fiete Krutein, Linda Ng Boyle

I1 - UX IN INDUSTRY: AN UNCONFERENCE W/ THE PRACTITIONERS

UX IN INDUSTRY: AN ‘UNCONFERENCE’ W/ THE PRACTITIONERS 833
France Jackson

ID1 - INDIVIDUAL DIFFERENCES

INDIVIDUAL DIFFERENCES IN VISUAL PERCEPTION AND POSTURE MIMICKING IN THE INERTIAL SENSOR-BASED POSTURE MATCHING METHOD FOR THE UPPER EXTREMITY	836
<i>Wonil Lee, Jia-Hua Lin, Stephen Bao</i>	
THE RELATIONSHIP BETWEEN VISUAL AND AUDITORY CUE UTILIZATION	838
<i>Jaime C. Auton, Mark W. Wiggins, Daniel Sturman</i>	
THE ROLE OF CUE UTILIZATION DURING A SIMULATED DRIVING SCENARIO	843
<i>Daniel Sturman, Mark W. Wiggins</i>	
INVESTIGATING GENDER DIFFERENCES IN HUMAN INTERACTIONS WITH A TRANSPARENT SWARM	848
<i>Aya Hussein, Sondoss Elsayah, Hussein Abbass</i>	
EFFECT OF BRAIN STIMULATION ON MECHANISMS OF SOCIAL COGNITION IS MODULATED BY INDIVIDUAL PREFERENCES FOR HUMAN VERSUS ROBOT AGENTS	853
<i>Abdulaziz Abubshait, Eva Wiese</i>	
PREDICTING ATTRITION AND PERFORMANCE IN NAVY AND MARINE CORPS AIR TRAFFIC CONTROL SCHOOL	858
<i>Noelle L. Brown, Cyrus K. Foroughi, Joseph T. Coyne, Ciara Sibley, Tatana Olson, Stephanie Myrick</i>	

K1 - CHILDREN'S ISSUES

ERGONOMICS IN ELEMENTARY SCHOOL: A MULTIFACETED APPROACH FOR LAPTOP COMPUTERS IN THE CLASSROOM	863
<i>Melissa M. Afterman</i>	
A HUMAN FACTORS APPROACH TO CENTRAL LINE ASSOCIATED BLOODSTREAM INFECTION (CLABSI) PREVENTION AND SAFETY CULTURE IN THE PEDIATRIC INTENSIVE CARE UNIT PILOT REPORT	868
<i>Naomi B. Bishop, Snezana Nena Osorio, Jennifer Inhae Lee, Mary Mahoney, Brianne Genow, Rana Zadeh, Elizabeth Capezuti, Sophia Brown, Shari Jean-Marie, Joanne Mathieu</i>	
DEVELOPING AN INTERACTIVE SURVEY INSTRUMENT TO CAPTURE HOSPITALIZED CHILDREN'S EXPERIENCE	872
<i>Haneen Ali, Astin Cole, Adam Sienkiewicz, Monir Hossain</i>	
FALLS FROM SHOPPING CARTS VERSUS HOUSEHOLD PRODUCTS AMONG YOUNG CHILDREN	877
<i>Farheen S. Khan, Kuba J. Glazek, J. Jay Todd, Samuel J. Alper</i>	
AN INVESTIGATION ON THE PORTRAYAL OF BLUE WHALE CHALLENGE ON YOUTUBE AND TWITTER	882
<i>Amro Khasawneh, Kapil Chalil Madathil, Emma Dixon, Pamela Wisniewski, Heidi Zinzow, Rebecca Roth</i>	

ME1 - IT TAKES PARTNERS TO CREATE SOLUTIONS MANAGEMENT WANTS

IT TAKES PARTNERS TO CREATE SOLUTIONS MANAGEMENT WANTS 884
Cristina G. Banks, Kathleen L. Mosier, Kriss J. Kennedy, Christopher Miller, Andrew S. Imada

ME2 - THE CYBERNETIC RETURN IN HUMAN FACTORS AND ERGONOMICS

THE CYBERNETIC RETURN IN HUMAN FACTORS/ERGONOMICS (HFE)..... 889
Patrick Waterson, Chris Baber, David Golightly, Peter Hancock, Thierry Morineau, Stephen J. Guastello, Travis J. Wiltshire, Waldemar Karwowski, Colin G. Drury

ME3 - TEAM DYNAMICS

ORCHESTRATING THROUGH WHIRLWIND: IDENTIFIED CHALLENGES AND RESILIENCE FACTORS OF INCIDENT MANAGEMENT TEAMS DURING HURRICANE HARVEY 894
Changwon Son, Farzan Sasangohar, S. Camille Peres, Timothy J. Neville, Jukrin Moon

COMMUNICATION SYSTEM CUES TO BENEFIT DISTRIBUTED ACTION TEAMS 899
Sarah Berger, Robert Henning

A STRUCTURED RESET PROCESS TO BENEFIT TEAM RESILIENCE 904
Jeffrey Hanrahan, Robert Henning

ME4 - AN EXPLORATION OF PATIENT ERGONOMICS IN HISTORICALLY MARGINALIZED COMMUNITIES

AN EXPLORATION OF PATIENT ERGONOMICS IN HISTORICALLY MARGINALIZED COMMUNITIES..... 909
Rupa S. Valdez, Richard J. Holden, Kapil Madathil, Natalie Benda, Richard J. Holden, Enid Montague, Rupa Valdez, Nicole Werner

ME5 - CURRENT RESEARCH IN MACROERGONOMICS

PUBLIC'S ACCEPTANCE OF AUTOMATED VEHICLES: THE ROLE OF INITIAL TRUST AND SUBJECTIVE NORM 914
Tingru Zhang, Haibo Tan, Shuling Li, Haoyu Zhu, Da Tao

MACROERGONOMICS --- A REAPPRAISAL..... 919
Thomas J. Smith, Michelle M. Robertson, Robert A. Henning

MICROMOBILITY AND THE BUILT ENVIRONMENT 924
Patricia C. Tice

PRELIMINARY ASSESSMENT OF A NOVEL WATCHSTANDING SCHEDULE FOR A CREW ON A SMALL SURFACE COMBATANT OF THE UNITED STATES NAVY 928
Panagiotis Matsangas, Nita Lewis Shattuck

PROCESSES AND CHALLENGES ASSOCIATED WITH INFORMAL ELECTRONIC WASTE RECYCLING AT AGBOGBLOSHIE, A SUBURB OF ACCRA, GHANA	933
<i>Augustine A. Acquah, Clive D'Souza, Bernard Martin, John Arko-Mensah, Afua Amoabeng Nti, Lawrence Kwarteng, Sylvia Takyi, Isabella A. Quakyi, Thomas G. Robins, Julius N. Fobil</i>	

ME6 - IMPLEMENTING HUMAN SYSTEMS INTEGRATION IN THE DEPARTMENT OF HOMELAND SECURITY

IMPLEMENTING HUMAN SYSTEMS INTEGRATION IN THE DEPARTMENT OF HOMELAND SECURITY	938
<i>Bonnie Kudrick, Kristopher Korbela, Jeffrey Dressel, Janae Lockett-Reynolds, Mark Rutherford, Matthew Witbeck, Jenny LaFreniere, Bret Peterson</i>	

OE1 - RECENT FINDING FROM THE UPPER LIMB CONSORTIUM STUDY: NEW APPROACHES TO RISK ASSESSMENT AND ADDITIONAL HEALTH OUTCOMES

RECENT FINDINGS FROM THE UPPER LIMB CONSORTIUM STUDY: NEW APPROACHES TO RISK ASSESSMENT AND ADDITIONAL HEALTH OUTCOMES	943
<i>Carisa Harris, Chair, David Rempel, Alysha R Meyers, Stephen Bao, Jay Kapellusch, David Rempel, Carisa Harris</i>	

OE10- UNDERSTANDING CAUSAL PATHWAYS FOR OCCUPATIONALLY RELATED LOW BACK DISORDERS PANEL

UNDERSTANDING CAUSAL PATHWAYS FOR OCCUPATIONALLY RELATED LOW BACK DISORDERS	950
<i>Sue A. Ferguson, William S. Marras, Jay M. Kapellusch, Matthew S. Thiese, Kermit G. Davis, Sean Gallagher</i>	

OE11 - POSTURE AND OFF ERGO

NECK MUSCLE ACTIVATION AND HEAD KINEMATICS WHEN USING A SMARTPHONE WHILE WALKING	952
<i>Woojin Yoon, Hyeseon Han, Seobin Choi, Gwanseob Shin</i>	

THE EFFECT OF POSTURE AND DURATION OF SMARTPHONE USAGE ON NECK FLEXION ANGLE	957
<i>Sundus Alfaitouri, Ahamed Altaboli</i>	

POSTURAL STRATEGIES OF BUS DRIVERS DURING A REGULAR WORK SHIFT IN URBAN AREA: A PILOT STUDY	962
<i>Federico Arippa, Bruno Leban, Massimiliano Pau</i>	

SIT-STAND WORKSTATIONS: RELATIONS AMONG POSTURAL SWAY, TASK, PROPRIOCEPTION AND DISCOMFORT	967
<i>Chandler Shannon, Ed Havey, Anita Vasavada</i>	

DOES USING MULTIPLE COMPUTER MONITORS AFFECT HEALTH AND PRODUCTIVITY? A SYSTEMATIC REVIEW	972
<i>Kaitlin M. Gallagher, Laura Cameron, Madison Boulé, Diana De Carvalho</i>	

OE12 - RETURN ON INVESTMENT OF ERGONOMICS INTERVENTIONS - DISCUSSION PANEL

RETURN ON INVESTMENT OF ERGONOMICS INTERVENTIONS – DISCUSSION PANEL 973
Blake McGowan, Christopher R. Reid, Stephen Bao, Jay Kapellusch

OE13 - OCCUPATIONAL ERGONOMICS

EVALUATION OF A TRUNK SUPPORTING EXOSKELETON FOR REDUCING MUSCLE FATIGUE..... 975
Nathan Poon, Logan van Engelhoven, Homayoon Kazerooni, Carisa Harris

LIFTING HEAVY PATIENTS IN THEIR HOMES: A BIOMECHANICAL STUDY OF EQUIPMENT THAT CAN BE USED BY EMS PROVIDERS 979
Steven A. Lavender, Carolyn M. Sommerich, Steven Bigelow, Eric B. Weston, Kelly Seagren, Noura Amini Pay, Dawn Sillars, Vivek Ramachandran, Chunyi Sun, Yilun Xu, William S. Marras

VIDEO-BASED ERGONOMIC ASSESSMENT FOR SPACESUIT TRAINING IN A MICROGRAVITY ANALOG 982
Yaritza Hernandez, K. Han Kim, Elizabeth Benson, Sarah Jarvis, Sudhakar Rajulu

NEUTRAL BODY POSTURE IN SPACEFLIGHT 987
K. Han Kim, Karen S. Young, Sudhakar L. Rajulu

COMPOUND MANUAL MATERIAL HANDLING TASKS: DOES A WORST-CASE ANALYSIS OF SUB-TASKS LEAD TO UNDERESTIMATION OF RISK? 992
Thomas J. Albin

CONTROL AND AUTOMATION SYSTEMS ONBOARD THE VESSEL: LESSONS IN HUMAN-CENTERED DESIGN LEARNED FROM 20 YEARS OF MARINE OCCURRENCES IN CANADA..... 995
Michelle Gauthier, Gerard Kruithof, Christina Narlis, Wendy A. M. Jolliffe

OE14 - THE DESIGN OF EXPERIMENTS IN OCCUPATIONAL ERGONOMICS RESEARCH: ISSUES AND CHALLENGES

THE DESIGN OF EXPERIMENTS IN OCCUPATIONAL ERGONOMICS RESEARCH: ISSUES AND CHALLENGES 1000
Bob Fox, Dan Mines, Joel Cort, Monica Jones, Ming-Lun Lu, Jim Potvin, David Rempel

OE15 - RISK ASSESSMENT AND PHYSICAL RISK/STRESSORS

MAPPING CENTER OF PRESSURE DURING STANDING REACH TASKS 1003
Monica L. H. Jones, Sheila M. Ebert, Clive D'Souza, Matthew P. Reed

MEASURING THE EFFECT OF TOOL DESIGN ON EXPOSURE TO PHYSICAL RISK FACTORS AMONG NOVICE HAND PLANTERS 1008
Robert Granzow, Mark C. Schall Jr., Mathew Smidt, Jerry Davis, Richard Seseck, Sean Gallagher

NEVER MIND, IT'S TOO COLD: THERMAL STRESS AND A DECREASE IN SELF-CONTROL SELF-EFFICACY	1013
<i>Drew M. Morris, June J. Pilcher</i>	

PHYSICAL DEMAND COMPARISONS BETWEEN CLECO'S LOW TORQUE REACTION AND BOSCH'S ERGOSTOP RIGHT-ANGLE POWER-TOOL FASTENING STRATEGIES	1018
<i>Joel Cort, Ryan Porto, Pete Trull</i>	

IDENTIFYING AN OPTIMAL SAMPLING METHOD TO ESTIMATE POSTURAL RISK IN A DYNAMIC WORK TASK	1023
<i>Kryztopher D. Tung, Yoko E. Fukumura, Nancy A. Baker, Jane L. Forrest, Shawn C. Roll</i>	

OE2 - VIBRATION-PHYSICAL RF/STRESSORS

EVALUATION OF MULTI-AXIAL ACTIVE SUSPENSION TO REDUCE WHOLE BODY VIBRATION EXPOSURES AND ASSOCIATED BIOMECHANICAL LOADING IN MINING HEAVY EQUIPMENT VEHICLE OPERATORS.....	1029
<i>Kiana Kia, Pete Johnson, Stephanie Fitch, Jack Dennerlein, Jay Kim</i>	

PHYSIOLOGICAL AND MUSCULAR STRESS ASSOCIATED WITH MULTI-AXIAL WHOLE-BODY VIBRATION EXPOSURE IN MINING HEAVY EQUIPMENT VEHICLE ENVIRONMENT.....	1035
<i>Kiana Kia, Stephanie Fitch, Sean Newsom, Jay Kim</i>	

EFFECTS OF MULTI-AXIAL WHOLE BODY VIBRATION EXPOSURE ON POSTURAL STABILITY	1041
<i>Jang-Ho Park, Kiana Kia, Stephanie Fits, Divya Srinivasan, Jeong Ho Kim</i>	

AN EXPLORATORY STUDY COMPARING THE HAND ARM VIBRATION EXPOSURES MEASURED FROM BUCKING BARS USING TRADITIONAL TOOL-MOUNTED ACCELEROMETERS AND WRIST WORN IMUS	1043
<i>Wadih Zaklit, Per Reinhall, Livia Anderson, Szymon Sarnowicz, Cassidy Quigley, Hyoung Frank Ryou, Richard Gardner, Riley HansonSmith, Peter W. Johnson</i>	

COMPARISON OF WHOLE-BODY VIBRATION EXPOSURES WHEN OPERATING A CITY BUS WITH AN ACTIVE, PASSIVE AND STATIC SUSPENSION BUS SEAT	1047
<i>Peter W. Johnson, Jennifer Ibbotson-Brown, Serf Menocal, Jim Parison</i>	

OE3 - HEALTH CARE

PHYSICAL STRESSES ON CAREGIVERS WHEN PULLING PATIENTS UP IN BED: EFFECT OF REPOSITIONING AIDS AND PATIENT WEIGHT	1052
<i>Jie Zhou, Neal Wiggermann</i>	

EFFECTS OF VISUAL STRESS ON POSTURAL CONTROL DURING SIMULATED LAPAROSCOPY: A PRELIMINARY STUDY.....	1057
<i>Yifan Li, Kristin Chrouser, Clive D'Souza</i>	

QUANTIFICATION OF IN SITU TREMOR IN MICROSCOPIC SURGERY	1062
<i>Yifan Li, Mitchell Wolf, Amol Kulkarni, James Bell, Jonathan Chang, Amit Nimunkar, Robert G. Radwin</i>	

EFFECTS OF PATIENT TURNING DEVICES ON MUSCULAR DEMANDS OF CAREGIVERS.....	1064
<i>Jaemin Hwang, Hemateja Ari, Megha Matoo, Jie Chen, Jeong Ho Kim</i>	

PREVALENCE OF SAFE PATIENT HANDLING PRACTICE IN U.S. ACUTE CARE HOSPITALS	1068
<i>Susan Kayser, Neal Wiggermann, Dee Kumpar, R.N. Hill-Rom</i>	

OE4 - EXOSKELETONS 1

ASSESSMENT OF TWO PASSIVE BACK-SUPPORT EXOSKELETONS IN A SIMULATED PRECISION MANUAL ASSEMBLY TASK	1073
<i>Saman Madinei, Sunwook Kim, Mohammad Mehdi Alemi, Divya Srinivasan, Maury A. Nussbaum</i>	
EVALUATION OF TRUNK-SUPPORTING EXOSKELETON.....	1075
<i>H. Kazerooni, Wayne Tung, Minerva Pillai</i>	
EFFECTS OF PASSIVE UPPER-EXTREMITY EXOSKELETON USE ON MOTOR PERFORMANCE IN A PRECISION TASK.....	1079
<i>Denean M. Kelson, Sunwook Kim, Maury A. Nussbaum, Divya Srinivasan</i>	
EFFECTS OF USING A PROTOTYPE WHOLE-BODY POWERED EXOSKELETON FOR PERFORMING INDUSTRIAL TASKS.....	1081
<i>Sunwook Kim, Willow Lawton, Maury A. Nussbaum, Divya Srinivasan</i>	
EFFECTS OF BACK SUPPORT EXOSKELETON USE ON POSTURAL STABILITY	1083
<i>Jang-Ho Park, Sunwook Kim, Maury A. Nussbaum, Divya Srinivasan</i>	

OE5 - TASK ASSESSMENT

A DEEP LEARNING-BASED RULA METHOD FOR WORKING POSTURE ASSESSMENT.....	1085
<i>Li Li, Xu Xu</i>	
ACTIVATION PATTERN OF THE UPPER EXTREMITY MUSCLES DURING DYNAMIC PUSH AND PULL TASKS.....	1090
<i>Donghyun Song, Haerim Bak, Gwanseob Shin</i>	
LOW BACK MUSCLE ACTIVITY WHEN USING A SMARTPHONE WHILE WALKING	1094
<i>Seobin Choi, Misol Kim, Eunjee Kim, Gwanseob Shin</i>	
EFFECTS OF MENTAL AND PHYSICAL FATIGUE INDUCING TASKS ON BALANCE AND GAIT CHARACTERISTICS	1098
<i>Youngjae Lee, Sophia Ulman, Sunwook Kim, Divya Srinivasan</i>	

OE6 - EXOSKELETONS 2

ACCURACY OF AN ALGORITHM USING MOTION DATA OF FIVE WEARABLE IMU SENSORS FOR ESTIMATING LIFTING DURATION AND LIFTING RISK FACTORS	1100
<i>Menekse S. Barim, Ming-Lun Lu, Shuo Feng, Grant Hughes, Marie Hayden, Dwight Werren</i>	
EXPLORING NEUROERGONOMIC FIT OF PASSIVE EXOSKELETONS DURING MANUAL HANDLING TASKS	1107
<i>N/A</i>	

IDENTIFYING BARRIERS AND FACILITATORS OF EXOSKELETON IMPLEMENTATION IN THE OPERATING ROOM.....	1108
<i>Jackie S. Cha, Sara Monfared, Kaylee Ecker, Derek Lee, Dimitrios Stefanidis, Maury A. Nussbaum, Denny Yu</i>	

OE7 - FATIGUE

AN EXAMPLE OF MODELING THE COMBINED EFFECTS OF CREEP AND FATIGUE LOADING IN MUSCULOSKELETAL TISSUE.....	1109
<i>Sean Gallagher, Rong Huangfu</i>	

SHOULDER RISK ASSESSMENT BASED ON FATIGUE FAILURE THEORY.....	1112
<i>Dania Bani Hani, Sean Gallagher, Richard F. Seseck, Rong Huangfu, Mark C. Schall Jr., Jerry Davis</i>	

SEX-SPECIFIC FATIGABILITY RATES OF NECK MUSCLES DURING SUSTAINED NON- NEUTRAL EXERTIONS.....	1117
<i>Suman Chowdhury, Yu Zhou, Curran P. Reddy, Bocheng Wan, Xudong Zhang</i>	

OE8 - LIFTING/LB

SPINAL LOADING DURING ONE AND TWO-HANDED LIFTING.....	1121
<i>Eric B. Weston, Alexander Aurand, Jonathan S. Dufour, Gregory G. Knapik, William S. Marras</i>	

ESTIMATING TRUNK ANGLES DURING LIFTING USING COMPUTER VISION BOUNDING BOXES *.....	1123
<i>Runyu L. Greene, Ming-Lun Lu, Menekse Salar Barim, Xuan Wang, Marie Hayden, Yu Hen Hu, Robert G. Radwin</i>	

A COMPARISON OF SPINAL LOADS WHILE LIFTING IN CONFINED VERTICAL SPACE.....	1125
<i>Eric B. Weston, Jonathan S. Dufour, Ming-Lun Lu, William S. Marras</i>	

OE9 - MOTION CAPTURE/VR

EFFECT OF TWO COMMON HEAD-MOUNTED AUGMENTED REALITY SYSTEMS ON MUSCLE FORCE AND BLINK RATE OF ELECTRIC UTILITY POWER PLANT OPERATORS.....	1127
<i>Richard W. Marklin Jr., Ashley M. Toll, Eric H. Bauman, John J. Simmins</i>	

OPTICAL AND INERTIAL MOTION CAPTURE JOINT ANGLE COMPARISON USING JACK™.....	1132
<i>Bianca Sfalcin, Xiaoxu Ji, Adrian de Gouw, Jim Potvin, Joel Cort</i>	

GENDER AND PARITY IN STATISTICAL PREDICTION OF ANTERIOR CARRY HAND- LOADS FROM INERTIAL SENSOR DATA.....	1137
<i>Sol Lim, Clive D'Souza</i>	

PD1 - STANLEY CAPLAN USER CENTERED DESIGN AWARD

2019 PRODUCT DESIGN TECHNICAL GROUP: STANLEY CAPLAN USER-CENTERED PRODUCT DESIGN AWARD.....	1142
<i>Adam Shames, Kathleen Kremer</i>	

PD3 - ASSESSING BODY MECHANICS

MEASUREMENT OF THE INTERNAL SHAPE OF POWER GRIP IN WRIST ULNAR/RADIAL DEVIATION	1144
<i>Hayoung Jung, Sujin Mun, Wonsup Lee, Heecheon You</i>	
PERFORMANCE, MOVEMENT, POSTURE, AND PERCEIVED DISCOMFORT IN ACTIVE VS. STATIC SEATING	1149
<i>Jeremy D. Faulk, Cameron C. McKee, Heather Bazille, Michael Brigham, Jasmine Daniel, Julia G. Jaffe, JeeEun Lee, Elena Sabinson, Yaoyi Zhou, Yige Zhu, Yoo jin Chung, Alan Hedge</i>	
VALIDITY OF PENDANT-BASED IMU ASSESSMENT OF POSTURAL STABILITY UNDER VARYING BALANCE CONDITIONS COMPARED TO A SENSOR POSITIONED ON THE LOWER BACK.....	1154
<i>Shubo Lyu, Stephen Piazza, Danielle Symons Downs, Andris Freivalds</i>	

PD4 - PRODUCT DESIGN AND METHODOLOGY

PEOPLE CAN COMPENSATE FOR DIRECTIONAL MISMATCHES BETWEEN INPUT DEVICES AND CURSOR MOTIONS, UP TO A THRESHOLD.....	1159
<i>Matthew R. Yanko, Dan Odell</i>	

VOLUME 3

COMPARISON OF VIDEO-BASED AND TRADITIONAL PHYSICAL DEMANDS DESCRIPTION METHODS.....	1164
<i>Colin D. McKinnon, Michael W. Sonne, Peter J. Keir</i>	
DESIGN FOR DISCOVERY: HELPING AUSTRALIAN FARMERS EXPLORE THEIR OPTIONS IN A GOVERNMENT SUSTAINABILITY PROGRAM THROUGH USER CENTRED DESIGN	1168
<i>Cara A. Stitzlein, Martijn Mooij</i>	

PD5 - PRODUCT DESIGN PRACTITIONER SESSION

DEVELOPERS' BEHAVIORAL CHARACTERISTIC AND ITS IMPACT ON PERFORMANCE: A CASE STUDY OF IOT DEVELOPMENT PRODUCT DESIGN	1173
<i>Jongsoon Park, David Kuhns</i>	
THE PSYCHOLOGICAL FACTORS THAT INFLUENCE SUCCESSFUL TECHNOLOGY ADOPTION IN THE OIL AND GAS INDUSTRY	1178
<i>Ruby Roberts, Rhona Flin</i>	
A WEARABLE INTERVENTION FOR LAPTOP USERS.....	1183
<i>Byungsoo Kim, Hongyang Liu, Sharon Joines</i>	
AN APPLICATION OF MACHINE LEARNING FOR POLICE MOBILE COMPUTER TERMINAL USABILITY EVALUATION.....	1189
<i>Maryam Zahabi, Emily McCollum</i>	

EXPLORING DESIGN CONSTRUCTS IN SOUND DESIGN WITH A FOCUS ON PERCEIVED AFFORDANCE.....	1194
<i>Myounghoon Jeon</i>	

INDIVIDUAL DIFFERENCES

SEX DIFFERENCES IN PERCEPTIONS OF ASYNCHRONOUS AUDIOTACTILE CUES.....	1199
<i>Victoria L. Claypoole, J. Christopher Brill</i>	

PRODUCT DESIGN

ERGONOMIC ANALYSIS OF AN AFFORDANCE TOOL FOR MODERN KITCHEN KNIVES.....	1204
<i>Richard T. Stone, Olivia Janusz, Thomas M. Schnieders</i>	

COGNITIVE ENGINEERING AND DECISION MAKING

HUMAN-ROBOT INTERACTION WITH DRONES AND DRONE SWARMS IN LAW ENFORCEMENT CLEARING OPERATIONS.....	1208
<i>Richard T. Stone, Thomas M. Schnieders, Kevin A. Push, Stephen Terry, Mary Truong, Inshira Seshie, Kathryn Socha</i>	

VIRTUAL ENVIRONMENTS

VIRTUAL REALITY TRAINING IMPROVES REAL-WORLD PERFORMANCE ON A SPEEDED TASK.....	1213
<i>Daphne E. Whitmer, Daniel Ullman, Cheryl I. Johnson</i>	

TRAINING

EVALUATING AN ADAPTIVE TRAINER FOR A COMPLEX DECISION-MAKING TASK	1218
<i>Cheryl I. Johnson, Daphne E. Whitmer, Matthew D. Marraffino</i>	

HUMAN PERFORMANCE

UNDERSTANDING CONTROLLER-PILOT INTERACTION DYNAMICS IN THE CONTEXT OF AIR TRAFFIC CONTROL.....	1220
<i>Mustafa Demir, Nancy J. Cooke, Christopher S. Lieber, Sarah Ligda</i>	

GENERAL SESSIONS

DO PEOPLE MENTALLY REPRESENT AUTOMATED TASKS? EVIDENCE FROM TASK-SWITCHING COSTS FOLLOWING TAKEOVERS.....	1222
<i>Martina K. Hollearn, James D. Miles</i>	

SURFACE TRANSPORTATION

LIGHT-BASED EXTERNAL HUMAN MACHINE INTERFACE: COLOR EVALUATION FOR SELF-DRIVING VEHICLE AND PEDESTRIAN INTERACTION	1227
<i>Stefanie M. Faas, Martin Baumann</i>	

SAFETY

- THE EFFECTS OF TRANSITIONING BETWEEN DIFFERENT FLOOR COVERINGS ON
GAIT CHARACTERISTICS OF OLDER ADULTS 1232
Hyung Nam Kim, Thurmon E. Lockhart

INDIVIDUAL DIFFERENCES

- SEX-RELATED DIFFERENCES IN SPATIAL ABILITY AND SIGNAL DETECTION TASK
PERFORMANCE 1234
Rhyse Bendell, Florian Jentsch

COGNITIVE ENGINEERING AND DECISION MAKING

- MULTIPLE RESOURCE LOADING AND AUDITORY PREEMPTION DURING A
CONTINUOUS SIGNAL DETECTION TASK 1239
Rhyse Bendell, Gabrielle Vasquez, Florian Jentsch

HEALTH CARE

- OPTIMIZING SURGICAL TOOLS FOR SINGLE-SITE SURGERY: A CADAVER-BASED
DESIGN STUDY 1244
Bernadette McCrory, Alex Cuevas, Jacob Alborano, Bethany R. Lowndes, M. Susan Hallbeck

SURFACE TRANSPORTATION

- ANALYSIS OF CRASH REPORTS FOR RECUMBENT BICYCLES AND TRICYCLES 1249
Thomas J. Ayres

USABILITY AND SYSTEM EVALUATION

- AN INVESTIGATION OF DIFFERENT METHODOLOGIES FOR RATING PRODUCT
SATISFACTION 1254
Ian Robertson, Philip Kortum

TRAINING

- ASSESSMENT OF THE RELATIONSHIP BETWEEN MILITARY WEAPON
QUALIFICATION SCORES AND ATTRIBUTES OF SIMULATED MARKSMANSHIP
MISSION READINESS 1259
*Jose D. Villa, John J. Christopher, K. Blake Mitchell, Erika K. Hussey, John W. Ramsay,
Stephanie A. T. Brown*

- DETERMINING THE CRITICAL AIMING WINDOW DURATION BASED ON SHOOTER
SKILL LEVEL 1264
*Jeremey R. Schnipke, Michael E. LaFiandra, Gregory M. Freisinger, Leif Hasselquist,
Stephanie A.T. Brown*

USABILITY AND SYSTEM EVALUATION

CURRENT STATE OF USER EXPERIENCE EVALUATION IN VIRTUAL REALITY: A SYSTEMATIC REVIEW FROM AN ERGONOMIC PERSPECTIVE..... 1269

Yong Min Kim, Ilseun Rhiu, Minshik Rhie, Hye Seon Choi, Myung Hwan Yun

METACOGNITION IN HUMAN FACTORS: THE REWARDS AND CONSEQUENCES OF REPEATED ASSESSMENT 1271

Lisa Vangsness, Michael E. Young

OCCUPATIONAL ERGONOMICS

INFLUENCE OF FLOORING ON LOWER EXTREMITY BLOOD OXYGENATION AND VOLUME DURING PROLONGED STANDING 1273

Stephanie A. Wiltman, Kenneth S. Pechtl, Theodore J. Huppert, April J. Chambers

COGNITIVE ENGINEERING AND DECISION MAKING

DOES RESTRICTING AN OBSERVER'S ARM MOVEMENTS DEGRADE THEIR JUDGMENTS OF OTHERS' REACHING ABILITIES? 1278

Nicholas A. Garcia, Keith S. Jones, Benjamin P. Widlus

SURFACE TRANSPORTATION

ACUTE HYPERGLYCEMIA MAY IMPAIR DRIVING SKILLS OF YOUNG T1DM PATIENTS 1279

Dana Ridel, Avinoam Borowsky, Yisrael Parmet, Alon Haim, Rotem Shalev, Eli HersHKovitz

AUGMENTED COGNITION

DIFFERENTIATING ACTIVE AND PASSIVE FATIGUE WITH THE USE OF ELECTROENCEPHALOGRAPHY 1280

Kyle A. Bernhardt, Dmitri Poltavski, Thomas Petros, F. Richard Ferraro

OCCUPATIONAL ERGONOMICS

PREDICTIVE DISTRIBUTION MODELING OF TRUNK KINEMATIC VARIABLES 1285

Jordyn Koenig, Hamid Norasi, Gary Mirka

COMPUTER SYSTEMS

AN EXAMINATION OF THE EFFORT HYPOTHESIS FOR THE PERCEIVED STRENGTH OF PASSWORDS..... 1286

Philip Kortum, Claudia Ziegler Acemyan

BEST PRACTICES: USABILITY TESTING ACROSS (UN)COMMON PLATFORMS..... 1291

Sophie Amberkar, Anna Delchamps, Zoe Glas, Chelsea Miller, Ryle Scribner, Marshall Wang, Rochelle Edwards

USABILITY AND SYSTEM EVALUATION

- ALTERNATIVE FARNSWORTH-MUNSELL SCORING METHODOLOGY FOR TESTING EYEWEAR 1296
Edward R. Hennessy

COGNITIVE ENGINEERING AND DECISION MAKING

- A REAL-TIME INTERRUPTION MANAGEMENT SYSTEM BASED ON EYE-TRACKING DATA..... 1301
Hagit Shaposhnik

- ANTHROPOMORPHIZING ROBOTS: THE EFFECT OF FRAMING IN HUMAN-ROBOT COLLABORATION 1306
Linda Onnasch, Eileen Roesler

SAFETY

- RISK PERCEPTIONS OF COMMON TECHNOLOGIES 1311
Rachel E. Stuck, Bruce N. Walker

INDIVIDUAL DIFFERENCES

- EXPLORING SEX DIFFERENCES IN VIGILANCE PERFORMANCE WITH KNOWLEDGE OF RESULTS..... 1316
Grace E. Waldfogle, Michaela R. Hagerty-Koller, Lindsey R. Lane, Allison E. Garibaldi, James L. Szalma

CYBERSECURITY

- AN ABSTRACTION OF CYBER INCEPTION: USING A MODIFIED VERSION OF BATTLESHIP TO STUDY STRATEGIES AND BEHAVIOR OF DECEPTION 1321
Verica Buchanan, Ashley R. Chinzi, Nicholas C. Day, Lidija A. Buchanan, Rachel Specht, Nancy J. Cooke

OCCUPATIONAL ERGONOMICS

- NATIONAL OCCUPATIONAL RESEARCH AGENDA FOR MUSCULOSKELETAL HEALTH 1326
Ming-Lun Lu, David M. Rempel, William S. Marras, Robert R. Fox, Kari Babski-Reeves, Blake McGowan, Alysha R. Meyers, Sean Gallagher

- DEVELOPMENT OF AN ALGORITHM FOR AUTOMATICALLY ASSESSING LIFTING RISK FACTORS USING INERTIAL MEASUREMENT UNITS..... 1329
Ming-Lun Lu, Shuo Feng, Grant Hughes, Menekse S. Barim, Marie Hayden, Dwight Werren

PRODUCT DESIGN

- AN ERGONOMIC EVALUATION OF POP-TOP CAN OPENER DESIGN..... 1334
Richard Stone, Zachary Sobczak, Colten Fales, Ahmad Mumani, Esra Abdelall, Thomas Schnieders

HEALTH CARE

IMPLEMENTING BLOCKCHAIN TO ENHANCE USABILITY OF PATIENT-GENERATED DATA.....	1339
<i>Steffen Baumann, Richard Stone, Esra Abdelall, Varun Srikrishnan, Thomas Schnieders, Colten Fales, Ahmad Mumani</i>	

ENVIRONMENTAL DESIGN

AN ENGINEERING APPROACH TO STORAGE AND ACCESS IN HIGH PRIORITY SCENARIOS.....	1344
<i>FNU Varun Ananthasivan Srikrishnan, Richard T. Stone, Cong Xu</i>	

OCCUPATIONAL ERGONOMICS

GYMNASTICS VAULT BOARD DESIGN: A COMPARISON OF SPRING CONFIGURATION AND STYLE OF SPRING – PRELIMINARY STUDY	1349
<i>Courtney Middelkoop, Richard Stone</i>	

COGNITIVE ENGINEERING AND DECISION MAKING

PERCEPTUAL ANTICIPATION IN A SHOOT/DON'T SHOOT TASK	1353
<i>Dakota Scott, Joel Suss</i>	

AEROSPACE SYSTEMS

MEASURING ROTARY-WING AVIATOR WORKLOAD WITHIN FOUR WORKLOAD DOMAINS	1358
<i>Kathryn A. Feltman, Kyle A. Bernhardt, Amanda M. Kelley</i>	

OCCUPATIONAL ERGONOMICS

LEAD VEST/APRON AND BACK PAIN IN INTERVENTIONAL RADIOLOGY AND ENDOVASCULAR SURGERY: A SCOPING REVIEW.....	1362
<i>Emmanuel Tetteh, M. Susan Hallbeck, Gary Mirka</i>	
EFFECTS OF SAMPLING FREQUENCY AND SAMPLE WINDOW SIZE ON MEDIAN FREQUENCY OF SURFACE EMG	1364
<i>Pramiti Sarker, Gary Mirka</i>	

SAFETY

SAFETY CLIMATE IN MILITARY ORGANIZATIONS: A PILOT STUDY OF AN ADJUSTED MULTI-DOMAIN INSTRUMENT	1368
<i>M. Schüler, J. Vega Matuszczyk</i>	

VIRTUAL ENVIRONMENTS

- VIRTUAL REALITY EXPOSURE THERAPY AND MILITARY PERSONNEL WITH POST-TRAUMATIC STRESS DISORDER: A SYSTEMATIC REVIEW 1373
Simar Singh, Dan Nathan-Roberts

INDIVIDUAL DIFFERENCES

- PERFORMANCE ON A NATURAL USER INTERFACE TASK IS CORRELATED WITH HIGHER GESTURE PRODUCTION 1379
Shannon K. T. Bailey, Cheryl I. Johnson

AEROSPACE SYSTEMS

- HOW AIRLINE DISPATCHERS MANAGE FLIGHTS: A TASK ANALYSIS IN DISTRIBUTED AND HETEROGENEOUS NETWORK OPERATIONS..... 1384
Lixiao Huang, Victoria Chibuogu Nneji, Mary Cummings

COGNITIVE ENGINEERING AND DECISION MAKING

- PAYING A PRICE FOR INFORMATION: NON-OPTIMAL DECISION MAKING AND PREFERENCE FOR INFORMATION OVER EXPECTED VALUE OUTCOMES 1389
Christopher D. Wickens, Charles Smith, Benjamin Clegg, Nathan Herdener

SURFACE TRANSPORTATION

- A CASE STUDY ON THE IMPACT OF CROSSWALK MARKINGS ON DRIVER YIELDING TO PEDESTRIANS 1394
Curtis M. Craig, Nichole L. Morris, Yubin Hong
- HAZARD PERCEPTION IN CITY AND HIGHWAY ENVIRONMENTS..... 1399
John Paul Plummer, Anastasia Diamond, Alex Chaparro, Rui Ni

INDIVIDUAL DIFFERENCES

- HOW DO INDIVIDUAL DIFFERENCES IN ATTENTION CONTROL AND WORKING MEMORY CAPACITY RELATE TO MONITORING AUTOMATION? 1404
Cyrus K. Foroughi, Ericka Rovira, Kaley Rose, DaShawn Davis, Jaritzel J. Jurado, Jongbum Chae, Rich Pak, Noelle L. Brown, Ciara Sibley, Joseph T. Coyne
- UPDATING THE DIRECTION ORIENTATION TASK: AN AVIATION SELECTION TOOL 1409
Heidi N. Keiser, Cory M. Moclair, Kenneth M. King, Noelle L. Brown, Cyrus K. Foroughi, Ciara Sibley, Joseph T. Coyne

OCCUPATIONAL ERGONOMICS

- IMPACT OF REST AND SECONDARY INTERVENTION ON MUSCULOSKELETAL DISORDER DEVELOPMENT, SYSTEMIC INFLAMMATION AND SENSORIMOTOR BEHAVIORAL DECLINES IN A RAT MODEL..... 1414
Tianqi Tenchi Gao Smith, Ann E Barr-Gillespie, Michelle Harris, Mamta Amin, Sean Gallagher, Mary Frances Barbe

SYSTEM DEVELOPMENT

- USING HUMAN-AGENT TEAMS TO PURPOSEFULLY DESIGN MULTI-AGENT SYSTEMS 1420
Christopher Flathmann, Nathan McNeese, Lorenzo Barberis Canonico

COGNITIVE ENGINEERING AND DECISION MAKING

- THE IMPACT OF INTERRUPTIONS ON FEATURE CHANGE DETECTION WITHIN DYNAMIC SCENES..... 1425
Kimberly N. Perry, Mark W. Scerbo

VIRTUAL ENVIRONMENTS

- THE INTUITIVENESS OF GESTURE CONTROL WITH A MIXED REALITY DEVICE 1430
Jacob D. Benedict, Jacob D. Guliuzo, Barbara S. Chaparro

FORENSICS PROFESSIONAL

- THE JOINT EFFECT OF SCIENTIFIC KNOWLEDGE AND PHOTOGRAPHIC EVIDENCE ON EXPERT WITNESS CREDIBILITY 1435
N/A

COGNITIVE ENGINEERING AND DECISION MAKING

- TOWARD A DEFINITION OF COMPLEX COGNITIVE SKILL 1440
Dar-Wei Chen, Kelly J. Neville, Lauren Massey, Gregory A. Burbelo, Paul N. Blankenbeckler, Sean Normand, Elizabeth Uhl

HUMAN PERFORMANCE

- TOWARDS A MODEL OF AUTOMATION ADOPTION 1445
Ian McCandliss, Kevin Zish, J. Malcolm McCurry, J. Gregory Trafton

HEALTH CARE

- NORMOBARIC HYPOXIA WITH A SIMPLE SACCADIC TASK REVEALS LATENT PERFORMANCE DEFICITS IN SERVICE MEMBERS AFFECTED BY MILD TRAUMATIC BRAIN INJURIES (MTBI)..... 1450
Christopher J. Aura, Leonard A. Temme, Paul M. St. Onge, Thomas J. DeGraba, Joseph Bleiberg

GENERAL SESSIONS

PERCEIVED APPLICABILITY OF A BIG FIVE PERSONALITY INVENTORY FOR COMPUTERS.....	1456
<i>Briana Sobel, Valerie Sims</i>	

COGNITIVE ENGINEERING AND DECISION MAKING

COLLECTIVELY INTELLIGENT TEAMS: INTEGRATING TEAM COGNITION, COLLECTIVE INTELLIGENCE, AND AI FOR FUTURE TEAMING.....	1461
<i>Lorenzo Barberis Canonico, Christopher Flathmann, Nathan McNeese</i>	

THE WISDOM OF THE MARKET: USING HUMAN FACTORS TO DESIGN PREDICTION MARKETS FOR COLLECTIVE INTELLIGENCE	1466
<i>Lorenzo Barberis Canonico, Christopher Flathmann, Nathan McNeese</i>	

VIRTUAL ENVIRONMENTS

TEXT INPUT PERFORMANCE WITH A MIXED REALITY HEAD-MOUNTED DISPLAY (HMD).....	1471
<i>Jessyca L. Derby, Christopher T. Rarick, Barbara S. Chaparro</i>	

HEALTH CARE

BLOOD FLOW VELOCITY OF THE MIDDLE CEREBRAL ARTERIES: A REAL-TIME MEASURE OF ATTENTIONAL LOAD IN THE LAPAROSCOPIC SURGERY ENVIRONMENT?.....	1476
<i>Martina I. Klein, Eleanor K. Foster, Eric T. Greenlee</i>	

AUGMENTED COGNITION

AUGMENTED REALITY HEAD-UP DISPLAYS EFFECT ON DRIVERS' SPATIAL KNOWLEDGE ACQUISITION.....	1481
<i>Nayara de Oliveira Faria, Dina Kandil, Joseph L. Gabbard</i>	

USABILITY AND SYSTEM EVALUATION

ASSESSING THE USER EXPERIENCE OF VIDEO GAMES: RELATIONSHIPS BETWEEN THREE SCALES	1483
<i>William J. Shelstad, Barbara S. Chaparro, Joseph R. Keebler</i>	

ENVIRONMENTAL DESIGN

USING UNIVERSAL DESIGN TO IMPROVE THE VISITOR EXPERIENCE AT THE GEORGIA AQUARIUM.....	1488
<i>N/A</i>	

CYBERSECURITY

- A SIMULATOR STUDY ON DRIVERS' RESPONSE AND PERCEPTION TOWARDS
VEHICLE CYBERATTACKS 1493
Fangda Zhang, Jonathan Petit, Shannon C. Roberts

USABILITY AND SYSTEM EVALUATION

- DEVELOPING HUMAN-ROBOT TEAM INTERDEPENDENCE IN A SYNTHETIC TASK
ENVIRONMENT 1498
*Glenn J. Lematta, Pamela B. Coleman, Shawaiz A. Bhatti, Erin K. Chiou, Nathan J. McNeese,
Mustafa Demir, Nancy J. Cooke*

PRODUCT DESIGN

- HAND CLASSIFICATION BY COMPARING THREE CLUSTERING METHODS 1503
Sung Hee Ahn, Gee Won Shin, Kyung-Jun Lee, Joong Hee Lee, Myung Hwan Yun

HEALTH CARE

- HOW NOISE AFFECTS PATIENTS IN HOSPITALS 1505
Katie Jue, Dan Nathan-Roberts

USABILITY AND SYSTEM EVALUATION

- HEURISTIC EVALUATION OF A TESLA MODEL 3 INTERFACE 1510
*Eva L. Parkhurst, Lindsay B. Conner, James C. Ferraro, Mar E. Navarro, Mustapha
Mouloua*

TRAINING

- EFFECTIVENESS OF A SIMULATOR-BASED BRIDGE RESOURCE MANAGEMENT
TRAINING MODULE IN THE GERMAN NAVY 1515
Stefan Röttger, Hannes Krey

USABILITY AND SYSTEM EVALUATION

- AN EYE-TRACKING ANALYSIS OF A RESTAURANT MENU 1517
Joshua K. Smith, Jacob D. Guliuzo, Jacob D. Benedict, Barbara S. Chaparro

VIRTUAL ENVIRONMENTS

- STRESS LINKED TO REPORTS OF SIMULATOR SICKNESS IN VIGILANCE: A FACTOR
ANALYSIS OF THE SSSQ AND THE SSQ 1522
Eric T. Greenlee, Lucas J. Hess

SAFETY

- A TEMPORAL ANALYSIS OF SAFETY DRIVERS TAKING BACK CONTROL IN PUBLIC ROADWAY AUTOMATED DRIVING TRIALS 1527
Nicole M. Corcoran, Daniel V. McGehee, T. Zachary Noonan

SURFACE TRANSPORTATION

- TEXT MINING TWEETS ON DRIVING SAFETY AND CELLPHONE USE..... 1532
Chao Qian, Yueqing Li, Yuhong Wang

INDIVIDUAL DIFFERENCES

- UNDERSTANDING DISTRESS: AN EXAMINATION OF THE ROLE OF STEREOTYPE THREAT IN VIGILANCE TASKS..... 1536
Lindsay Rice, Eric T. Greenlee

USABILITY AND SYSTEM EVALUATION

- ADAPTIVE AUDITORY ALERTS FOR SMART IN-VEHICLE INTERFACES 1540
Edin Šabić, Daniel Henning, Justin MacDonald

INDIVIDUAL DIFFERENCES

- READING THE MIND IN ROBOTS: HOW THEORY OF MIND ABILITY ALTERS MENTAL STATE ATTRIBUTIONS DURING HUMAN-ROBOT INTERACTIONS..... 1545
Jacquelyn L. Schreck, Olivia B. Newton, Jihye Song, Stephen M. Fiore

SURFACE TRANSPORTATION

- MEASURING THE TIME COURSE OF ENGINEER WORKLOAD DURING AUTOMATION MODE TRANSITIONS 1550
Andrew M. Liu, James D. Brooks, Neeraja Subrahmaniyan, Bradford W. Miller, Charles M. Oman

USABILITY AND SYSTEM EVALUATION

- PERCEIVED USEFULNESS OF MULTIMODAL VOICE ASSISTANT TECHNOLOGY 1555
Rianna R. Baeza, Anil R. Kumar

COGNITIVE ENGINEERING AND DECISION MAKING

- IMPROVING HAZARD PERCEPTION AND TRACKING THROUGH PART-TASK TRAINING..... 1560
Nathan Dumessa, Leo Gugerty

AUGMENTED COGNITION

- AN EXAMINATION OF COMPENSATORY EFFORT IN A VIGILANCE TASK USING
TRANSCRANIAL DOPPLER SONOGRAPHY 1565
Eric T. Greenlee, Tiffany G. Lui

COMPUTER SYSTEMS

- INDIVIDUALS WITH AUTISM SPECTRUM DISORDER: A REVIEW OF HUMAN FACTORS
CONSIDERATIONS AND USABILITY TESTING GUIDELINES 1570
McKenna K. Tornblad, Keith S. Jones, Fethi A. Inan

COGNITIVE ENGINEERING AND DECISION MAKING

- EXPERTISE AND COMPLEXITY AS MEDIATORS OF KNOWLEDGE LOSS IN OPEN
SOURCE SOFTWARE DEVELOPMENT 1575
Olivia B. Newton, Stephen M. Fiore, Jihye Song
- PERFORMANCE IN NOISE: THE RELATIONSHIP BETWEEN WORKLOAD AND
SITUATION AWARENESS IN NAVY TACTICAL TEAMS 1580
Brittany E. Holthausen, Zoe M. Becerra, M. David Keller, John M. Ziriox, Bruce N. Walker

PRODUCT DESIGN

- SEARCHING FOR FICTION FOR PLEASURE READING: CURRENT RESEARCH AND
RECOMMENDATIONS 1585
Alexandra Huang, Dan Nathan-Roberts

COMPUTER SYSTEMS

- TRUST MEASUREMENT IN HUMAN–AUTOMATION INTERACTION: A SYSTEMATIC
REVIEW 1590
Matthew Brzowski, Dan Nathan-Roberts

CYBERSECURITY

- TREND ANALYSIS OF CYBER SECURITY RESEARCH PUBLISHED IN HFES
PROCEEDINGS FROM 1980 TO 2018 1595
*Salim A. Mouloua, James Ferraro, Mustapha Mouloua, Gerald Matthews, Robert R.
Copeland*

INDIVIDUAL DIFFERENCES

- DO MONOLINGUAL AND BILINGUAL SPEAKERS DIFFER IN LANGUAGE
PROCESSING? EVIDENCE FROM BEHAVIOR AND ERPS 1600
Salim A. Mouloua, Stephanie Castelin, Mustapha Mouloua

AGING

- THE EFFECTS VIDEO GAMEPLAY ON MEMORY AND NEED FOR COGNITION IN ADULTS AND OLDER ADULTS..... 1605
Jason A. Parker, Paul A. Barclay, Valerie K. Sims

INDIVIDUAL DIFFERENCES

- EXPLORING THE EFFECT OF STIMULI CHARACTERISTICS ON SIGNAL DETECTION PERFORMANCE: SEX INFLUENCED TARGETING BIAS 1610
Jessica Williams, Rhyse Bendell, Jason Parker, Andrew Talone, Jordan Sasser, Gabrielle Vasquez, Florian Jentsch

SURFACE TRANSPORTATION

- PREDICTING BUCKLED AND UNBUCKLED TRIPS OF OCCASIONAL SEAT BELT USERS IN SHRP2 DATA..... 1615
Joonbum Lee, Vindhya Venkatraman, Christian M. Richard

CYBERSECURITY

- ELEMENTS OF CYBER-COGNITIVE SITUATION AWARENESS IN ORGANIZATIONS..... 1619
Chanel Macabante, Sherry Wei, David Schuster

COGNITIVE ENGINEERING AND DECISION MAKING

- FLOOD RISK LITERACY: COMMUNICATION AND IMPLICATIONS FOR PROTECTIVE ACTION..... 1624
Madhuri Ramasubramanian, Jinan N. Allan, Rocio Garcia Retamero, Hank Jenkins-Smith, Edward T. Cokely

VIRTUAL ENVIRONMENTS

- SPATIAL AUDIO CUEING AIDS PILOT NAVIGATION DURING SIMULATED HELICOPTER FLIGHT IN DEGRADED VISUAL ENVIRONMENTS..... 1629
Lana Milam, Ellis Akins, Henry Williams, Brian Simpson, Heath G. Jones

PERCEPTION AND PERFORMANCE

- THEORIES OF VIGILANCE AND THE PROSPECT OF COGNITIVE RESTORATION..... 1634
Jace Flanagan, Dan Nathan-Roberts

OCCUPATIONAL ERGONOMICS

- UNDERSTANDING PROSTHETIC ABANDONMENT..... 1639
Monica Espinosa, Dan Nathan-Roberts

VIRTUAL ENVIRONMENTS

- SEEING IN SLOW MOTION: MANIPULATING AROUSAL IN VIRTUAL REALITY..... 1644
*Michael Wilkinson, Zachary H. Pugh, Aaron Crowson, Jing Feng, Christopher B. Mayhorn,
Douglas J. Gillan*

TRAINING

- EXAMINING TRAINING COMPREHENSION AND EXTERNAL COGNITION IN
EVALUATIONS OF UNCERTAINTY VISUALIZATIONS TO SUPPORT DECISION
MAKING 1649
Jihye Song, Olivia B. Newton, Stephen M. Fiore, Corey Pittman, Joseph J. LaViola Jr.

CYBERSECURITY

- SMART HOME DEVICES: PROMOTING USER TRUST AND PROTECTING USER DATA..... 1654
Lih Seng Goh, Dan Nathan-Roberts

USABILITY AND SYSTEM EVALUATION

- ANALYSIS OF USAGE CHARACTERISTICS OF PREMIUM BUS PASSENGER USING
VIDEO OBSERVATION METHOD 1659
*Minjae Kim, Hayoung Jung, Younggeun Choi, Youngjae Jung, Hoimin Choi, Dohyun Kim,
Munjin Kim, Heecheon You*

SURFACE TRANSPORTATION

- SIMULATOR VERSUS TRADITIONAL TRAINING: A COMPARATIVE STUDY OF NIGHT
DRIVING TRAINING 1664
*Gunhild Birgitte Saetren, Catharina Lindheim, Martin Rasmussen Skogstad, Pål Andreas
Pedersen, Rolf Robertsen, Ståle Lødemel, Per Johan Haukeberg*

AUGMENTED COGNITION

- NEUROERGONOMICS AND VIGILANCE: PROBING THE EVENT-RELATED CEREBRAL
HEMODYNAMIC RESPONSE 1669
Eric T. Greenlee, Emily L. Maw

COGNITIVE ENGINEERING AND DECISION MAKING

- THE COGNITIVE PROCESS OF WILDLAND FIRE CHAINSAW TROUBLESHOOTING:
STRUCTURE, CONTENT, AND TRAINING 1671
Elliot Nauert, Doug Gillan

USABILITY AND SYSTEM EVALUATION

- EXPLORING THE UTILITY OF SUBJECTIVE WORKLOAD MEASURES FOR CAPTURING
DUAL TASK RESOURCE LOADING..... 1676
Gabrielle Vasquez, Rhyse Bendell, Andrew Talone, Florian Jentsch

SAFETY

SOCIOTECHNICAL ANALYSIS OF THE UBER COLLISION WITH A PEDESTRIAN: ACTOR MAPS AND ACCIMAPS.....	1681
<i>Neville A Stanton, Paul M Salmon</i>	

HEALTH CARE

INTEGRATION OF CURRENTLY AVAILABLE AND EMERGING INTRACORPOREAL IMAGING TECHNOLOGIES IN MEDICINE	1687
<i>Quinn Krause, Bernadette McCrory</i>	

BEHAVIOR CHANGE AND PERSUASION IN MOBILE HEALTH INTERVENTIONS: A CRITICAL LITERATURE REVIEW.....	1692
<i>Karim Zahed, Arjun H. Rao, Farzan Sasangohar</i>	

AEROSPACE SYSTEMS

AEROSPACE AND ERGONOMIC METHODS FOR EAR ANTHROPOMETRY SUPPORTED BY BULGARIAN RESEARCH	1694
<i>John A. Roebuck Jr.</i>	

PP1 - PERCEPTION AND DECISION MAKING

COLLABORATIVE METACOGNITION IN SIGNAL DETECTION DECISION MAKING	1699
<i>Jackson Duncan-Reid, Jason S. McCarley</i>	

FOUNDATIONAL ELEMENTS OF A RENDEZVOUS: WHEN (AND WHERE) PLANNING & PREDICTION MEET	1704
<i>Kimberly S. Spahr, Christopher D. Wickens, Benjamin A. Clegg, C.A.P. Smith, Gautham Vijayaragavan</i>	

CAN YOU SEE IT? PERCEIVED VARIANCE IN SCATTERPLOT VISUALIZATION.....	1709
<i>Nathan Herdener, Benjamin A. Clegg, Christopher D. Wickens, C. A. P. Smith</i>	

PP2 - TRAINING PERCEPTION FOR VEHICLES

COMMUNICATION OF VISUAL AND AUDITORY INFORMATION AND THE COORDINATION OF TEAM TASK PERFORMANCE	1714
<i>Adam F. Werner, Jamie C. Gorman, Michael J. Crites</i>	

A MATHEMATICAL MODEL-BASED METRIC OF SPATIAL DISORIENTATION FOR USE IN TRIGGERING ACTIVE COUNTERMEASURES.....	1719
<i>Jordan B. Dixon, Tristan Endsley, Torin K. Clark</i>	

UTILITY OF CONCURRENT BANDWIDTH FEEDBACK IN TRAINING AIRCRAFT FLIGHT TASKS	1724
<i>John A. Karasinski, Stephen K. Robinson</i>	

PP3 - PERCEPTION AND SAFETY ON THE ROADS

THE USE OF AUTOMATIC OBJECT DETECTION SIGNALS FROM SMART CAMERAS TO ENHANCE BRIDGE OPERATORS' SITUATION AWARENESS	1729
<i>Rutger Stuut, Ellemieke van Doorn, Karin de Jong</i>	
MULTIMODAL CUE COMBINATIONS: A POSSIBLE APPROACH TO DESIGNING IN-VEHICLE TAKEOVER REQUESTS FOR SEMI-AUTONOMOUS DRIVING	1734
<i>Gaojian Huang, Clayton Steele, Xinrui Zhang, Brandon J. Pitts</i>	
HIERARCHICAL TASK ANALYSIS FOR DRIVING UNDER DIVIDED ATTENTION	1739
<i>Xiaonan Yang, Jung Hyup Kim, Roland Nazareth</i>	

PP4 - INVESTIGATIONS INTO THE PARAMETERS OF PERFORMANCE

MODELLING POSTURAL DISCOMFORT PERCEPTION USING CHAID DECISION TREE ALGORITHM.....	1744
<i>Soomin Hyun, Woojin Park</i>	

VOLUME 4

OPTIMIZING MILITARY HUMAN-ROBOT TEAMING: AN EVALUATION OF TASK LOAD AND MODALITY SWITCH COST	1746
<i>Daniel Barber, Lauren Reinerman-Jones, Maartje Hidalgo</i>	
PRECISION CONSTRAINTS DURING POINTING WITH A STYLUS: IMPLICATIONS FOR FITTS' LAW	1751
<i>Daniel S. McConnell</i>	
EXAMINING THE EFFECTS OF CLUTTER AND TARGET SALIENCE IN AN E-COMMERCE VISUAL SEARCH TASK.....	1756
<i>N/A</i>	

PP5 - PERCEPTION IN AR AND VR

SPATIAL AUDITORY CUEING FOR A DYNAMIC THREE-DIMENSIONAL VIRTUAL REALITY VISUAL SEARCH TASK	1761
<i>Rachel J. Cunio, David Dommett, Joseph Houpt</i>	
CUEING ATTENTION TO A MATRIX OF VALUES ON A HEAD-WORN DISPLAY: FOUR STUDIES WITH A MULTIPLE PATIENT MONITORING TASK	1766
<i>Isaac S. Salisbury, Tsz-Lok Tang, Caitlin Browning, Paul D. Schlosser, Ismail Mohamed, Tobias Grundgeiger, Robert G. Loeb, Penelope M. Sanderson</i>	
EFFECTS OF TRANSPARENCY AND CONTROLLER TYPE ON PERFORMANCE IN A MULTI-LAYER DISPLAY	1767
<i>Sarah C. Leibner, Alexandra Proaps, James P. Bliss</i>	

S1 - INNOVATIVE METHODS FOR ASSESSING SAFETY THROUGH HUMAN PERFORMANCE

MULTI-DIMENSIONAL WORKLOAD IN TWO TYPES OF NUCLEAR POWER PLANT SIMULATORS 1772
Lauren Reinerman-Jones, Jinchao Lin, Daniel Barber, Gerald Matthews, Niav Hughes

HUMAN FACTORS GROUND TEST ASSESSMENT AND PROTOCOL DEVELOPMENT FOR SPACE RADIATION PROTECTION CONCEPTS 1777
Julie A. Hanson, Martha Cloudsley, Sheila Thibeault

NETWORK-BASED SAFETY LEADING INDICATORS FOR SAFETY RISK ANALYSIS IN CONSTRUCTION 1782
Jun Wang, Saiedeh Razavi

LEARNING DRIVERS' BEHAVIOR FROM SOCIAL NETWORKING 1787
Yueqing Li, Acyut Kaneria, Chao Qian, Brian Craig

EVALUATION OF FIBERGLASS AND ALUMINUM LADDER STABILITY DURING A SIMULATED TETHERED OPERATOR FALL EVENT 1792
Colin D. McKinnon, Kayla M. Fewster, C.R. Dickerson, Jack P. Callaghan

S2 - ENHANCING SAFETY THROUGH PROCEDURES AND WARNNG LABELS

WARNING LABELS REFERRING TO ELECTRONIC INFORMATION - COMBINATION SAFETY SYMBOL, URL, AND QR CODE AS SUPPLEMENTAL DIRECTIVE 1797
Judith J. Isaacson, Steven M. Hall, Jared Frantz

REFLECTING ABSTRACTION HIERARCHY OF A CHEMICAL PROCESSING SYSTEM ON STANDARD OPERATING PROCEDURES 1801
Changwon Son, S. Camille Peres, Nilesh Ade, Timothy J. Neville

AN EXAMINATION OF THE CHANGING NATURE OF PROCEDURE USE AND ADHERENCE AS EXPERTISE IS DEVELOPED OVER TIME IN A VIRTUAL REALITY ENVIRONMENT 1806
Joseph Hendricks, S. Camille Peres, Timothy Neville

S3 - DESIGN FOR HUMAN ERROR PREVENTION

COMPUTERIZED OPERATOR SUPPORT SYSTEM FOR NUCLEAR POWER PLANT HYBRID MAIN CONTROL ROOM 1809
Roger Lew, Ronald L. Boring, Thomas A. Ulrich

STAYING ALERT: INCORPORATING HUMAN FATIGUE IN RISK MANAGEMENT 1814
Chason J. Coelho, Sunil D. Lakhiani, Delmar R. Morrison III

HUMAN AND ORGANIZATIONAL FACTORS OF POSITIVE TRAIN CONTROL SAFETY SYSTEM THE APPLICATION OF HIGH RELIABILITY ORGANIZING IN RAILROAD 1819
Yalda Khashe, Najmedin Meshkati

HUMAN RELIABILITY STUDIES WITH MICROWORLD SIMULATORS 1824
Ronald Boring, Thomas Ulrich, Roger Lew, Martin Rasmussen Skogstad

AN AUGMENTED-REALITY-BASED WARNING INTERFACE FOR PEDESTRIANS: USER INTERFACE DESIGN AND EVALUATION	1829
<i>Yourui Tong, Bochen Jia</i>	

**S4 - AND YET ACCIDENTS STILL HAPPEN: HAZARDS AND SAFETY ANALYSIS
ACROSS INDUSTRIES**

VIDEO DATA FOR ESCALATOR ACCIDENTS	1834
<i>Thomas J. Ayres</i>	

SAFETY IN SHIPPING: INVESTIGATING SAFETY CLIMATE IN NORWEGIAN MARITIME WORKERS	1839
<i>Steven C. Mallam, Jørgen Ernstsens, Salman Nazir</i>	

ACCIDENT ANALYSIS IN PRACTICE: A REVIEW OF HUMAN FACTORS ANALYSIS AND CLASSIFICATION SYSTEM (HFACS) APPLICATIONS IN THE PEER REVIEWED ACADEMIC LITERATURE	1844
<i>Adam Hulme, Neville A. Stanton, Guy H. Walker, Patrick Waterson, Paul M. Salmon</i>	

TOWARDS HARMONIZING SAFETY DATABASES: AN ASSESSMENT OF EXISTING DATA SOURCES	1849
<i>Arjun H. Rao, Mengxi Yu, Farzan Sasangohar</i>	

WHY SLIPS, TRIPS, AND FALLS ARE STILL A PROBLEM: A HAZARD ASSESSMENT AT SURFACE MINES	1851
<i>Mahiyar F. Nasarwanji, Alan G. Mayton, Jonisha Pollard</i>	

S5 - SAFETY STUDIES IN PRACTICE

INDUSTRIAL WORKERS PERCEPTION OF REVERSE MOTION WARNING DEVICES ON FORKLIFTS	1856
<i>Yousif Abulhassan, David Wilbanks, Richard Kilpatrick, Tyler Howell</i>	

DOES TEAM INTERACTION EXPLORATION SUPPORT RESILIENCE IN HUMAN AUTONOMY TEAMING?	1861
<i>Glenn J. Lematta, Craig J. Johnson, Erin K. Chiou, Nancy J. Cooke</i>	

A VISUALIZATION APPROACH TO PERFORMING TASK ANALYSIS OF TIME SERIES EVENT LOG DATA FROM A MICROWORLD SIMULATION	1862
<i>Thomas A. Ulrich, Ronald L. Boring, Timothy McJunkin, Aunshul Rege</i>	

THE EFFECT OF TAKEOVER LEAD TIME ON DRIVER WORKLOAD	1867
<i>Yongdeok Yun, Hyungseok Oh, Rohae Myung</i>	

SITTING POSTURES AND ACTIVITIES IN AUTONOMOUS VEHICLES – NEW REQUIREMENTS TOWARDS OCCUPANT SAFETY	1869
<i>Anna-Lena Köhler, Julia Pelzer, Kristian Seidel, Stefan Ladwig</i>	

SD1 - SYSTEM DEVELOPMENT

VISUALIZATION OF FOOD BANK/AGENCY DISTRIBUTION	1874
<i>Ritson Delpish, Steven Jiang</i>	

HISTORY OF HUMAN FACTORS IN US NAVY AIRCRAFT COCKPIT DESIGN: 1969-2019..... 1878
Stephen C. Merriman, Keith S. Karn

EFFECT OF ANTHROPOMORPHIC DESIGN ON THE EFFECTIVENESS OF
MOTIVATIONAL MESSAGES 1883
Eric Sikorski, Shawn Mulvey, Eva Wiese

SD2 - STANDARDS IN PRACTICE: ALL THINGS CONSIDERED

STANDARDS IN PRACTICE: ALL THINGS CONSIDERED 1888
John Chin, Harry Blanchard, Seve Benincasa, Jennifer Trich Kremer, Michael Parker

SF2 - USER-CENTERED DESIGN AND USABILITY TESTING

CONTEXT-BASED VISUAL AIDS TO SUPPORT THE SITUATION AWARENESS OF FIELD
ENGINEERS CONDUCTING WINDSTORM RISK SURVEYS 1893
Sruthy Agnisarman, Kapil Chalil Madathil, Jeffery Bertrand

USABILITY ANALYSIS OF AVIATION WEATHER PRODUCTS FOR GENERAL
AVIATION 1898
Jacqueline McSorley, John Kleber, Beth Blickensderfer

MOBILE MENTAL HEALTH TECHNOLOGIES: UNIQUE CHALLENGES AND SOLUTIONS
FOR AN EFFECTIVE USER CENTERED DESIGN METHODOLOGY 1903
Amanda J. Johnson, Ann M. Bisantz, Amy L. Reynolds, Scott T. Meier

USABILITY STUDY OF THE IPROVÈN BPM-337BT BLOOD PRESSURE MONITOR AND
APP 1905
Valerie Cote, Arjun H. Rao, Farzan Sasangohar

PREFLIGHT WEATHER DECISION SUPPORT TOOL (PWDST): USER-CENTERED DESIGN
PROCESS AND USABILITY VALIDATION 1910
Jayde King, John Kleber, Ashlee Harris, Barbara Chaparro, Beth Blickensderfer

SF3 - CLINICAL AND CONSUMER HEALTH CARE

ANALYSIS OF EYE BEHAVIOR: MENTAL WORKLOAD ASSESSMENT IN ROBOTIC
SURGERY TRAINING 1915
Chuhao Wu, Jackie S. Cha, Jay Sulek, Tian Zhou, Chandru P. Sundaram, Denny Yu

TOWARDS UNDERSTANDING LIMINAL FATIGUE IN NURSING 1917
James Flores, Ethan P. Larsen, Arjun H. Rao, Farzan Sasangohar

OPERATING ROOM TURNOVER TIME: DEFINITIONS AND FUTURE RESEARCH NEEDS 1922
Gianna Schock, Beth Blickensderfer

A PRELIMINARY STUDY INVESTIGATING PATIENTS' PERCEPTIONS OF RESEARCH
CONSENTING METHODS 1926
*Mackenzie Klein Wilson, Amro Khasawneh, Amal Ponathil, Shraddha Narasimha, Sruthy
Agnisarman, Brandon Welch, Kapil Chalil Madathil*

ANALYZING HEART RATE AS A PHYSIOLOGICAL INDICATOR OF POST-TRAUMATIC
STRESS DISORDER: A SCOPING LITERATURE REVIEW 1931
Mahnoosh Sadeghi, Farzan Sasangohar, Anthony McDonald

SF4: HUMAN PERCEPTION AND PERFORMANCE

THE CONSPICUITY BENEFITS OF REAR-FACING BIKE LIGHTS IN DAYLIGHT.....	1932
<i>Darlene E. Edewaard, Ellen C. Szubski, Richard A. Tyrrell</i>	
CAN HIGHLIGHTING A PEDESTRIAN’S BIOLOGICAL MOTION AT NIGHT MITIGATE THE NEGATIVE EFFECT OF DRIVER DISTRACTION?.....	1934
<i>Ellen Szubski, Darlene Edewaard, Richard Tyrrell</i>	
PERCEPTIONS OF PASSABILITY THROUGH DYNAMICALLY MOVING GAPS.....	1936
<i>Katie Lucaites, Rohith Venkatakrishnan, Roshan Venkatakrishnan, Ayush Bhargava, Christopher C. Pagano</i>	
TRANSFER OF CALIBRATION IN VIRTUAL REALITY TO BOTH REAL AND VIRTUAL ENVIRONMENTS	1938
<i>Hannah M. Solini, Ayush Bhargava, Christopher C. Pagano</i>	
FORAGING FOR HANDHOLDS: ATTENTIONAL SCANNING VARIES BY EXPERTISE IN ROCK CLIMBING	1943
<i>Emily Hartkop, Christopher D. Wickens, John Keller, Anne C. McLaughlin</i>	

SF5: COGNITIVE ANALYSIS AND NATURALISTIC OBSERVATION

UNDERSTANDING RELIANCE AND TRUST IN DECISION AIDS FOR UAV TARGET IDENTIFICATION	1948
<i>Hunter Rogers, Amro Khasawneh, Jeffrey Bertrand, Kapil Chalil</i>	
INVESTIGATING INCIDENT MANAGEMENT TEAMS AS COGNITIVE SYSTEMS OF SYSTEMS VIA NETWORK ANALYSIS OF REAL TIME INTERACTIONS	1950
<i>Jukrin Moon, Farzan Sasangohar, S. Camille Peres, Timothy J. Neville, Changwon Son</i>	
MIND PERCEPTION IN A COMPETITIVE HUMAN-ROBOT INTERACTION GAME.....	1952
<i>Levern Q. Currie, Eva Wiese</i>	

SF6: ERGONOMIC DESIGN: OPTIMIZING THE DESIGN OF PRODUCTS FOR HUMAN USE

ANTHROPOMETRIC CHARACTERISTICS OF CHINESE AURICLES FOR ERGONOMIC DESIGN	1957
<i>Mengcheng Wang, Hao Fan, Carisa Harris, Suihuai Yu</i>	
RISK FACTORS FOR MUSCULOSKELETAL INJURIES AMONG AIRPORT CUSTOMER SERVICE EMPLOYEES.....	1959
<i>Hamed Asadi, John H. Mott, Denny Yu</i>	
THE IMPACT OF MOUSE WEIGHT AND CONNECTION TYPE ON MUSCLE ACTIVITY AND PERFORMANCE WHILE GAMING.....	1964
<i>Guangchuan Li, Mengcheng Wang, Alexander Wiesinger, Elias Hoeglinger, Alan Barr, Yue Liu, Carisa Harris</i>	

SF7: INFLUENCING HUMAN PERFORMANCE, HEALTH, AND ENJOYMENT THROUGH DESIGN

USING HAPTIC FEEDBACK AS A TREATMENT FOR POSITION DEPENDENT, SEVERE, CHRONIC SNORING 1967
Imani A. Murph, John French, Matt Kukulka, Dylan Bush

THE EFFECTS OF VEHICLE LEVEL OF AUTOMATION AND WARNING TYPE ON RESPONSES TO VEHICLE HACKING 1972
Wyatt McManus, Jing Chen

EXAMINING THE ROLE OF VIDEO IN SPORTS MEDIA VIEWING 1973
Ragan Wilson, Christopher B. Mayhorn

SS6 - HFES TECHNICAL STANDARDS UPDATE

DISCUSSION PANEL HFES TECHNICAL STANDARDS UPDATE 2019 HFES ANNUAL MEETING 1978
Robert R. Fox, Michelle Kerr, Tom Albin, Daryle Gardner-Bonneau, David Rempel, Kelly Hale, Christopher R. Reid

ST1 - DRIVER ATTENTION AND HAZARD PERCEPTION

SOME ON-ROAD GLANCES ARE MORE EQUAL THAN OTHERS: MEASURING ENGAGEMENT IN THE DRIVING TASK 1981
Liberty Hoekstra-Atwood, David Prendez, John L. Campbell, Christian M. Richard

ATTENTION MAINTENANCE TRAINING: ARE YOUNG DRIVERS GETTING BETTER OR BEING MORE STRATEGIC?..... 1986
James Unverricht, Yusuke Yamani, Sarah Yahoodik, Jing Chen, William J. Horrey

DRIVERS' PERCEPTIONS OF EVENTS: IMPLICATIONS FOR THEORY AND PRACTICE 1991
Robert J. Sall, Richard B. Wagner, Jing Feng

YOU LOOK FAMILIAR: LEARNER DRIVER HAZARD IDENTIFICATION ON FAMILIAR AND UNFAMILIAR ROADS..... 1996
Rachael A. Wynne, Vanessa Beanland, Gemma J. M. Read, Paul M. Salmon

DOES FAMILIARITY BREED COMPETENCE OR CONTEMPT? EFFECTS OF DRIVER EXPERIENCE, ROAD TYPE AND FAMILIARITY ON HAZARD PERCEPTION 2001
Vanessa Beanland, Rachael A. Wynne

ST2 - DISPLAY, WARNING AND INTERFACE DESIGN

THE EFFECT OF SECONDARY COGNITIVE TASK DIFFICULTY ON HEADWAY MAINTENANCE AND PERCEIVED WORKLOAD WHILE USING LANE KEEPING SYSTEMS 2006
Nade Liang, Brandon J. Pitts

A REVIEW ON THE INTERFACE DESIGN OF AUTOMOTIVE HEAD-UP DISPLAYS FOR COMMUNICATING SAFETY-RELATED INFORMATION 2011
Juhee Park, Woojin Park

PLAUSIBILITY OF HUMAN REMOTE DRIVING: HUMAN-CENTERED EXPERIMENTS FROM THE POINT OF VIEW OF TELEDRIVERS AND TELEPASSENGERS.....	2013
<i>Christopher Cabrall, Jork Stapel, Pavan Besemer, Koen Jongbloed, Mitchel Knipscheer, Bas Lottman, Philip Oomkens, Niek Rutten</i>	

THE EFFECTS OF WARNING LEAD TIME ON SITUATION AWARENESS IN CONNECTED VEHICLE SYSTEMS.....	2019
<i>Xiaomei Tan, Yiqi Zhang</i>	

A MODEL OF INDIAN DRIVERS' RATINGS OF IN-VEHICLE ALERTS TO PEDESTRIAN ENCOUNTERS ON ROADS IN INDIA.....	2020
<i>Kip Smith, Jan-Erik Kallhammer</i>	

ST3 - SAFETY OF ROAD USERS

COLLISION RISK ASSESSMENT USING NATURALISTIC DATA FROM A RENT-A-CAR FLEET.....	2025
<i>Dongsoon Min, Trevor Waite, Birsen Donmez</i>	

EFFECTS OF CELL PHONE CONVERSATION ON THE FIRST DRIVER RESPONSE TO A STOPPED LEAD VEHICLE.....	2026
<i>Bradley W. Weaver, Patricia R. DeLucia, Jason Jupe</i>	

PEDESTRIAN MOVING PATTERNS DURING POTENTIAL CONFLICTS WITH 110 ON-ROAD DRIVING VEHICLES.....	2031
<i>Renran Tian, Stanley Chien, Yaobin Chen, Rini Sherony</i>	

WHAT ARE STEERING PICTURES ARE WORTH? USING IMAGE-BASED STEERING FEATURES TO DETECT DROWSINESS ON RURAL ROADS.....	2036
<i>Kartik Mutya, Jayesh Shah, Anthony D. McDonald, Jaycelyn Jefferson</i>	

WARNING SIGNS TO FASTEN SEAT BELTS RESULT IN HIGHER RATES OF REAR SEAT BELT USE IN RIDESHARE VEHICLES.....	2041
<i>Kenneth Nemire</i>	

ST4 - VEHICLE AUTOMATION: DRIVER BEHAVIOR CHANGES

THE IMPACT OF MIND WANDERING ON SIGNAL DETECTION, SEMI-AUTONOMOUS DRIVING PERFORMANCE, AND PHYSIOLOGICAL RESPONSES.....	2046
<i>Gaojian Huang, Nade Liang, Chuhao Wu, Brandon J. Pitts</i>	

PATTERNS OF SEQUENTIAL OFF-ROAD GLANCES INDICATE LEVELS OF DISTRACTION IN AUTOMATED DRIVING.....	2051
<i>Shiyan Yang, Jonny Kuo, Michael G. Lenné</i>	

PASSENGER EMOTIONAL RESPONSE TYPE AND TIMING DURING AUTOMATED VEHICLE INTERSECTION NEGOTIATION.....	2056
<i>Josh Domeyer, Areen Alsaid, Shu-Yuan Liu, John D. Lee</i>	

ACCEPTANCE OF VEHICLE AUTOMATION: EFFECTS OF DEMOGRAPHIC TRAITS, TECHNOLOGY EXPERIENCE AND MEDIA EXPOSURE.....	2061
<i>Chaiwoo Lee, Bobbie Seppelt, Bryan Reimer, Bruce Mehler, Joseph F. Coughlin</i>	

THE AUTONOMOUS VEHICLE SOCIAL NETWORK: ANALYZING TWEETS AFTER A RECENT TESLA AUTOPILOT CRASH.....	2066
<i>Jacelyn Jefferson, Anthony D. McDonald</i>	

ST5 - VEHICLE AUTOMATION: SYSTEM DESIGN

EXAMINING THE IMPACTS OF DRIVERS’ EMOTIONS ON TAKEOVER READINESS AND PERFORMANCE IN HIGHLY AUTOMATED DRIVING	2071
<i>Na Du, Jackie Ayoub, Feng Zhou, Anuj K. Pradhan, Lionel Robert, Dawn Tilbury, Elizabeth Pulver, X. Jessie Yang</i>	

OCCUPANT MONITORING IN AUTOMATED VEHICLES: CLASSIFICATION OF SITUATION AWARENESS BASED ON HEAD MOVEMENTS WHILE CORNERING.....	2073
<i>Frederik Schewe, Hao Cheng, Alexander Hafner, Monika Sester, Mark Vollrath</i>	

USING A SITUATIONAL AWARENESS DISPLAY TO IMPROVE RIDER TRUST AND COMFORT WITH AN AV TAXI	2078
<i>Chun-Cheng Chang, Rebecca A. Grier, Jason Maynard, John Shutko, Mike Blommer, Radhakrishnan Swaminathan, Reates Curry</i>	

A TAXONOMY OF STRATEGIES FOR SUPPORTING TIME-SHARING WITH NON-DRIVING TASKS IN AUTOMATED DRIVING	2083
<i>Dengbo He, Dina Kanaan, Birsen Donmez</i>	

MEASURING ADULT DRIVERS’ USE OF LEVEL 1 AND 2 DRIVING AUTOMATION BY ROADWAY FUNCTIONAL CLASS	2088
<i>Ian J. Reagan, Wen Hu, Jessica B. Cicchino, Bobbie Seppelt, Lex Fridman, Michael Glazer</i>	

ST6 - BEST OF THE SURFACE TRANSPORTATION TG: UNDERSTAND, PREDICT, DESIGN AND TRAIN

EFFECTS OF CELL PHONE CONVERSATION AND ROADWAY COMPLEXITY ON THE PERCEPTION OF AN IMMEDIATE HAZARD WHILE DRIVING	2093
<i>Bradley W. Weaver, Patricia R. DeLucia, Jason Jupe</i>	

TOWARD PREDICTION OF DRIVER AWARENESS OF AUTOMOTIVE HAZARDS: DRIVING-VIDEO-BASED SIMULATION APPROACH	2094
<i>Hyungil Kim, Joseph L. Gabbard, Sujitha Martin, Ashish Tawari, Teruhisa Misu</i>	

DRIVING SIMULATOR VALIDATION FOR IN-VEHICLE HUMAN MACHINE INTERFACE ASSESSMENT	2099
<i>Thomas McWilliams, Bruce Mehler, Bobbie Seppelt, Bryan Reimer</i>	

THE EFFECT OF FAILURE PREDICTABILITY ON DRIVER TAKEOVER PERFORMANCE AND MONITORING BEHAVIOR IN PARTIALLY AUTOMATED VEHICLES.....	2104
<i>Samantha Hopkins, Chelsea DeGuzman, Birsen Donmez</i>	

DRIVER TRAINING FOR AUTOMATED VEHICLE TECHNOLOGY – KNOWLEDGE, BEHAVIORS, AND PERCEIVED FAMILIARITY	2105
<i>Alexandria M. Noble, Sheila G. Klauer, Zachary R. Doerzaph, Michael P. Manser</i>	

ST7 - CHALLENGES AND OPPORTUNITIES IN DEVELOPING NEXT GENERATION IN-VEHICLE HMI SYSTEMS

CHALLENGES AND OPPORTUNITIES IN DEVELOPING NEXT GENERATION IN-VEHICLE HMI SYSTEMS 2110
Rebecca Williamson, Yu Zhang, Bruce Mehler, Ying Wang

ST8 - THE EFFECT OF ROADWAY AND INFRASTRUCTURE ON DRIVER BEHAVIOR

ON-ROAD AND IN-VEHICLE DELIVERY OF SERVICE SIGNS: EFFECTS OF INFORMATION SOURCE AND AGE..... 2112
Yulin Deng, Stephen Cauffman, Mei Lau, Ebony Johnson, Christopher Cunningham, David Kaber, Jing Feng

THE EFFECTS OF RESTRICTED SIGHT DISTANCES ON DRIVERS AT SIMULATED RURAL INTERSECTIONS..... 2117
Jacob Achtemeier, Curtis M. Craig, Nichole L. Morris

EFFECTIVENESS OF DIAGRAMMATIC GUIDE SIGNS AT COMPLEX INTERCHANGES 2119
Kelly Magee, Vindhya Venkatraman, Liberty Hoekstra-Atwood, Christian Richard

COGNITIVE LOAD VARIABILITY FROM ROAD CHARACTERISTICS SHOULD INFLUENCE A SAFETY REQUIREMENT FOR VEHICLE STOPPING SIGHT DISTANCE..... 2124
Cody A. Pennetti, Kelsey Hollenback, Inki Kim, James H. Lambert

TRAFFIC AND RATINGS OF DRIVER WORKLOAD: THE EFFECT OF THE NUMBER OF VEHICLES AND THEIR DISTANCE HEADWAYS 2129
Ke Liu, Paul Green, Yili Liu

T1 - PANEL - TRAINING AND TRANSFER: EXPLORING ISSUES OF EMBEDDED TRAINING IN COMPLEX SYSTEMS

TRAINING AND TRANSFER: EXPLORING ISSUES OF EMBEDDED TRAINING IN COMPLEX SYSTEMS 2134
Christopher Nemeth, Rebecca Fosha, Elizabeth S. Veinott

T2 - TRAINING IN VIRTUAL ENVIRONMENTS

TRANSFER OF TRAINING FROM VIRTUAL REALITY AND AUGMENTED REALITY: A META-ANALYSIS EXTENDED ABSTRACT 2137
Alexandra D. Kaplan, Jessica Cruik, Mica Endsley, Suzanne M. Beers, Ben D. Sawyer, P.A. Hancock

IMPROVING EXPERTISE IN LOCAL LAW ENFORCEMENT: UTILIZING VIRTUAL ENVIRONMENTS TO ASSESS OFFICER PERFORMANCE AND STANDARDIZE TRAINING PROCEDURES 2139
Monica Connelly, Joel Suss, Lia DiBello

AUGMENTED REALITY SANDTABLE (ARES) IMPACTS ON LEARNING 2144
Kelly S. Hale, Gwen Campbell, Jennifer Riley, Michael Boyce, Charles Amburn

T3 - TRAINING FOR INDIVIDUAL CAPABILITIES

INDIVIDUAL DIFFERENCES IN ADAPTIVE TRAINING: DISTRESS, WORKLOAD, AND COPING WITH CHANGES IN DIFFICULTY	2149
<i>Bradford L. Schroeder, Nicholas W. Fraulini, Matthew D. Marraffino, Wendi L. Van Buskirk, Cheryl I. Johnson</i>	
HOLDING ON TIGHT: RELATIONSHIP BETWEEN GRIP STRENGTH AND MARKSMANSHIP STABILITY	2151
<i>John J. Christopher, Jessica Schindler, Jose Villa, Erika Hussey, John Ramsay, Stephanie A. T. Brown</i>	
DEVELOPMENT OF ATTENTIONAL SKILLS TRAINING FOR OPERATORS OF UNMANNED AERIAL SYSTEMS	2156
<i>Angelia Sebok, Matthew Walsh, Christopher Wickens, Terence Andre, Noah Kreisler, Lucy Pei, Laticia Bowens, Carla Landsberg</i>	

T4 - PANEL - UTILIZING GAMES FOR LEARNING: APPLICATIONS OF GAME-BASED TRAINING AND GAMIFICATION

UTILIZING GAMES FOR LEARNING: APPLICATIONS OF GAME-BASED TRAINING AND GAMIFICATION.....	2161
<i>Andrew Griggs, Elizabeth H. Lazzara, Evan Palmer, Sarah Fouquet, Tiffany Leverenz, Alexis Raushel, Shawn Doherty</i>	

U1 - ASSESSING HUMAN PERFORMANCE TO IMPROVE DESIGNS

HUMAN RELIABILITY ANALYSIS FOR VERIFICATION AND VALIDATION OF NEW DESIGNS	2164
<i>Ronald Laurids Boring</i>	
APPLICATION OF NASA-TLX AND SHERPA IN SETTING UP FUSED FILAMENT FABRICATION EQUIPMENT	2169
<i>N/A</i>	

U2 - CONSIDERATIONS FOR THE USABILITY AND IMPLEMENTATION OF AUGMENTED REALITY IN THE PRODUCTION ENVIRONMENT

CONSIDERATIONS FOR THE USABILITY AND IMPLEMENTATION OF AUGMENTED REALITY IN PRODUCTION ENVIRONMENTS.....	2174
<i>Alicia A. Perez, Maartje Hidalgo, Irina Lediaeva, Mustapha Mouloua, P. A. Hancock</i>	

U3 - HUMAN FACTORS FOR PROCESS CONTROL

DESIGNING FOR SITUATION AWARENESS IN THE MAIN CONTROL ROOM OF A SMALL MODULAR REACTOR.....	2179
<i>Maggie Kirkwood</i>	
EXPLORING THE USE OF COGNITIVE MODELS FOR NUCLEAR POWER PLANT HUMAN-SYSTEM INTERFACE EVALUATION	2184
<i>Casey R. Kovesdi, M.S., Jeffrey C. Joe, M.S.</i>	

EMPIRICAL STUDY OF SHARED SITUATION AWARENESS BETWEEN ACTIVE AND PASSIVE GROUP-VIEW DISPLAYS.....	2189
<i>Sa Kil Kim, Joo Hyun Sim, Tong Il Jang, Hyun Chul Lee</i>	

AN EYE-TRACKING EVALUATION OF GAUGE SHAPES IN PROCESS CONTROL.....	2195
<i>Chao Shi, Ling Rothrock</i>	

TEAM PERFORMANCE IN A SIMULATED MARITIME CONTROL ROOM: THE EFFECT OF INFORMATION INTEGRATION AND OPERATOR CONFIGURATION.....	2200
<i>Steph Michailovs, Stephen Pond, Megan Schmitt, Jessica Irons, Matthew Stoker, Troy Visser, Sam Huf, Shayne Loft</i>	

U4 - USABILITY OF EMERGING TECHNOLOGIES

USABILITY TESTING FOR SMART IV PUMPS THROUGH SIMULATION-BASED EVALUATION.....	2203
<i>Jiayin Chen, Kaifeng Liu, Foon-ye Chan, Zhenzhen Xie, Philip Lam, Yat-wo Liu, Hing-yu So, Calvin Ka-lun Or</i>	

EVALUATION OF INTERFACE MODALITY EFFECTIVENESS FOR REMOTELY-CONTROLLED LOCOMOTIVES.....	2205
<i>So Young Kim, Neeraja Subrahmaniyan, James D. Brooks</i>	

USERS' PERCEPTIONS OF SMARTPHONE WEATHER APPLICATIONS' USABILITY.....	2210
<i>Abdulrahman Khamaj, Ziho Kang, Elizabeth Argyle</i>	

HUMAN PERFORMANCE IN GOOGLE'S TWO-FACTOR AUTHENTICATION SETUP PROCESS.....	2215
<i>Shivam Pandey, Tewodros Taffese, Michelle Huang, Michael D. Byrne</i>	

U5 - USABILITY METHODS IN PRACTICE

IMPROVED ACCURACY TEST METHOD FOR MOBILE EYE TRACKING IN USABILITY SCENARIOS.....	2220
<i>Mark Thibeault, Monica Jesteadt, Andrew Beitman</i>	

LESSONS LEARNED FROM CONDUCTING ALZHEIMER'S DISEASE CAREGIVER MHEALTH APP TRAINING AND FOCUS GROUP SESSIONS.....	2225
<i>Janetta Brown, Hyung Nam Kim</i>	

METHODOLOGICAL MODIFICATIONS WHEN TESTING MACHINE LEARNING-ENABLED PRODUCTS: A PRELIMINARY FRAMEWORK.....	2230
<i>Linda Huber, Rebecca Williamson</i>	

EXPANDING THE PLAYTEST METHOD FOR UX RESEARCH BEYOND GAMING.....	2233
<i>Sophie Amberkar, Kevone Bennett, Anna Delchamps, Rochelle Edwards</i>	

U6 - USABILITY IN TRAINING, EYE TRACKING, AND E-MIRRORS

THE CLASSIFICATION OF REPRESENTATIONAL FORMS.....	2238
<i>Stephen B. Gilbert, Whitman Richards</i>	

DETERMINING STATIC MOUNT ACCURACY WITH A MID-RANGE EYE TRACKER.....	2243
<i>Andrea Crosser, Monica Snideman, Daniela Vazquez Klisans</i>	

PREFERRED E-MIRROR LUMINANCE LEVELS FOR DIVERSE AMBIENT LIGHT CONDITIONS.....	2248
<i>Seonghyeok Park, Kitae Hwang, Sohyun Yoon, Gyouhyung Kyung</i>	

EFFECTS OF E-MIRROR POSITION AND SIZE AND LANE CHANGING DIRECTION ON DRIVER EYE-OFF-ROAD TIME, MENTAL WORKLOAD, AND PREFERENCE	2249
<i>Kitae Hwanga, Seonghyeok Parka, Gyouhyung Kyung</i>	

**VE1 - USER CONSIDERATIONS WITHIN VIRTUAL ENVIRONMENTS: STRESS,
SICKNESS AND MEMORY**

VALIDATION OF VR-BASED IMMERSIVE HIGH-ALTITUDE SCENE IN INDUCING STRESS RESPONSE.....	2250
<i>Juan Liu, Yulin Zhang, Zhubin Wang, Guozhen Zhao</i>	

SIMULATOR SICKNESS COPING STRATEGIES: FINDINGS FROM REDDIT	2255
<i>Sarah Beadle</i>	

INTRODUCING THE VIMSSQ: MEASURING SUSCEPTIBILITY TO VISUALLY INDUCED MOTION SICKNESS	2260
<i>Behrang Keshavarz, Raheleh Saryazdi, Jennifer L. Campos, John F. Golding</i>	

THE IMPACT OF VIRTUAL HUMAN VOICE ON LEARNER TRUST	2265
<i>Scotty D. Craig, Erin K. Chiou, Noah L. Schroeder</i>	

INCIDENTAL MEMORY RECALL IN VIRTUAL REALITY: AN EMPIRICAL INVESTIGATION	2270
<i>Jørgen Ernstsens, Steven C. Mallam, Salman Nazir</i>	

**VE2 - EXTENDING AND UNDERSTANDING THE STATE OF THE ART THROUGH
VIRTUAL ENVIRONMENT APPLICATION**

INTEGRATING EPISODIC FUTURE THINKING INTO VIRTUAL REALITY TO MITIGATE SUBSTANCE USE DISORDERS: A THEORETICAL FRAMEWORK	2275
<i>Tianzi Wang, Alexandra M. Mellis, Nathan Lau, Warren Bickel</i>	

EVALUATING THE COMPREHENSIVENESS OF VR PLAY GUIDELINES USING ELDER SCROLLS: SKYRIM VR	2280
<i>Daniel Smith, Jasmine Granados, Joel Suss</i>	

CROSS-CULTURAL REACTIONS TO PEACEKEEPING ROBOTS WIELDING NON- LETHAL WEAPONS	2285
<i>James P. Bliss, Shelby K. Long, Nicole Karpinsky-Mosley</i>	

MUSCLE ACTIVATION AND DRIVING PERFORMANCE DIFFERENCES BETWEEN STATIC AND DYNAMIC DRIVING SIMULATION CONDITIONS.....	2291
<i>Diego Gonzalez, Danielle Filio, Lynn Dony, Michele Oliver</i>	

USABILITY TESTING OF A VIRTUAL REALITY TUTORIAL	2296
<i>Stephanie G. Fussell, Jessyca L. Derby, Joshua K. Smith, William J. Shelstad, Jacob D. Benedict, Barbara S. Chaparro, Robert Thomas, Andrew R. Dattel</i>	

VE3 - ME AND MY VE, PART 6: APPLICATIONS IN HUMAN FACTORS RESEARCH AND PRACTICE

APPLICATIONS OF VIRTUAL ENVIRONMENTS IN HUMAN FACTORS RESEARCH AND PRACTICE..... 2301
Randall Spain, Benjamin Goldberg, Pete Khooshabeh, David Krum, Joshua Biro, Courtney Linder, Laura Stanley, Ross Tredinnick, Kevin Ponto, Logan Gisick, Matthew Pierce, Joseph Keebler, Phillip Young, Allison Hancock, Jennifer Phillips, Natalie Steinhauer, James Niehaus, Jeremy Flynn

VE4 - A PRACTITIONERS APPROACH TO EXPLORATION AND RESEARCH WITH VIRTUAL ENVIRONMENTS

POSTURAL RISKS AND USER EXPERIENCE OF 3D INTERFACE DESIGNS FOR VIRTUAL REALITY-BASED LEARNING ENVIRONMENTS..... 2306
Yilu Sun, Gourab Kar, Andrea Stevenson Won, Alan Hedge

INVESTIGATING THE USE OF MOVEMENT KINEMATICS TO ASSESS PERCEPTUAL AMBIGUITY IN VIRTUAL REALITY..... 2311
Logan D. Clark, Sara L. Riggs

HOW HAPTIC FEEDBACK IN A MIXED REALITY POOL GAME AFFECTS REAL-LIFE POOL PERFORMANCE 2316
Elaine Thai, Anil R. Kumar

EVALUATION OF A VIRTUAL REALITY ENVIRONMENT FOR COCKPIT DESIGN 2321
Richard Joyce, Stephen K. Robinson

COMPARISON OF HTC VIVE™ VIRTUAL REALITY HEADSET POSITION MEASURES TO CENTER OF PRESSURE MEASURES..... 2326
Brian Sycott, Keith Williams, Mark Hinderaker, Chia-Cheng Lin

Author Index