

# **13th IFAC Symposium on Analysis, Design, and Evaluation of Human- Machine Systems (HMS 2016)**

IFAC PapersOnLine Volume 49, Issue 19

Kyoto, Japan

30 August – 2 September 2016

**Editors:**

**Tetsuo Sawaragi**

ISBN: 978-1-5108-3230-5

**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.**

Copyright© (2016) by Elsevier Limited  
All rights reserved.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact the publisher, Elsevier Limited  
at the address below.

Elsevier Limited  
360 Park Ave South  
New York, NY 10010

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

<b>FUNDAMENTAL ISSUES IN MANUAL CONTROL CYBERNETICS</b> .....	1
<i>M. Mulder, D. M. Pool, D. A. Abbink, E. R. Boer, M. M. Van Paassen</i>	
<b>CONSTRAINTS IN IDENTIFICATION OF MULTI-LOOP FEEDFORWARD HUMAN CONTROL MODELS</b> .....	7
<i>Frank M. Drop, Daan M. Pool, Max Mulder, Heinrich H. Bülthoff</i>	
<b>RELATING EYE ACTIVITY MEASURES TO HUMAN CONTROLLER REMNANT CHARACTERISTICS</b> .....	13
<i>A. Popovici, P. M. T. Zaal, D. M. Pool, M. Mulder</i>	
<b>SAFETY ANALYSIS OF AVIATION FLIGHT-DECK PROCEDURES USING SYSTEMIC ACCIDENT MODEL</b> .....	19
<i>Takayuki Hirose, Tetsuo Sawaragi, Yukio Horiguchi</i>	
<b>FUNCTION ALLOCATION BETWEEN AUTOMATION AND HUMAN PILOT FOR AIRBORNE SEPARATION ASSURANCE</b> .....	25
<i>Husni Idris, Gabriele Enea, Timothy A. Lewis</i>	
<b>A COMPARISON OF METHODS FOR ASSESSING SITUATION AWARENESS IN CURRENT DAY AND FUTURE AIR TRAFFIC MANAGEMENT OPERATIONS: GRAPHICS-BASED VS TEXT-BASED ONLINE PROBE SYSTEMS</b> .....	31
<i>Thomas Z. Strybel, Dan Chiappe, Kim-Phuong L. Vu, Adriana Miramontes, Henri Battiste, Vernol Battiste</i>	
<b>IMPACT OF AUTOMATION SUPPORT ON THE CONFLICT RESOLUTION TASK IN A HUMAN-IN-THE-LOOP AIR TRAFFIC CONTROL SIMULATION</b> .....	36
<i>Joey Mercer, Ashley Gomez, Cynthia Gabets, Nancy Bienert, Tamsyn Edwards, Lynne Martin, Vimmy Gujral, Jeffrey Homola</i>	
<b>FUNCTION ALLOCATION STRATEGIES FOR THE UNMANNED AIRCRAFT SYSTEM TRAFFIC MANAGEMENT (UTM) SYSTEM, AND THEIR IMPACT ON SKILLS AND TRAINING REQUIREMENTS FOR UTM OPERATORS</b> .....	42
<i>Vernol Battiste, Arik-Quang V. Dao, Thomas Z. Strybel, Alexander Boudreau, Yin Kwan Wong</i>	
<b>ADAPTIVE LEVEL OF AUTOMATION FOR RISK MANAGEMENT</b> .....	48
<i>Marie-Pierre Pacaux-Lemoine, Patrick Millot</i>	
<b>TOWARD A PETRI NET BASED APPROACH TO SUPPORT RISK ANALYSIS OF DISSONANCES BETWEEN HUMAN AND MACHINE</b> .....	54
<i>F. Vanderhaegen</i>	
<b>HOW DOES A DRIVER PERCEIVE RISK WHEN MAKING DECISION OF LANE-CHANGING?</b> .....	60
<i>Huiping Zhou, Makoto Itoh</i>	
<b>SITUATION AWARENESS TRAINING FOR GENERAL AVIATION PILOTS USING EYE TRACKING</b> .....	66
<i>Céline M. Muehlethaler, Chiara P. Knecht</i>	
<b>SHARED CONTROL IS THE SHARP END OF COOPERATION: TOWARDS A COMMON FRAMEWORK OF JOINT ACTION, SHARED CONTROL AND HUMAN MACHINE COOPERATION</b> .....	72
<i>F. Flemisch, D. Abbink, M. Itoh, M-P. Pacaux-Lemoine, G. Weßel</i>	
<b>DESIGN, REALIZATION AND EXPERIMENTAL EVALUATION OF A HAPTIC STICK FOR SHARED CONTROL STUDIES</b> .....	78
<i>Lorenzo Pollini, Matteo Razzanelli, Mario Olivari, Alessandro Brandimarti, Michele Maimeri, Paolo Pazzaglia, Giovanni Pittiglio, Roger Nuti, Mario Innocenti, Heinrich Bülthoff</i>	
<b>EFFECTIVENESS OF A RISK PREDICTIVE SHARED STEERING CONTROL BASED ON POTENTIAL RISK PREDICTION OF COLLISION WITH VULNERABLE ROAD USERS</b> .....	84
<i>Yuichi Saito, Takayuki Mitsumoto, Pongsathorn Raksincharoensak</i>	
<b>SIMULTANEOUS ACHIEVEMENT OF SUPPORTING HUMAN DRIVERS AND IMPROVING DRIVING SKILLS BY SHARED AND COOPERATIVE CONTROL</b> .....	90
<i>Takahiro Wada, Kohei Sonoda, Shintaro Tada</i>	
<b>A HIERARCHICAL FRAMEWORK TO ANALYZE SHARED CONTROL CONFLICTS BETWEEN HUMAN AND MACHINE</b> .....	96
<i>Makoto Itoh, Frank Flemisch, David Abbink</i>	
<b>WHAT PREVIEW ELEMENTS DO DRIVERS NEED?</b> .....	102
<i>Erwin R. Boer</i>	

<b>EFFECTS OF PREVIEW TIME ON HUMAN CONTROL BEHAVIOR IN RATE TRACKING TASKS</b> .....	108
<i>K. Van Der El, S. Barendswaard, D. M. Pool, M. Mulder</i>	
<b>HUMAN MOTOR CONTROL AND THE INTERNAL MODEL PRINCIPLE*</b> .....	114
<i>R. Brent Gillespie, Amir H. Ghasemi, Jim Freudenberg</i>	
<b>BIODYNAMIC FEEDTHROUGH: CURRENT STATUS AND OPEN ISSUES</b> .....	120
<i>Joost Venrooij, Mario Olivari, Heinrich H. Bühlhoff</i>	
<b>GAZE TRAJECTORY PREDICTION IN THE CONTEXT OF SOCIAL ROBOTICS</b> .....	126
<i>François De La Bourdonnaye, Rossitza Setchi, Cecilia Zanni-Merk</i>	
<b>HUMAN-FRIENDLY COMMUNICATION FOR SMART DEVICE INTERLOCKED ROBOT PARTNERS</b> .....	132
<i>Takenori Obo, Takahiro Takeda, Janos Botzheim, Naoyuki Kubota</i>	
<b>INSIGHTS INTO INTERACTION - EFFECTS OF HUMAN-HUMAN INTERACTION IN PEDESTRIAN CROSSING SITUATIONS USING A LINKED SIMULATOR ENVIRONMENT</b> .....	138
<i>Christian Lehsing, Tobias Benz, Klaus Bengler</i>	
<b>SYMBOL EMERGENCE IN ROBOTICS FOR LONG-TERM HUMAN-ROBOT COLLABORATION*</b> .....	144
<i>Tadahiro Taniguchi</i>	
<b>LEARNING OF RELATIVE SPATIAL CONCEPTS FROM AMBIGUOUS INSTRUCTIONS</b> .....	150
<i>Zhixiang Gu, Ryo Taguchi, Koosuke Hattori, Masahiro Hoguro, Taizo Umezaki</i>	
<b>LEARNING OF MOTOR CONTROL FROM MOTOR BABBLING*</b> .....	154
<i>Tatsuya Aoki, Tomoaki Nakamura, Takayuki Nagai</i>	
<b>LAYERS OF SHARED AND COOPERATIVE CONTROL, ASSISTANCE AND AUTOMATION</b> .....	159
<i>Marie-Pierre Pacaux-Lemoine, Frank Flemisch</i>	
<b>AUTOMATED DRIVING USING SHARED AND COOPERATIVE GUIDANCE AND CONTROL: REVISITING PAST RESEARCH WITH A NEW MODEL</b> .....	165
<i>E. Altendorf, M. Baltzer, Y. Canpolat, D. Lopez, C. Schreck, G. Weßel, F. Flemisch</i>	
<b>DESIGN AND EVALUATION OF A FLIGHT ENVELOPE PROTECTION HAPTIC FEEDBACK SYSTEM</b> .....	171
<i>J. Ellerbroek, M. J. M. Rodriguez Martin, T. Lombaerts, M. M. Van Paassen, M. Mulder</i>	
<b>THE PREDICTABILITY OF A TARGET SIGNAL AFFECTS MANUAL FEEDFORWARD CONTROL</b> .....	177
<i>Frank M. Drop, Rick De Vries, Max Mulder, Heinrich H. Bühlhoff</i>	
<b>SATISFYING CURVE NEGOTIATION: EXPLAINING DRIVERS' SITUATED LATERAL POSITION VARIABILITY</b> .....	183
<i>Erwin R. Boer</i>	
<b>HUMAN CROSSFEED IN DUAL-AXIS MANUAL CONTROL WITH MOTION FEEDBACK</b> .....	189
<i>S. Barendswaard, D. M. Pool, M. Mulder</i>	
<b>SHARED MENTAL MODELS IN HUMAN-MACHINE SYSTEMS</b> .....	195
<i>Clark Borst</i>	
<b>AUTOMATION TRANSPARENCY AND PERSONALIZED DECISION SUPPORT: AIR TRAFFIC CONTROLLER INTERACTION WITH A RESOLUTION ADVISORY SYSTEM*</b> .....	201
<i>Carl Westin, Clark Borst, Brian Hilburn</i>	
<b>A HYBRID APPROACH TO TRAINING EXPERT SKILLS IN HIGHLY AUTOMATED SYSTEMS: LESSONS FROM AIR TRAFFIC MANAGEMENT</b> .....	207
<i>Brian Hilburn</i>	
<b>REPRESENTING DISTRIBUTED COGNITION IN SOCIO-TECHNICAL SYSTEMS</b> .....	212
<i>Neville A Stanton</i>	
<b>PLACE CONCEPT LEARNING BY HMLDA BASED ON POSITION AND VISION INFORMATION*</b> .....	216
<i>Yoshinobu Hagiwara, Inoue Masakazu, Taniguch Tadahiro</i>	
<b>SIMULTANEOUS ESTIMATION OF SELF-POSITION AND WORD FROM NOISY UTTERANCES AND SENSORY INFORMATION</b> .....	221
<i>Akira Taniguchi, Tadahiro Taniguchi, Tetsunari Inamura</i>	
<b>INTERDISCIPLINARY COMMUNICATION AND COMPREHENSION IN FACTORY AUTOMATION ENGINEERING - A CONCEPT FOR AN IMMERSIVE VIRTUAL ENVIRONMENT</b> .....	227
<i>Sebastian Ulewicz, Dorothea Pantförder, Birgit Vogel-Heuser</i>	
<b>HOME I/O: AN EXAMPLE OF HUMAN-MACHINE SYSTEMS CONCEPTS APPLIED TO STEM EDUCATION</b> .....	233
<i>B. Riera, D. Annebicque, B. Vigário</i>	

<b>A PEDESTRIAN SIMULATOR FOR URBAN CROSSING SCENARIOS</b> .....	239
<i>Ilja Feldstein, André Dietrich, Sasha Milinkovic, Klaus Bengler</i>	
<b>LESSONS LEARNED FROM GOOD PRACTICES DURING THE ACCIDENT AT FUKUSHIMA DAIICHI NUCLEAR POWER STATION IN LIGHT OF RESILIENCE ENGINEERING</b> .....	245
<i>Atsufumi Yoshizawa, Kyoko Oba, Masaharu Kitamura</i>	
<b>SOCIALLY CONSTRUCTED RESILIENCE BY MULTIPLE ORGANIZATIONS - THE CASE OF TOKAI NO.2 POWER STATION-</b> .....	251
<i>Kyoko Oba, Atsufumi Yoshizawa, Masaharu Kitamura</i>	
<b>SUPPLEMENTARY REMARKS ON LESSONS LEARNED FROM THE GREAT EAST JAPAN EARTHQUAKE</b> .....	257
<i>Masaharu Kitamura</i>	
<b>SIT-TO-STAND INTENTION ESTIMATION METHOD USING THE ANGLE OF FORWARD TRUNK INCLINATION AND LEG ELECTROMYOGRAMS</b> .....	261
<i>Yusuke Kato, Tsuyoshi Inoue, Hiroyuki Motoyama, Jun Ozawa</i>	
<b>DESIGN OF TEST SIGNALS FOR IDENTIFICATION OF NEUROMUSCULAR ADMITTANCE</b> .....	266
<i>Anand K. Bhoelai, M. M. (René) Van Paassen, David A. Abbink, Max Mulder</i>	
<b>AN ALTERNATIVE APPROACH TO DISTINGUISH MOVEMENTS OF PARKINSON DISEASE PATIENTS</b> .....	272
<i>Sven Nõmm, Aaro Toomela, Martti Vaske, Dan Uvarov, Pille Tabä</i>	
<b>SMARTWATCH-ENHANCED INTERACTION WITH AN ADVANCED TROUBLESHOOTING SYSTEM FOR INDUSTRIAL MACHINES</b> .....	277
<i>Valeria Villani, Lorenzo Sabattini, Nicola Battilani, Cesare Fantuzzi</i>	
<b>LINKING DESIGN INTENTION AND USERS' INTERPRETATION THROUGH IMAGE SCHEMAS</b> .....	283
<i>O. K. Asikhia, R. Setchi</i>	
<b>GRAPHICAL NOTIFICATION TO MAINTAIN GOOD POSTURE DURING VISUAL DISPLAY TERMINAL WORK</b> .....	289
<i>Kazuyoshi Murata, Yu Shibuya</i>	
<b>MIRROR EFFECT BASED LEARNING SYSTEMS TO PREDICT HUMAN ERRORS - APPLICATION TO THE AIR TRAFFIC CONTROL</b> .....	295
<i>F. Vanderhaegen</i>	
<b>UIO-BASED FAULT DIAGNOSIS DESIGN IN FINITE-FREQUENCY DOMAIN FOR DISCRETE- TIME T-S FUZZY SYSTEMS*</b> .....	301
<i>Ke Zhang, Bin Jiang, Jinping Xia</i>	
<b>ECOLOGICAL INTERFACE DESIGN: SENSOR FAILURE DIAGNOSIS IN AIR TRAFFIC CONTROL</b> .....	307
<i>V. A. Bijsterbosch, C. Borst, M. Mulder, M. M. Van Paassen</i>	
<b>CROSS-SECTOR TRANSFERABILITY OF METRICS FOR AIR TRAFFIC CONTROLLER WORKLOAD</b> .....	313
<i>S. M. B. Abdul Rahman, C. Borst, M. M. Van Paassen, M. Mulder</i>	
<b>ANALYSIS OF CONTROLLERS' WORKING METHODS SUPPORTING SAFE AND EFFICIENT AIR TRAFFIC OPERATIONS</b> .....	319
<i>Daisuke Karikawa, Hisae Aoyama</i>	
<b>PRACTICAL DESIGN BASED ON USER EXPERIENCE APPROACH FOR REMOTE AERODROME FLIGHT INFORMATION SERVICES</b> .....	325
<i>Satoru Inoue, Shinya Nagashio, Kazuhiko Yamazaki</i>	
<b>HUMAN COGNITIVE CONTROL MODE ESTIMATION USING JINS MEME</b> .....	331
<i>Takafumi Ogawa, Makoto Takahashi, Ryuta Kawashima</i>	
<b>ANALYSIS OF DRIVER BEHAVIOR BASED ON REAL EXPRESSWAY DATA</b> .....	337
<i>Susumu Yamada, Makoto Takahashi</i>	
<b>A CYBERNETIC APPROACH TO ASSESS THE TRAINING OF MANUAL CONTROL SKILLS</b> .....	343
<i>D. M. Pool, P. M. T. Zaal</i>	
<b>A MULTI-SENSORY CYBERNETIC DRIVER MODEL OF STOPPING BEHAVIOR: COMPARING REALITY AGAINST SIMULATORS WITH DIFFERENT CUE-RENDERING FIDELITIES</b> .....	349
<i>Erwin R. Boer</i>	
<b>TOWARD A VIRTUAL TOOL TO TRAIN ON DISSONANCE CONTROL SUPPORTED BY LEARNING AND COOPERATION</b> .....	355
<i>F. Vanderhaegen</i>	

<b>A STUDY ON THE LOCATION SEARCH BY LANDMARKS IN CONSIDERATION OF THE SPATIAL IMAGE</b> .....	361
<i>Takeo Sakairi, Masahi Watanabe, Katsuyuki Kamei, Masahiko Ikawa, Takayoshi Kitamura, Tomoko Izumi, Yoshio Nakatani</i>	
<b>ANALYSIS OF HUMAN POINTING BEHAVIOR IN VISION-BASED POINTING INTERFACE SYSTEM - DIFFERENCE OF TWO TYPICAL POINTING STYLES -</b> .....	367
<i>Kazuaki Kondo, Genki Mizuno, Yuichi Nakamura</i>	
<b>A DESIGN MODEL FOR TANGIBLE INTERACTION: CASE STUDY IN WASTE SORTING</b> .....	373
<i>Clémentine Havrez, Sophie Lepreux, Yoann Lebrun, Sylvain Haudegond, Pierrette Ethuin, Christophe Kolski</i>	
<b>THE KNOWLEDGE-BASED TOOLS FOR THE STEEL INDUSTRY</b> .....	379
<i>Luigi M. Galasso, Andrea Polo, Marco Ometto</i>	
<b>ESTIMATION OF BOUNDARY SURFACE BASED ON BULK MODULUS FOR CUTTING WORK</b> .....	385
<i>H. Itaka, R. Sakamoto, K. Yano</i>	
<b>MYAID: A TROUBLESHOOTING APPLICATION FOR SUPPORTING HUMAN OPERATORS IN INDUSTRIAL ENVIRONMENT</b> .....	391
<i>Valeria Villani, Nicola Battilani, Giulia Lotti, Giulia Lotti, Cesare Fantuzzi</i>	
<b>DEVELOPMENT OF PLANT DID RISK MONITOR SYSTEM FOR NPPS BY UTILIZING UML MODELLING TECHNOLOGY</b> .....	397
<i>Hidekazu Yoshikawa, Takashi Nakagawa</i>	
<b>THE DESIRABLE FEATURES OF COMPUTER BASED EMERGENCY OPERATING PROCEDURE FOR NUCLEAR POWER OPERATION</b> .....	403
<i>Tulis Jojok Suryono, Akio Gofuku</i>	
<b>PRESENCE, BEHAVIOURAL REALISM AND PERFORMANCES IN DRIVING SIMULATION</b> .....	408
<i>N. Pallamin, C. Bossard</i>	
<b>UNDERSTANDING CUE UTILITY IN CONTROLLED EVASIVE DRIVING MANOEUVRES: OPTIMIZING VESTIBULAR CUES FOR SIMULATOR &amp; HUMAN ABILITIES</b> .....	414
<i>E. Sadraei, R. Romano, S. Advani, A. H. Jamson, P. Chappell, G. Markkula, A. Bean, E. R. Boer</i>	
<b>HUMAN-CPS INTERACTION - REQUIREMENTS AND HUMAN-MACHINE INTERACTION METHODS FOR THE INDUSTRY 4.0</b> .....	420
<i>Carsten Wittenberg</i>	
<b>FORMAL AND JOINT VERIFICATION OF CONTROL PROGRAMS AND SUPERVISION INTERFACES FOR SOCIO-TECHNICAL SYSTEMS COMPONENTS</b> .....	426
<i>S. Mesli-Kesraoui, A. Toguyeni, A. Bignon, F. Oquendo, D. Kesraoui, P. Berruet</i>	
<b>MARKERS AND PATTERNS OF ORGANIZATIONAL RESILIENCE FOR RISK ANALYSIS</b> .....	432
<i>A. De Galizia, C. Simon, P. Weber, B. Iung, C. Duval, E. Serdet</i>	
<b>MUTUAL ASSISTANCE SYSTEM FOR AUTOMOBILE SAFETY</b> .....	438
<i>Sui. Kurihashi, Kenji. Kanaka</i>	
<b>ECO-DRIVING COMMAND FOR TRAM-DRIVER SYSTEM*</b> .....	444
<i>Salvatore La Delfa, Simon Enjalbert, Philippe Polet, Frédéric Vanderhaegen</i>	
<b>ECOLOGICAL INTERFACE FOR COLLABORATION OF MULTIPLE UAVS IN REMOTE AREAS</b> .....	450
<i>S. Van Lochem, C. Borst, G. C. H. E. De Croon, M. M. Van Paassen, M. Mulder</i>	
<b>PLANT OPERATION SUPPORT SYSTEM WITH PREDICTION FUNCTIONS THAT REALIZES SAFE AND OPTIMAL OPERATION</b> .....	456
<i>Ryosuke Kashiwa, Azusa Takenaka, Makoto Nakaya</i>	
<b>EXPERIMENTAL INVESTIGATION OF THE ESSENTIAL INFORMATION IN THE PART OF REMARKS OF OPERATION MANUAL TO SUPPORT NOVICE PLANT OPERATORS</b> .....	462
<i>Takashi Matsubara, Akio Gofuku, Taro Sugihara</i>	
<b>HUMAN-SYSTEM CO-CREATIVE DESIGN OF RESILIENCE</b> .....	468
<i>Tetsuo Sawaragi</i>	
<b>ANALYSIS OF DYNAMIC DECISION MAKING UNDERPINNING SUPPLY CHAIN RESILIENCE: A SERIOUS GAME APPROACH</b> .....	474
<i>Tomomi Nonaka, Kentaro Miki, Ryo Odajima, Hajime Mizuyama</i>	
<b>THE EXPERIMENTAL STUDY ON THE ABILITY TO MANAGE UNEXPECTED EVENTS USING MICRO-WORLD SIMULATION</b> .....	480
<i>Yoshitake Sohma, Keito Yoshii, Makoto Takahashi, Hiroyuki Nakanowatari, Yuki Yamamoto, Keyvan Kashkoul</i> <i>Nejad, Takayuki Nozawa, Motoaki Sugiura, Ryuta Kawashima</i>	
<b>OBSTACLE AVOIDANCE BY STEERING AND BRAKING WITH MINIMUM TOTAL VEHICLE FORCE</b> .....	486
<i>Amrik Singh, Phuman Singh, Osamu Nishihara</i>	

<b>SUBJECTIVE PERCEPTION OF DISCOMFORT DUE TO VEHICLE VIBRATIONS IN THE SAGITTAL PLANE</b> .....	494
<i>Mark Mulder, David A. Abbink</i>	
<b>THE EFFECTS OF YAW AND SWAY MOTION CUES IN CURVE DRIVING SIMULATION</b> .....	500
<i>P. R. Lakerveld, H. J. Damveld, D. M. Pool, K. Van Der El, M. M. Van Paassen, M. Mulder</i>	
<b>A MEDIUM FOR SHORT-DISTANCE LOVERS THAT EXPLOITS AN OBSTRUCTIVE FUNCTION TO DRAW THEM BACK TO FACE-TO-FACE COMMUNICATIONS</b> .....	506
<i>Takuya Iwamoto, Kazushi Nishimoto</i>	
<b>A SYSTEM TO PROMOTE COMMUNICATIONS INDEPENDENT OF LANGUAGE</b> .....	510
<i>Tomoaki Itaba, Koya Kimura, Ivan Tanev, Katsunori Shimohara</i>	
<b>TANGIBLE GIMMICK FOR PROGRAMMING EDUCATION USING RFID SYSTEMS</b> .....	514
<i>Tatsuo Motoyoshi, Naoki Tetsumura, Hiroyuki Masuta, Ken'ichi Koyanagi, Toru Oshima, Hiroshi Kawakami</i>	
<b>DEVELOPMENT OF CONTENT SPECIFIC INFORMATION DISPLAY TO INDUCE INFORMAL COMMUNICATION LEADING TO INFORMAL LEARNING</b> .....	519
<i>Razana Husni, Motoki Urayama, Hirotake Ishii, Hiroshi Shimoda, Takayoshi Kitamura, Hidenori Fujino</i>	
<b>BLIND DRIVING BY MEANS OF AUDITORY FEEDBACK</b> .....	525
<i>Pavlo Bazilinskyy, Lars Van Der Geest, Stefan Van Leeuwen, Bart Numan, Joris Pijnacker, Joost De Winter</i>	
<b>SONIFYING THE LOCATION OF AN OBJECT: A COMPARISON OF THREE METHODS</b> .....	531
<i>Pavlo Bazilinskyy, Wessel Van Haarlem, Hashim Quraishi, Coen Berssenbrugge, Jasper Binda, Joost De Winter</i>	
<b>ANALYSIS OF TEAM SITUATION AWARENESS USING SERIOUS GAME AND CONSTRUCTIVE MODEL-BASED SIMULATION</b> .....	537
<i>Tetsuo Sawaragi, Kohei Fujii, Yukio Horiguchi, Hiroaki Nakanishi</i>	
<b>APPLYING SYSTEMIC ACCIDENT MODEL TO LEARN FROM NEAR-MISS INCIDENTS OF TRAIN MANEUVERING AND OPERATION</b> .....	543
<i>Keisuke Fukuda, Tetsuo Sawaragi, Yukio Horiguchi, Hiroaki Nakanishi</i>	
<b>A DYNAMIC CLOSED-LOOPED AND MULTIDIMENSIONAL MODEL FOR MENTAL WORKLOAD EVALUATION</b> .....	549
<i>A. Kostenko, P. Rauffet, C. Chauvin, G. Coppin</i>	
<b>AUTOMATION FOR IMPROVE OF MENTAL WORKLOAD OF THE SYSTEMS ENGINEER</b> .....	555
<i>Raphaël Coupat, Alexandre Philippot, David Annebicque, François Gellot, Bernard Riera</i>	
<b>MENTAL WORKLOAD RECOGNITION BY COMBINING WAVELET PACKET TRANSFORM AND KERNEL SPECTRAL REGRESSION TECHNIQUES</b> .....	561
<i>Yongcun Wang, Jianhua Zhang, Rubin Wang</i>	
<b>IDENTIFICATION OF MENTAL WORKLOAD USING IMBALANCED EEG DATA AND DYSMOTIVE-BASED NEURAL NETWORK APPROACH</b> .....	567
<i>Xiqing Cui, Jianhua Zhang, Rubin Wang</i>	
<b>A SUGGESTIVE RECOMMENDATION METHOD TO MAKE TOURISTS “FEEL LIKE GOING”</b> .....	573
<i>Tomoko Izumi, Takayoshi Kitamura, Yoshio Nakatani</i>	
<b>1. COGNITIVE FUNCTION TRAINING SYSTEM USING GAME-BASED DESIGN FOR ELDERLY DRIVERS</b> .....	579
<i>Toshihiro Hiraoka, Ting-Wen Wang, Hiroshi Kawakami</i>	
<b>ESTIMATION OF DRIVER MENTAL STATES USING AUTONOMIC INDICES</b> .....	585
<i>Yukiyo Kuriyagawa, Mina Shimamura, Ichiro Kageyama</i>	
<b>EXPLORING THE RELATIONSHIP BETWEEN MENTAL WORKLOAD, VARIATION IN PERFORMANCE AND PHYSIOLOGICAL PARAMETERS</b> .....	591
<i>A. Marinescu, S. Sharples, A. C. Ritchie, T. Sánchez López, M. McDowell, H. Morvan</i>	
<b>MULTIFACTOR INTERACTIONS AND THE AIR TRAFFIC CONTROLLER: THE INTERACTION OF SITUATION AWARENESS AND WORKLOAD IN ASSOCIATION WITH AUTOMATION</b> .....	597
<i>T. Edwards, J. Homola, J. Mercer, L. Claudatos</i>	
<b>SEEING THE WOODS FOR THE TREES: THE PROBLEM OF INFORMATION INEFFICIENCY AND INFORMATION OVERLOAD ON OPERATOR PERFORMANCE</b> .....	603
<i>Nastaran Dadashi, David Golightly, Sarah Sharples</i>	
<b>DESIGNING HUMAN-MACHINE INTERFACE FOR AUTONOMOUS VEHICLES</b> .....	609
<i>S. Debernard, C. Chauvin, R. Pokam, S. Langlois</i>	
<b>ARCHITECTURE FOR MULTI-LEVEL COOPERATION AND DYNAMIC AUTHORITY MANAGEMENT IN AN AUTOMATED DRIVING SYSTEM - A CASE STUDY ON LANE CHANGE COOPERATION</b> .....	615
<i>Mohamed Amir Benloucif, Jean-Christophe Popieul, Chouki Sentouh</i>	
<b>EXTRACTING TRAIN DRIVER’S EYE-GAZE PATTERNS USING GRAPH CLUSTERING</b> .....	621
<i>Yukio Horiguchi, Takaya Suzuki, Tetsuo Sawaragi, Hiroaki Nakanishi, Tomoharu Takimoto</i>	

<b>COGNITIVE DRIVER DISTRACTION IMPROVES STRAIGHT LANE KEEPING: A CYBERNETIC CONTROL THEORETIC EXPLANATION</b> .....	627
<i>Erwin R. Boer, Panagiotis D. Spyridakos, Gustav M. Markkula, Natasha Merat</i>	
<b>HUMAN SKILL EVALUATION BASED ON CONTROL ENGINEERING APPROACH</b> .....	633
<i>Kazushige Koiwai, Yuntao Liao, Toru Yamamoto, Takao Nanjo, Yoichiro Yamazaki, Yoshiaki Fujimoto</i>	
<b>ARCHITECTURES FOR SHARED CONTROL OF VEHICLE STEERING*</b> .....	639
<i>Paul Boehm, Amir H. Ghasemi, Sile O'Modhrain, Paramsothy Jayakumar, R. Brent Gillespie</i>	
<b>Author Index</b>	