20th International Symposium on Aviation Psychology (ISAP 2019)

Dayton, Ohio, USA 7-10 May 2019

ISBN: 978-1-7138-0617-2

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© (2019) by Wright State University – Conferences & Events All rights reserved.

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

For permission requests, please contact Wright State University – Conferences & Events at the address below.

Wright State University – Conferences & Events 3640 Colonel Glenn Highway Dayton, Ohio 45435 USA

Phone: (937) 775-1000

http://www.wright.edu

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

For your convenience, the table of contents is linked to the body of the document and is keyword.searchable

Accident Investigation

Understanding Current Ways of Reporting a Runway Incursion Incident at Towered Airports Bhargava, Marais
A Case Study of Landing on Taxiway (1982-2016) Jin, Lu
Loss of Situation Awareness During Commercial Flight Over Colombian Mountains Mejia
Pilot and ATC Training
Individualized Landing Flare Training Using Both Flight Performance and Psychophysiological Measure Entzinger
Design of Air Traffic Control Weather Related Training Program Pierson, Ling, Alshaqah, James, Wang
Investigating the Effect of Micro-Quadcopter Flight on UAS Instruction Weldon, Borgen, Kozak
Mental Health Issues in Pilots
Hazardous Attitudes in US Part 121 Airlines Accidents Nunez, Lopez, Velazquez, Mora, Roman
Pilot Wellbeing and Work Related Stress (WRS) Cahill, Cullen, Gaynor
Managing Air Traffic Challenges
Traffic Flow Management for Trajectory Based Operations: Supporting Effective Predeparture Reroutes Smith, Evans, Spencer
A Framework for Assessing the Impact of Performance Based Navigation on Air Traffic Controllers Hinson, Sawyer, Serfoss
Assessing Human-System Resilience Potential Throughout the Development Lifecycle Alexander, Herschler
Cognition and Decision Making
The NASA MATB-II Predicts Prospective Memory Performance During Complex Simulated Flight Van Benthem, Shanahan, Ma, Fraser, Herdman
Examining Pilot Decision Making in Information Rich Cockpits Carroll Wilt Sanchez Carstens 73

A Decade of Lessons From the MTSU NASA FOCUS (Flight Operations Center - Unified Simulation) Lab

Developing a High Fidelity Simulation Lab: Challenges and Lessons Learned Georgiou, Littlepage, Hein, Bearden
Development and Use of Performance Composite Scores in Dispatch Teams Bearden, Hein, Littlepage
A Continuation of Research: Student Decision Making Under Stress in a Flight Control Center Pope, Russell, Hein, Burkholde
Human-Machine Teaming
Towards a Meta-model to Specify and Design Human-Agent Teams Schneider, Miller, McGuril
Simulating Human-Robot Teamwork Dynamics for Evaluation of Work Strategies in Human-Robot Team. 10
Wednesday Posters
Resilience and Safety for In-Time Monitoring, Prediction, and Mitigation of Emergent Risks Holbrook, Prinzel, Stewart, Smith, Matthews
The Psychologists' Role in Brazilian Aviation – Present and Perspectives Cabral, Ribeiro, Barreto, Fajer, Pereira, Santos
Communicating Data-Driven Risk Information to Pilots Fala, Marais
Findings of a Safety Culture Survey Across Disciplines at a Collegiate Institution Collegiate Program Safety Culture Survey – A Comparison of Disciplines
Beckman, Siao, Smith, Corns
Applied Use of Safety Performance Monitoring in Global Aviation Operations Wilky, Austrian, Hinson, Sawyer, Millam
Safety Attitude and Risk Perception Among Air Passengers: A Cross-National Study Rehman, You
Designing Military Cockpits to Support a Broad Range of Personnel Body Sizes Lindsey, Ganey, Carroll
Collaboration Interface Supporting Human-Autonomy Teaming for Unmanned Vehicle Management Frost, Calhoun, Ruff, Bartik, Behymer, Spriggs, Buchanan
Development of an Integrated Unmanned Aerial System Validation Center Decker, Mott, Connor, Habib, Bullock

Designing for Display Support

The Joint Tactical Air Controller: Cognitive Modeling and Augmented Reality HMD Design Wickens, Dempsey, Pringle, Kazansky, Hutka	.163
Haptic Support for Avoiding Static and Dynamic Obstacles in UAV Teleoperation Piessens, van Paassen, Mulder	. 169
Multiple Identity Tracking and Motion Extrapolation Buck, Rantanen	. 175
Using Enhanced Flight-Vision Systems (EFVS) for Low-Visibility Taxi in Transport-Category Aircraft Beringer, Sparko, Jaworski	
Safety and Effective Aviation Operations	
What is "Safety Data"? Pounds, Krois	. 187
A Systems-Based Model and Processes for Integrated Safety Management Systems (I-SMS) Silva Castilho	. 193
Drone Acceptance and Noise Concerns – Some Findings Eißfeldt, Vogelpohl	. 199
Physiological Measures in Aviation	
Feedback on Use of MATB-II Task For Modeling Of Cognitive Control Levels Through Psycho- Physiological Biosignals Daviaux, Bey, Arsac, Morellec, Lini	. 205
Evaluation of UAS Operator Training During Search and Surveillance Tasks Reddy, Richards, Izzetoglu	211
Communication and Coordination	
Controller-Pilot Communication as an Index of Human Performance in the National Airspace System Demir, Ligda, Cooke, Seeds, Harris, Niemczyk	.217
Evaluating Team Dynamics for Collaborative Communication Alignment Tasks Jones, Peters	. 223
Learning From the Past: Airline Accidents & the ICAO Language Proficiency Program Cookson	. 229
Aviation English Listening and Repeating Task for Native English Speaker and Non-Native Speaker Pi	

Displays for Orientation

Schnell, Geiselman, Simpson, Williams	241
Effects of Visual Perceptual Asymmetries on Performance While Using an Aircraft Attitude Symbolog Reis, Geiselman, Miller	-
Disorientation Research Device Testing of Synthetic Vision Display Technologies Prinzel, Ellis, Ballard, Lake, Nicholas, Arthur, Kiggins	253
Pilot Fatigue and Physiological Stress	
Erickson's Practice for Crews: What About Coping to the Situation With "Zen"? Plat-Robain	259
A System for Assessing Cervical Readiness Using Analytics and Non-invasive Evaluation (CRANE) Kiehl, Sathyanarayan, Halverson, Zabala, Gallagher, Farrel	265
Single-Pilot Operations	
The Training of Operators in Single Pilot Operations: An Initial System Theoretic Consideration Schmid, Stanton	271
Operational Alerting Concept for Commercial Single Pilot Operations Systems Reitsma, van Paassen, Mulder	277
From Crewed to Single-Pilot Operations: Pilot Performance and Workload Management Faulhaber	283
Visual Displays for Pilots	
An Empirical Test of an Enhanced Airspeed Indicator Trippe, Mauro, Sherry	289
Operational Alerting on Modern Commercial Flight Decks Reitsma, van Paassen, Mulder	295
Pilot Information Needs for Electronic Data-Driven Charts Jaworski, Yeh, Swider	301
Depiction of Vertical Flight Paths For NextGen Arrival and Departure Instrument Flight Procedures Chandra	
Real-World Perspectives	
Mission Ready Adaptive Systems Smith	313

Fatigue

If We'd Only Listen! What Research Can Tell Us About Aircrew Fatigue Rudin-Brown, Rosberg, Krukowski	319
Recovery from Unexpected Events	
Testing the Applicability of a Checklist-Based Startle Management Method in the Simulator Landman, van Middelaar, Groen, van Paassen, Bronkhorst, Mulder	325
SCD: A 3 States Startle Copying Display to Manage Deleterious Effects of Extreme Emergency Situates, Hourlier, Andre	
Pilot Evaluations of a Non-Verbal Statle and Surprise Management Method, Tested During Airline Recurrent Simulator Training Landman, Groen, Frank, Steinhardt, van Paassen, Bronkhorst, Mulder	337
Thursday Posters	337
Human Factors Electronic Kneeboard Design Guidelines for Military Tactical Aviation Bridgman, Neville, Massey, Krauskopf, Mizan, Mooney, Schmorrow	343
Effects of Verbal vs Graphical Weather Information on a Pilots Decision-Making During Preflight Pittorie, Carroll, Carstens	349
A New HMI Evaluation Method (MERIA) Based on Pilot's Mental Representations Letouzé, Créno, Diaz, Hourlier, Amdre	355
Effects of Decision Type and Aid Accuracy on User Performance Mahoney, Houpt	361
Identifying a Possible Function for Artificial Agent Adaptation in Variable Task Rate Environments Canzonetta, Miller	367
Virtual Reality Flight Environments May Tax Working Memory and Disrupt Prospective Memory Ommerli, Mirzaagha, Ma, Van Benthem, Herdman	373
Which Ocular Dominance Should be Considered for Monocular Augmented Reality Devices? Bayle, Guilbaud, Hourlier, Lelandais, Leroy, Plantier, Neveu	379
Aviation Selection	
Impact of ATCO Training and Expertise on Dynamic Spatial Abilities Matton, Gotteland, Granger, Durand	385
The Use of a Perceptual Speed Test in Civilian Pilot Selection Hoermann, Damos	391
How Personality, Intelligence, and Working Memory Predict Situation Awareness and Flight Performance, Babin, Teodoravic, Brooks, Pruksaritanon, Shetty	

Helicopter Human Factors

Envisioning User Requirements for First-of-a-Kind Future Rotorcraft Sushereba, Militello, Ernst, Diiulio, Roth, Scheff, Huff
The Use of 3D Modeling Software to Enhance Rotorcraft Maintenance Training Torrez, Kozak
Effect of Pain and Task Load on Flying Performance Probert, Dyre, Hollands, Beaudoin, Maceda
Weather Hazards in General Aviation
Weather Hazards in General Aviation: Human Factors Research to Understand and Mitigate the Problem Johnson, Blickensderfer, Whitehurst, Brown, Ahlstrom, Johnson
Human-Autonomy Teaming: An Evolving Interaction Paradigm
Human-Autonomy Teaming- An Evolving Interaction Paradigm: Teaming and Automation Richards, Kaliardos
Human-Autonomy Teaming - An Evolving Interaction Paradigm: A Cognitive Engineering Approach to HAT Schulte, Donath
Human-Agent Teaming- An Evolving Interaction Paradigm: An Innovative Measure of Trust Palmer, Richards, Shelton-Rayner, Inch, Mira, Izzetoglu
Collegiate Aviation Training
A History of the Air Traffic Control Collegiate Training Initiative (AT-CTI) Program McCauley, Broach
Six-Year Follow-Up of Intensive, Simulator-Based Pilot Training Lubner, Dattel, Allen, Henneberry, DeVivo
Data-Driven Improvement of Flight Training Safety at Purdue University Chow, Gupta, Torrez, Veeravalli, Mott, Green, Sambado
Weather Information for General Aviation
A Tablet Computer App Displaying Runway Winds Knecht
Automated Speech Recognition Technology to Support Weather-Related Communication for GA Pilots Huang, Pitts
Factors Affecting Air Traffic Controller's Weather Dissemination to Pilots Alshaqah, Ling, Pierson, Wang

Approaching Machine Common Sense

Machine Awareness	
Harbour, Clark, Mitchell, Vemuru	480
Temporary Memory Neuron for the Leaky Integrate and Fire Neuron Model	
Clark, Mitchell, Vemuru, Harbour	486
Reinforcement Learning in Aviation, Either Unmanned or Manned, With an Injection of AI	
Vemuru, Harbour, Clark	492