3AUDREY REINERT, PH.D.

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EDUCATION

Purdue University, West Lafayette, IN
DOCTORATE, INDUSTRIAL ENGINEERING — AUGUST 2019
PURDUE UNIVERSITY, WEST LAFAYETTE
THESIS: DETECTING HUMAN MACHINE INTERACTION FINGERPRINTS IN CONTINUOUS EVENT DATA
ADVISOR: DR. STEVEN LANDRY

Georgia Institute of Technology, Atlanta, GA
MASTERS OF SCIENCE, HUMAN COMPUTER INTERACTION — MAY 2015
THESIS: DEVELOPMENT OF AN OPERATOR INTERFACE FOR SEMI-AUTONOMOUS PARAFOILS
ADVISOR: DR. KAREN FEIGH

University of California San Diego, San Diego, CA
BACHELOR OF ARTS, HISTORY — JUNE 2012
BACHELOR OF SCIENCE, COGNITIVE PSYCHOLOGY — JUNE 2012

SELECTED PAPERS & BOOK CHAPTERS

REINERT, A. ET AL., "VISUAL ANALYTICS FOR DECISION-MAKING DURING PANDEMICS," IN *COMPUTING IN SCIENCE & ENGINEERING*, VOL. 22, NO. 6, PP. 48-59, 1 NOV.-DEC. 2020, DOI: 10.1109/MCSE.2020.3023288.

REINERT, A. (2019, JUNE). ALL ARE WELCOME BUT TERMS AND CONDITIONS APPLY . R. ROSCOE, E. CHIOU, A. WOOLRIDGE, IN ADVANCING DIVERSITY, INCLUSION, AND SOCIAL JUSTICE THROUGH HUMAN SYSTEMS ENGINEERING. CRC PRESS, TAYLOR AND FRANCIS GROUP, FORTHCOMING

REINERT, A. (2018, SEPTEMBER). DETERMINING MAXIMUM AIRSPACE CAPACITY VIA SIMULATION. IN 2018 IEEE/AIAA 37TH DIGITAL AVIONICS SYSTEMS CONFERENCE (DASC) (PP. 1-7). IEEE.

REINERT, C. (2015, SEPTEMBER). DEVELOPMENT OF AN OPERATOR INTERFACE TO IMPROVE LANDING ACCURACY OF SEMI-AUTONOMOUS PARAFOILS. IN DIGITAL AVIONICS SYSTEMS CONFERENCE (DASC), 2015 IEEE/AIAA 34TH (PP. 3C3-1). IEEE.

HOFREE, G., RUVOLO, P., **REINERT, C**., BARTLETT, M. S., & WINKIELMAN, P. (2012, NOVEMBER). WHY ARE YOU SMILING? IN A STRATEGIC CONTEXT, PEOPLE'S AFFECTIVE RESPONSES REFLECT THE MEANING OF ANDROID'S FACIAL EXPRESSIONS. IN DEVELOPMENT AND LEARNING AND EPIGENETIC ROBOTICS (ICDL), 2012 IEEE INTERNATIONAL CONFERENCE ON (PP. 1-2). IEEE.

FORTHCOMING

REINERT, A. ET A. (DEC. 2020) DEVELOPING SOIL HEALTH MONITORING DECISION SUPPORT SOFTWARE FOR USE IN ARID CLIMATES. ELIGHTNING TALK PRESENTED AT THE AMERICAN GEOPHYSICAL UNION ANNUAL MEETING, SAN FRANCISCO, CA, USA.

SNYDER, L., **REINERT, A**., EBERT, D.S. (JAN. 2021) PANVIZ 2.0: AI-DRIVEN VISUAL ANALYTICS TO ADAPT TO THE NOVEL CHALLENGES OF COVID-19. IN *THE HAWAII INTERNATIONAL CONFERENCE ON SYSTEM SCIENCE, HICSS 53.*

JOURNAL PAPERS

Reinert, A. et al., "Visual Analytics for Decision-Making During Pandemics," in *Computing in Science & Engineering*, vol. 22, no. 6, pp. 48-59, 1 Nov.-Dec. 2020, doi: 10.1109/MCSE.2020.3023288.

Hofree, G., Ruvolo, P., **Reinert, A.**, Bartlett, M. S., & Winkielman, P. W. (2018). Behind the robot's smiles and frowns: In social context, people do not mirror android's expressions but react to their informational value. Frontiers in neurorobotics, 12, 14.

CONFERENCE PRESENTATION

Reinert, A. (2018, September). Determining Maximum Airspace Capacity Via Simulation. Paper presented at the 37th Digital Avionics Systems Conference (DASC), London, United Kingdom.

Reinert, C. (2015, September). Development of an operator interface to improve landing accuracy of semi-autonomous parafoils. Paper presented at the 34th Digital Avionics Systems Conference, Prague, Czech Republic.

Reinert, A. (2018, September). Detecting Human Machine Interaction Fingerprints in Continuous Event Data. Poster presented at the 2nd annual Human Workload Conference, Amsterdam, The Netherlands.

POSTERS

Reinert, A. (2020, April). What We See When The Snow Melts. Twelfth International Conference on Climate Change: Impacts & Responses, Ca' Foscari University of Venice

Reinert, A. (2018, September). Detecting Human Machine Interaction Fingerprints in Continuous Event Data. Poster presented at the 2nd annual Human Workload Conference, Amsterdam, The Netherlands.

Winkielman, P. & **Reinert, C.** (2012, November). Why are you smiling? In a strategic context, people's affective responses reflect the meaning of android's facial expressions. Poster presented for the 2012 Development and Learning and Epigenetic Robotics Conference, San Diego, California, United States

INVITED TALKS

Reinert, A. (2020, October). Using Visual Analytics for Preservation and Documentation of Marginalized Perspectives. IEEE VIS 2020, Salt Lake City, Utah, USA

Reviewing Responsibilities

Human Factors and Ergonomics Society
- Cognitive Engineering and Decision Making Technical Group
- Augmented Cognition Technical Group

Human Workload Conference

Digital Avionics Systems Conference

Note: Publications prior to 2016 are listed under C. Reinert

CURRENT& PENDING FUNDING

NETWORK FOR ALERTING AND MANAGING PUBLIC SAFETY AND RESILIENCE – REACT
FUNDING AGENCY: NORTH ATLANTIC TREATY ORGANIZATION (NATO) AMOUNT: $500,000
ROLE: SENIOR INVESTIGATOR

UNSA/OU Alianza Institute: Public Health Monitoring and Decision Making
Funding Agency: Universidad de San Agustin Amount*:* $50,000
ROLE: SENIOR INVESTIGATOR/ GRANT WRITER

The Arequipa Nexus Institute for Food, Water, Energy, and the Environment
Sub- project: *Elevating the Peruvian Grape and Wine Industry into a Global Competitor through Advancements in Sustainable Agriculture*
Funding Agency: Universidad de San Agustin Amount*:* $7,287,293
ROLE: SENIOR INVESTIGATOR

PENDING SUPPORT
SCC-CIVIC-PG TRACK B: BUILDING A COMMUNITY INFORMED PANDEMIC MODELLING, SURVEILLANCE AND RESPONSE SYSTEM
Funding Agency: National Science Foundation Amount*:* $15,773
ROLE: SENIOR INVESTIGATOR / GRANT WRITER

FAI: Grounded, Fair, Robust, Transparent Human-Computer Decision-Making Environments
Funding Agency: National Science Foundation Amount*:* $1,247,578
ROLE: SENIOR INVESTIGATOR/ GRANT WRITER

ADDITIONAL CERTFICATIONS

INDIGENOUS PEOPLE'S ISSUES AWARDED: NOV 1ST 2020
ISSUED BY: COLUMBIAX: IPV VIA EDX
LINK TO CERTIFICATE

TEACHING and MENTORING EXPERIENCE

MASTERS STUDENT'S

- Stephanie Baione & Yiming Lyu Graduation: May 2021
  Creating an educational tool for the cisgender members of Georgia Tech Greek life to better understand their transgender peers
  Co-Advised with Dr. Jessica Roberts, Georgia Institute of Technology

Purdue University, School of Electrical and Computer Engineering October 2019-August 2019
Research Mentor

- Mentored two Ph.D. Students during dissertation process
- Mentored two undergraduate students as a of the Discovery Park Undergraduate Research Internship Program (DURI) program

Purdue University, School of Industrial Engineering October 2015-August 2019
Undergraduate Research Mentor

- Grissom Accessibility Project
- Seasonal Aviation Trend Analysis
- Incident Report Text Mining
- Airspace Fault Tolerance
- Airports and Fault Recovery

SELECTED RESEARCH PROJECTS

AVIATION INCIDENT DATA MINING

- Developed natural language processing scripts in R to identify incidents of procedural deviation among maintenance personnel to reduce maintenance delays

Augmented Reality in Cultural Heritage Contexts

- Led development of an Augmented Reality interface for use in museums to explain the experiences of minority populations

Reducing Time Spent in Airport Taxiways through Simulation

- Led development of an Augmented Reality interface for use in museums to explain the experiences of minority populations

Human Journey to Mars: Human Factors, Health & Human Sciences

- Developed a computational simulation to test if the addition of a new terminal or runway would reduce the time aircraft spent en- queued on taxiways.

Testing Heads up displays for racing helicopters

- Conducted user testing of helicopter symbology presented in a heads up display.
- Learned to fly a helicopter in X-Plane to determine which tasks should be evaluated during testing.
- Created two novel air race courses for flight testing.

Georgia Tech Brain Lab, Consulting Psychologist

- Researched and developed a novel emotional classifier for use on the emotional prosthetics project.
- Proposed MRI experiment employing a signal processing methodology to read neural activity.

Real-time Remote Sensing Data Visualization for Autonomous Vehicle Operation

- Prototyped an operator interface for simultaneous visualization of LiDAR and visual spectrum data.

PROFESSIONAL EXPERIENCE

The University of Oklahoma, Office of the Vice President of Research June 2020-Present

Postdoctoral Researcher

- Coordinated international research efforts for COVID-19 research in Peru
- Developed programming content for the new Data Science Institute for Societal Change
- Coordinated grant writing workshops
- Managed research budgets in excess of 500K USD

Purdue University, College of Electrical and Computer Engineering October 2019-June 2020

Postdoctoral Researcher

- Coordinated international research efforts for the *Elevating the Peruvian Grape and Wine Industry into a Global Competitor through Advancements in Sustainable Agriculture Project*.
- Developed Visual Analytics Systems to provide farmers with real-time soil content information
- Developed AR application to teach low income students circuit design
- Coordinated research efforts between three teams
- Managed research budgets in excess of 500K USD

National Air and Space Administration September 2017-June 2019

Universities Space Research Association Grant

- Received NASA funding to identify the conditions leading to critical pair formation

Federal Aviation Administration, Absecon, NJ May 2017-August 2017

DATA SCIENCE RESEARCH PROGRAMMER

- Investigated and prototyped computational architectures in JAVA for parallelizing legacy Complex Event Software used in Air Traffic Control Simulations
- Developed and deployed computational architecture built on Apache Hadoop, Storm, and Cassandra that reduced data processing time by a factor of 4
- Prototyped in-memory data analysis scripts built on Apache Ignite to reduce computational overhead by 30 percent
- Coordinated development of Apache Zeppelin and Tableau dashboards to visualize streaming data
- Presented results to the FAA's chief technical officer

Federal Aviation Administration, Oklahoma City, OK May 2016-August 2016

DATA SCIENCE/HUMAN FACTORS ASSOCIATE

- Engineered natural language process scripts to identify trends in aviation incidents
- Reduced incident report processing time by 8 hours
- Decreased incident mis-classification rate by 25 percent
- Identified procedural factors that contributed to aviation incidents
- Developed and presented a one-day mini-course on text mining and R programming

United Technologies Research Center, West Hartford, CT May 2015-August 2015

HUMAN FACTORS ASSOCIATE

- Programmed speech recognition application for use in helicopter cockpits
- Designed user testing plan to assess effectiveness of the display
- Developed signal processing scripts to remove engine noise from audio signal
- Presented findings to Human Factors division management

Telecommunications Networks and Technologies Laboratory June 2014-August 2014
Goddard Space Flight Center, Greenbelt, MD

SOFTWARE ENGINEERING INTERN

- Developed and prototyped an easily maintained, distributed and extended web-based communications design tool for use in SCaN Network Integration Project.
- Presented research to senior NASA engineering officials and program managers.

UNIVERSITY & COMMUNITY SERVICE

Industrial Engineering Graduate Student Organization President. August 2018-August 2019

- Coordinated on- and off-campus events to promote graduate student well-being

Diversity and Inclusion Officer/ Skater Relations Coordinator, Bout Coordinator 2017-2020

Naptown Roller Derby

- Developed transparency efforts to improve interleague relations
- Managed 15,000 (USD) event production budgets
- Sought addition diversity and conflict resolution training

SKILLS

R, JAVA, SQL, Python, D3, Tableau, User Interviews, Heuristic Evaluations, Hierarchical Task Analyses, Behavioral Coding, Qualitative Methods, Cognitive Walkthroughs, Cognitive Work Analyses, Text Analysis, Ethnographic research, Interviews, Contextual Inquiries, use case scenarios, Focus groups, Device UI evaluation