



Julian Abich IV

Institute for Simulation and Training
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EDUCATION

University of Central Florida, Orlando, FL

- 2013 *Ph.D.* Modeling and Simulation (Specialization: Human Factors)
- 2010 *M.S.* Modeling and Simulation (Specialization: Human Factors)
- 2007 *B.S.* Psychology

- 2013 *Certificate* Design for Usability
- 2012 *Certificate* Instructional Design for Simulations

RESEARCH INTERESTS

Human performance and physiological assessment, biofeedback, training, modeling & simulation, human factors & ergonomics, usability & user experience, human-computer interaction, human-robot interaction, decision-making, extreme environments, instructional design

PROFESSIONAL ACTIVITIES

Research Positions

RESEARCH ASSOCIATE

(2014-Present), University of Central Florida & Army Research Lab, Institute of Simulation and Training. Robotics Collaborative Technology Alliance (RCTA). Assess methods of robot information sharing, requests for assistance, and mission dialog commands for human-robot teams.

Duties:

- Leading experiment development team, utilizing results from previous RCTA Annual Program Plans
- Laying out vision for the plan of research for the following two years
- Leading simulation scenario development to create an environment for evaluation of multi-modal interfaces
- Developing HRI recommendations of interactive display design for mixed-initiative human-robot teaming
- Co-organized and executed capstone experimentation to exemplify interdisciplinary integration and achieved milestones
- Experience in working with subject matter experts in the fields of computer engineering, robotics, social sciences, and various military branches
- Created and presented posters to display progress and vision of the research program at an annual RCTA meeting
- Drafted and finalized research deliverables to disseminate research findings, resulting in national and international conference and journal publications
- Track, report, and deliver progress through quarterly reports
- Manage and supervise team to fulfill project related efforts

Results: Will provide recommendations to improve human performance through interdisciplinary development of robot action protocols and prototype technologies, empirically driven interactive display design, and scientifically vetted training methods.

(2014-Present), University of Central Florida & Army Research Lab, Institute of Simulation and Training. Ground Robot Assisted Intelligence, Surveillance, & Reconnaissance (GRAISR). Develop neurophysiological closed-loop communication for human-robot teaming and investigate accompanying robot response behavior.

Duties:

- Leading project & experiment development leveraging recommendations from HATS-ON project (described below)
- Assisting with simulation scenario development to assess closed-loop communication using neurophysiological input from the user
- Carrying out all duties transferred over from the HATS-ON project described below

Results: This project will focus on leveraging results from the HATS-ON project to increase the effectiveness of human-robot communications through neurophysiological input and determine robot response behavior to maintain user performance. It will also result in a defined joined path forward for human-robot teams.

POST-DOCTORAL RESEARCH ASSOCIATE & GRADUATE FACULTY SCHOLAR (DUAL APPOINTMENT)

(2014), University of Central Florida & Army Research Lab, Institute of Simulation and Training. Robotics Collaborative Technology Alliance (RCTA). Assess methods of robot information sharing, requests for assistance, and mission dialog commands for human-robot teams.

Duties:

- Leading experiment development team, utilizing results from previous RCTA Annual Program Plans
- Leading simulation scenario development to create an environment for evaluation of multi-modal interfaces
- Developing HRI recommendations of interactive display design for mixed-initiative human-robot teaming
- Created and presented posters to display progress and vision of the research program at an annual RCTA meeting
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Results: Will provide recommendations to improve human performance through interdisciplinary development of robot action protocols and prototype technologies, empirically driven interactive display design, and scientifically vetted training methods.

(2013-2014), University of Central Florida & Army Research Lab, Institute of Simulation and Training. Ground Robot Assisted Intelligence, Surveillance, & Reconnaissance (GRAISR). Develop neurophysiological closed-loop communication for human-robot teaming and investigate accompanying robot response behavior.

Duties:

- Leading project & experiment development leveraging recommendations from HATS-ON project (described below)
- Assisting with simulation scenario development to assess closed-loop communication using neurophysiological input from the user
- Co-organizing a technical exchange meeting to bring together relevant government agencies to contribute to a unified vision for the future of Human-Robot teams
- Invited to present current line of work at HFE-TAG annual meeting to inform and get feedback from the unmanned systems community
- Carrying out all duties transferred over from the HATS-ON project described below

Results: This project will focus on leveraging results from the HATS-ON project to increase the effectiveness of human-robot communications through neurophysiological input and determine robot response behavior to maintain user performance. It will also result in a defined joined path forward for human-robot teams.

(2013-2014), University of Central Florida, Institute of Simulation and Training. HRI Analysis for Training Simulations and Operational Neuroscience (HATS-ON): Phase II. Incorporating neuro-sensing in a closed-loop HRI system utilizing an unmanned system simulation platform.

Duties:

- Organized project plan and task schedule for experiment development
- Managed and trained research team to carry out experimentation with physiological equipment successfully (EEG, ECG, TCD, fNIR, & eye tracking)

- Tracked and reported monthly progress to ensure adherence to scheduled deadlines
- Co-developed the experimental design and determined which physiological measurements to incorporate to ensure collection of reliable and quality data relevant to experimental design
- Successfully implemented the simultaneous application of five physiological sensors: EEG, ECG, fNIR, TCD, and eye tracking
- Cleaned, processed, and organized experimental data into a master data document to streamline the process for statistical analysis
- Carried out full statistical analysis on the data and arranged meetings to discuss results to determine deliverable options
- Drafted and finalized research deliverables to disseminate research findings, resulting in national and international conference and journal publications

Results: Provided recommendations for application of physiological measures to assess mental workload in a complex domain. Results informed subsequent HRI investigation (above mentioned GRAISR project) focused on using operator state to drive ground robot behaviors in a closed-loop human-robot team.

(2013-2014), University of Central Florida, Institute of Simulation and Training. Human-Surrogate Interaction. Assess social, HRI, and usability qualities of non-traditional surrogates.

Duties:

- Organize project plan and task schedule for collaborative experimental development
- Manage and train research team to carry out experimentation successfully
- Track and report monthly progress to ensure adherence to scheduled deadlines
- Assist with the multi-disciplinary experimental design and determined which physiological measurements to incorporate to ensure collection of reliable and quality data relevant to experimental design
- Organize and compile a master data document to streamline the process for statistical analysis
- Carry out full statistical analysis on the data and arranged meetings to discuss results to determine deliverable options
- Draft and finalize research deliverables to disseminate research findings of the collaborative effort and experiment, resulting in conference and journal publications

Results: Provide recommendations for methodology to investigate non-traditional surrogates from a truly integrated and multi-disciplinary viewpoint. Experiment results will provide support for the specified methodology.

GRADUATE RESEARCH ASSISTANT

(2011-2013), University of Central Florida, Institute of Simulation and Training. HRI Analysis for Training Simulations and Operational Neuroscience (HATS-ON): Phase I. Establishing distinct workload manipulations within a complex simulated environment for future experimentation utilizing neuro-sensing measures in a closed-loop HRI system.

Duties:

- Organized project plan and task schedule for experiment development
- Managed and trained research team to carry out experimentation successfully with physio measures (EEG, ECG, TCD, fNIR, and eye tracking)
- Tracked and reported monthly progress to ensure adherence to scheduled deadlines
- Co-developed the experimental design aimed at systematically extracting distinct levels of workload
- Cleaned, processed, and organized experimental data into a master data document to streamline the process for statistical analysis
- Carried out full statistical analysis on the data and arranged meetings to discuss results to determine deliverable options
- Drafted and finalized research deliverables to disseminate research findings, resulting in national and international conference and journal publications

Results: Provided recommendations for task load manipulations to induce distinct levels of workload in a complex domain as assessed by both subjective and performance measures. Results informed subsequent HRI investigation (Phase II) focused on using operator state to drive robot behaviors in a closed-loop human-robot team.

(2010-2011), University of Central Florida, Institute of Simulation and Training. Algorithms Physiologically-derived to Promote Learning Efficiency (APPLE). Identifying and organizing instructional strategies proposed by education, cognitive psychology, and intelligent tutoring literatures to inform the selection of instructional strategies to improve training and learning effectiveness and efficiency.

Duties:

- Assisted in performing literature search, review, and classification of every instructional strategy related article found through multiple (over 3000) to populate the Instructional Strategies Model
- Led the secondary objective of this project which was the investigational use of neuro-physiological sensor (EEG and eye tracking) output during simulation based training to drive decisions about when to provide instruction in real-time environments
- Developed and created all experimental simulator scenarios for neuro-physiological assessment of decision-making
- Cleaned, processed, and organized experimental data into a master data document to streamline the process for statistical analysis
- Carried out full statistical analysis on the data and arranged meetings to discuss results to determine deliverable options
- Drafted research deliverables to disseminate research findings, resulting in national and international conference and journal publications

Results: This compendium of strategies is going to be used to conduct a meta-review analyzing the strategies' learner expertise, level of knowledge being used, learning environment and group size. Resulted in an Instructional Strategies Model (<http://xisi.crata.ucf.edu/>) that can be used to make decisions for integrating optimal instruction in varying domains.

(2010-2011), University of Central Florida, Institute of Simulation and Training. Next generation Expeditionary Warfare Intelligent Training (NEW-IT). Scenario-Based Training to better support USMC training by delivering adaptive, intelligent and dynamic instructional solutions to enhance productive training time.

Duties:

- Developed and created all experimental simulator scenarios for assessing adaptive training instructions
- Cleaned, processed, and organized experimental data into a master data document to streamline the process for statistical analysis
- Carried out full statistical analysis on the data and arranged meetings to discuss results to determine deliverable options
- Drafted research deliverables to disseminate research findings, resulting in national and international conference and journal publications

Results: Evolved scenario-based training through adaptive, intelligent, and dynamic features to deliver a software prototype Instructor Support System (ISS) that enhances current USMC simulation-based training. ISS was integrated with the Deployable Virtual Training Environment (DVTE).

(2009-2010), University of Central Florida, Institute of Simulation and Training. Adaptive and Intelligent Training Environment (AITE) for Enhanced Operations. Embedding meta-cognitive prompts during scenario based training to affect knowledge acquisition and application, while assessing associated physiological state.

Duties:

- Appointed graduate team lead to oversee the experiment to completion
- Carried out all data collection and organization incorporating physiological measurements
- Created all simulation scenarios for experimental tasks
- Performed full statistical analysis on subjective and objective data, including physio

- Drafted and finalized deliverables to disseminate research findings that identified physio benefits to training

Results: Support optimization of feedback timing according to individual needs based on level of performance and neuro-physiological measures of workload. By utilizing neuro-physiological measures in conjunction with performance data, our goal was to adapt/individualized selection and training solutions to foster efficient and effective combat training across all Marine Corps missions.

(2009), University of Central Florida, Institute of Simulation and Training. Using a video game as an advance organizer (AO). Investigate the use of a video game as an advance organizer for teaching military call for fire task

Duties:

- Assisted with data collection, organization, and analysis in support of Ph.D. student's dissertation
- Created a poster to disseminate research findings at the HFES conference

Results: Suggests the use of video games as an AO could potentially hinder learning outcomes, although an educational based game used as an AO prompted continued interest in learning.

POST-BACCALAUREATE RESEARCH ASSISTANT

(2007-2009), University of Central Florida & Army Research Laboratory. Scalable Phase II Interfaces for Dismounted Soldiers. Evaluation of visual display parameters for optimal hand-held interface design.

Duties:

- Appointed lab manager to delegate RA tasks and to oversee experimentation to completion
- Contributed to the development of the experimental design to gain design experience
- Trained research team to carryout experimentation with physio measures (EEG, ECG, eye tracking)
- Assisted with data collection, organization, and analysis in support of Ph.D. student's dissertation

Results:

(2008), Army Research Laboratory at Ft. Benning. Analysis of Performance of Visual Parameters through Hand-Held and Head-Mounted Displays while Navigating an iRobot. Exploring various interface designs for teleoperative control of unmanned system operations. Contracted.

Duties:

- Re-requested as human factors researchers to support field research based on successful past collaboration
- Assisted with live UGV data collection and organization assessing an HHD & HUD
- Drafted and finalized contractor's report to provide ARL with knowledgeable advise from the HF field

Results: Findings suggest the state-of-the-art of head-mounted display technology has not reached a level effective enough to improve unmanned ground system ISR performance at this time.

(2008), Army Research Laboratory at Ft. Benning. Analysis of Performance on Visual Parameters through Use of Multisensory Modalities while Navigating a Talon Robot. Compared unmanned ground system multi-modal interface designs for I.S.R operations. Contracted.

Duties:

- Requested as human factors researcher to support military field research and provide subject knowledge
- Assisted with live UGV data collection and organization assessing multi-modal displays
- Drafted and finalized contractor's report to provide ARL with knowledgeable advise from the HF field

Results: Theory of multiple resources was applied to design of UGV interface control. Findings support the use of using multi-modal displays (auditory + visual) for IED detection while navigating a UGV over single modal displays.

UNDERGRADUATE RESEARCH ASSISTANT

(2007), University of Central Florida, Florida Department of Transportation, MIT², Institute of Simulation and Training. Work zone design analysis in occlusion situations using a driving simulator. Evaluation of work zone design using GE Mark III driving simulator.

Duties:

- Developed all driving simulation scenarios for the experimental tasks
- Assisted with data collection and organization for statistical processing
- Directed and produced digital video media to illustrate experimental scenarios to funding agency
- Created and presented a poster at Showcase of Undergraduate Research Excellence at UCF
- Contributed to publication of a technical report for funding agency, FDOT

Results: The large number of work zone accidents and fatalities caused by unaware drivers prompted the research effort. Increasing the tapered sections lengths of work zones entrance will reduce likelihood of driver accidents and fatalities within road construction zones, even during occlusion situations.

(2006-2007), University of Central Florida, Air Force Research Laboratory. MIT², Institute of Simulation and Training. Studied the use of instant messaging on performance on C2 tasks as a weapons commander utilizing a PC game platform.

Duties:

- Volunteered to gain lab experience working with revered HF researchers
- Assisted with data collection, incorporating the application of physio measurements (EEG, ECG & EOG)
- Processed and organized experimental data for statistical analysis
- Assisted with publishing a technical report for funding agency, ARL

Results: Findings indicate that dual-task C2 performance increases mental and temporal workload, with no coping strategy adopted to respond to instant message alert. Techniques and development methodologies were transferred to a cooperative method focused on an encompassing analysis of the operational context.

Teaching & Mentoring Positions

Graduate Faculty Scholar (2014-2015), University of Central Florida.

Duties:

- Mentor graduate students by sharing specialized skills and knowledge to help educate future researchers
- Assisted students with program and course selection to choose most effective combination
- Served on dissertation committees
- Reviewed and provided feedback on dissertations, proposals, journal articles, conference proceedings, and posters to ensure students' success
- Supported graduate student activities that contribute to student growth and development, while teaching them to cope with the burdens of graduate school

Graduate teaching assistant (Fall 2011), University of Central Florida. Human-Computer Interaction.

Duties:

- Assisted in a full course redesign: developed lecture material, facilitated discussion topics, created class assignments and determined course assessments
- Gained firsthand experience in executing a full course redesign and development, overcoming any lack of experience by coordinating

Graduate teaching assistant (Spring 2011), University of Central Florida. Physiological Psychology

Duties:

- Coordinated peer advised study sessions and assembled supplemental material
- Learned how to mentor peer students at the graduate level and emulate the role of an academic professor

Teaching assistant (Spring 2006), University of Central Florida. Cognitive Psychology

Duties:

- Coordinated peer advised study sessions, assembled supplemental material, and proctored exams to protect the integrity of the course
- First experience in mentoring peer students at the undergraduate level

Graduate thesis & dissertation committee member

Jackson, L. (in progress). Measuring teachers' pedagogical goal orientation. *M.A.* in Applied Learning and Instruction from the Dept. of Education, University of Central Florida, Orlando, FL

TECHNICAL EXPERIENCE

Psychophysiology: Extensive experience utilizing psychophysiological measures to assess behavioral responses in a variety of contexts and domains that include:

Hardware: Electroencephalogram (EEG), electrooculogram (EOG), eye tracking, electrocardiogram (ECG), galvanic skin response (GSR), functional near infrared imaging (fNIR), transcranial doppler (TCD).

Software: Biopac Systems, Inc. Instrumentation, Acknowledge Data Acquisition Software, B-Alert Data Acquisition Software, faceLAB 5 Eyetracker, EyeWorks eye tracking analysis software

Operating Systems: Microsoft Windows, Linux, Apple OS

Statistical and Office Software: IBM SPSS, MiniTab, G*Power, Microsoft Office, OpenOffice, EndNote, Mendeley

Stimulus Presentation Software: SuperLab 4.0.4, DUJO Engine

Programming: some experience with LabVIEW

Audio/Visual Production Software: CUBASE, MAGIX, Final Cut Pro, Camtasia, Adobe Suite

Simulation and Training Instrumentation/Software: General Electric Mark III driving simulator, I-SIM GE software, GE scenario designer, Deployable Virtual Training Environment military simulator, Mixed Initiative eXperimental testbed (unmanned vehicle simulator), Presagis: Terra Vista & FlightSIM, Arena

REFEREED JOURNALS

Matthews, G., Reinerman-Jones, L.E., Barber, D.J., & **Abich, J., IV.** (2014). The psychometrics of mental workload: multiple measures are sensitive, but divergent. *The Journal of the Human Factors and Ergonomics Society.*

Abich, J., IV, Reinerman-Jones, L.E. & Matthews, G. (Under review). Impact of workload and stress on unmanned intelligence, surveillance, and reconnaissance operations. *Ergonomics.*

Abich, J., IV, & Barber, D.J. (submitted). Multi-modal HRI communication: Speech and gesture. *Journal of Human-Robot Interaction.*

Abich, J., IV, Matthews, G., Reinerman-Jones, L., Welch, G., Lackey, S., Hughes, C., & Nagendran, A. (In progress). On the way: An experimental evaluation of human-surrogate interaction. *PLOS One.*

Rusnock, C., Reinerman-Jones, L., **Abich, J., IV,** Geiger, C. (In progress). Assessing performance-workload tradeoffs for adaptive automation systems design. *Journal of Experimental Psychology: Applied.*

Reinerman-Jones, L.E., **Abich, J., IV,** Lackey, S. J., & Barber, D. (In progress). Theoretical versus mathematical prediction of performance from physiological and questionnaire responses to task load. *Applied Psychological Measurement.*

Reinerman-Jones, L.E. & **Abich, J., IV.** (In progress). An evaluation of workload: Impact of being connected to physiological measures. *Biological Psychology.*

REFEREED CONFERENCE PRESENTATIONS & PROCEEDINGS

Abich, J., IV, Matthews, G., Reinerman-Jones, L., & Barber, D.J. (2015). Predicting performance and workload from baseline and concurrent task measures. *Proceedings of the 59th Human Factors and Ergonomics Society 2014,* Los Angeles, CA (HFES 2015), October 26-30, 2015.

- Barber, D.J., **Abich, J., IV**, Phillips, E., Talone, A., Jentsch, F., & Hill, S. (2015). Field assessment of multimodal communication for dismounted human-robot teams. *Proceedings of the 59th Human Factors and Ergonomics Society 2014*, Los Angeles, CA (HFES 2015), October 26-30, 2015.
- Abich, J., IV**, Barber, D.J., & Reinerman-Jones, L. (2015). Experimental environments for dismounted human-robot multimodal communications. *Proceedings of the 10th International Conference of HCI International 2015*, Los Angeles, CA (HCII 2015), August 2-7, 2015.
- Matthews, G., Reinerman-Jones, L., Wohleber, R., Lin, J., Mercado, J., & **Abich, J., IV**. (2015). Workload is multidimensional, not unitary. What now? *Proceedings of the 10th International Conference of HCI International 2015*, Los Angeles, CA (HCII 2015), August 2-7, 2015.
- Abich, J., IV**, Matthews, G., Reinerman-Jones, L., Welch, G., Lackey, S., Hughes, C., & Nagendran, A. (2014). Good enough yet? A preliminary evaluation of human-surrogate interaction. *Proceedings of the 9th International Conference of HCI International 2014*, Heraklion, Crete, Greece (HCII 2014), July 22-27, 2014.
- Reinerman-Jones, L.E., Matthews, G., Barber, D.J. & **Abich, J., IV**. (2014). Psychophysiological metrics for workload are demand-sensitive but multifactorial. *Proceedings of the 58th Human Factors and Ergonomics Society 2014*, Chicago, IL (HFES 2014), October 27-31, 2014.
- Abich, J., IV**, Reinerman-Jones, L., & Taylor, G. (2013). Workload measures for adaptive training systems. *Proceedings of the 57th Human Factors and Ergonomics Society 2013*, San Diego, CA (HFES 2013), September 30-October 4, 2013.
- Abich, J., IV**, Taylor, G., & Reinerman-Jones, L. (2013). Establishing workload manipulations utilizing a simulated environment. *Proceedings of the 8th International Conference of HCI International 2013*, Las Vegas, NV (HCII 2013), July 21-26, 2013.
- Flynn, J.R., Ward, S., **Abich, J., IV**, & Poole, D. (2013). Image Quality Assessment using the SSIM and the Just Noticeable Difference Paradigm. *Proceedings of the 8th International Conference of HCI International 2013*, Las Vegas, NV (HCI 2013), July 21-26, 2013.
- Vogel-Walcutt, J., **Abich, J., IV**, & Carper, T.M. (2013). Using neuro-physiological data to improve feedback timing. *Proceedings of the 57th Human Factors and Ergonomics Society 2013*, San Diego, CA (HFES 2013), September 30-October 4, 2013. DOI: 10.1177/1541931213571181
- Vogel-Walcutt, J. & **Abich, J., IV**. (2011). Using neuro-physiological data to inform feedback timing: a pilot study. *Proceedings of the 6th International Conference of HCI International 2011*, Orlando, FL (HCI 2011), July 9-14, 2011.

LECTURES & INVITED ADDRESSES

- Barber, D.J., **Abich, J., IV**, & Reinerman-Jones, L.E. (2015, May). Multimodal communication for dismounted human-robot teams. *Department of Defense (DoD) Human Factors and Ergonomics (HFE) Technical Advisory Group (TAG) Bi-annual Meeting 69*. Invited address from U.S. Army, Human Research and Engineering Directorate Mission Training Facility, Orlando, FL.
- Abich, J., IV**, & Reinerman-Jones, L.E. (2014, May) Augmenting Robot Behaviors Using Physiological Measures: Phase 2. *Department of Defense (DoD) Human Factors and Ergonomics (HFE) Technical Advisory Group (TAG) Bi-annual Meeting 68*. Invited address from U.S. Army, Human Research and Engineering Directorate Mission Training Facility, Aberdeen Proving Grounds, MD.
- Abich, J., IV**, & Mercado, J.E. (2013, December). Regression: The basics. *ACTIVE Lab Workshop Series 2013*. Lecture conducted from Institute for Simulation and Training, University of Central Florida, Orlando, FL.

Reinerman-Jones, L., Taylor, G., **Abich, J.** (2012) Augmenting Robot Behaviors Using Physiological Measures. *Department of Defense (DoD) Human Factors and Ergonomics (HFE) Technical Advisory Group (TAG) Bi-annual Meeting 67*. Invited address from Wright-Patterson AFB, Dayton, OH.

REFEREED TECHNICAL REPORTS

Duley, A.R., Morgan, J.F., Wang, J., **Abich, J., IV**, & Hancock, P.A. (2007). *Driver response behavior to work zone onset in occlusion situation*. Florida Department of Transportation [Contract No: BD 548-18].

Duley, A.R., Flynn, J., **Abich, J., IV**, Drabik, H., Szalma, J. & Hancock, P.A. (2006). *Collaborative technologies and their effects on operator workload in BMC2 domains*. Air Force Research Lab [Contract No: BD 548-18].

REFEREED ENCYCLOPEDIA

Vogel-Walcutt, J., **Abich, J., IV**, & Schatz, S. (2012). Boredom of learning. In N.M. Seel (Ed.), *Springer Encyclopedia of the Sciences of Learning* (1st ed., Vol. 1, p. 171) New York, NY: Springer Science + Business Media, LLC.

CONTRACTOR REPORTS

Abich, J., IV, Flynn, J., & Knack, G. (2008). *Analysis of performance of visual parameters through hand-held and head mounted displays while navigating an iRobot (MIT2-SD-0002)*. Ft. Benning, GA: Army Research Lab, MIT² Lab, University of Central Florida.

Abich, J., IV, & Knack, G. (2008). *Analysis of performance on visual display through use of multisensory modalities while navigating a talon robot (MIT2-SD-0001)*. Ft. Benning, GA: Army Research Lab, MIT² Lab, University of Central Florida.

REFEREED POSTERS

Barber, D.J., **Abich, J., IV**, Phillips, E., Talone, A., Jentsch, F., & Hill, S. (2015). Field assessment of multimodal communication for dismounted human-robot teams. *The 59th Human Factors and Ergonomics Society 2014*, Los Angeles, CA (HFES 2015), October 26-30, 2015.

Abich, J., IV. (2012). Physiologically Driven Robot Behavior. *Poster presented at the Solving the Mystery of How the Brain Works session at the Florida Hospital for Children*, Orlando, FL, May 10, 2012.

Abich, J., IV, Morgan, J.F., Wang, J., & Duley, A.R. (2007). Driver Response Behavior to Work Zone Onset in Occlusion Situations. Presented at the Showcase of Undergraduate Research Excellence at University of Central Florida, Orlando, FL.

NEWSLETTERS

Abich, J., IV. (2012). Human Agents for Training and Simulation- Physiologically based Robot Interaction as Multimodal Exchanges (HATS-PRIME). *AugCog-Technical Group*, 5(1), 4.

ARTICLE REVIEWER

IEEE - Sensors Journal (2014)

FUNDING

2014 Robotics Collaborative Technology Alliance (RCTA) – Renewed funding awarded \$500,000/year for next 5 years.

2014 NSF Cyberlearning and Future Learning Technologies 14-526: Physiologically Driven Cyberlearning: Developing Learning Receptivity Index. \$350,000/year for 2-3 years. (In progress)

- 2014 NSF National Robotics Initiative (NRI) 14-500: \$750,000/year for 2-3 years. First Responder Collaborative Robots. (In progress)
- 2014 NSF Major Research Instrumentation (MRI) 15-504: Development of a robotics instrument for research involving multiple, human scale robots. \$1 million/year for 2-3 years. (In progress)

HONORS AND AWARDS

- 2012 Awarded top three in the Solving the Mystery of How the Brain Works Student Poster Session. Florida Hospital for Children Orlando, FL.
- 2009-2013 Graduate Research Assistantship through Applied Cognition and Training in Immersive Virtual Environments (ACTIVE) lab. Institute for Simulation & Training, Orlando, FL.
- 2005-2007 Undergraduate Research Assistantship through MIT² lab. Psychology Dept., University of Central Florida, Orlando, FL.
- 2003-2006 Dean's List. University of Central Florida, Orlando, FL.
- 2002-2007 Florida Bright Future's Undergraduate Scholarship

VOLUNTEER & COMMUNITY SERVICE

- 2015-Present The Delaney Organization: An international nonprofit organization that provides mental health services to at-risk-youth and troubled teens. *Duties:* Vice-president; develop and enforce organization policies and objectives, employee management, create public awareness initiatives, oversee financial budget, prepare operational and financial reports.
- 2015 Science Fair Judge at Dr. Nelson Ying Orange County Science Exposition, Orlando, FL. (February). *Duties:* Designated captain of the judging team, organized process for interviews, and lead discussion to determine the winning project. This was an amazing opportunity to support the STEM effort at the middle and high school academic level and fostering students' interest in these fields.
- 2015 Volunteered at Cypress Creek Elementary School's STEM Night, Orlando, FL. (February). *Duties:* Lead a STEM lab for elementary students. This event was to support underserved populations in the sciences and to encourage students to take an interest in STEM topics and pursue careers in a related field.
- 2007-Present Meals on Wheels; Orlando, FL. *Duties:* Delivered hot and ready-to-eat meals for the elderly community unable to support themselves in their later years. It is amazing to see the difference a little help can make in someone's life.
- 2013-Present Playa Limpia: Executive Director of nonprofit organization working with local beach communities to increase awareness of society's environmental impacts. *Duties:* Setup and organizing volunteer beach clean-up events, manage and schedule volunteers, and collaborate with local establishments to spread the awareness.
- 2014 Operation Give: San Rafael el Arado, Guatemala (October). Raising over \$26,000 for over 600 children in need for school and well-being for a year. Fundraisers were held in three major U.S. cities including Delray Beach, San Francisco, and Los Angeles. *Duties:* Worked with local vendors and establishments to host events. Further developed of my network, management, and event planning skills. Performed a musical set on stage. Also created a transmedia campaign to disseminate message over multiple forms of media. <http://www.razoo.com/story/Operation-Give-Guatemala>
- 2014 Orlando Electronic Interactive Entertainment Convention (February, OTRONICON). To publicize research efforts from UCF-IST as part of ongoing outreach and science, technology, engineering, and mathematics (STEM) support. *Duties:* Managed presenters (choose, train, schedule), setup and layout of visuals, showcase research projects supported by ACTIVE lab

- 2014 Science Fair Judge at Audobon Park Elementary School, Orlando, FL. (May). *Duties:* Judged the science fair of over 400 fourth and fifth grade student participants. This opportunity was a way of giving back to the community, supporting the STEM effort, and showing the ACTIVE lab's commitment to both.
- 2014 Knights Helping Knights Food Pantry (Fall). *Duties:* Assisted in coordinating efforts in our lab to collect food for financially struggling UCF students that cannot afford meals during the school semester.
- 2012 Operation Santa: San Rafael el Arado, Guatemala (December). Raised over \$10000 for 150 children in need for the holidays. Fundraisers were held in three major U.S. cities including Miami, San Francisco, and Los Angeles. *Duties:* Worked with local vendors and establishments to host events. Further developed of my network, management, and event planning skills. Also created a transmedia campaign to disseminate message over multiple forms of media. <http://www.razoo.com/story/Operation-Santa-San-Rafael-El-Arado-Guatemala>
- 2012 Orlando Electronic Interactive Entertainment Convention (March, OTRONICON). To publicize research efforts from UCF-IST as part of ongoing outreach and science, technology, engineering, and mathematics (STEM) support. *Duties:* Showcase research projects supported by ACTIVE lab

PROFESSIONAL AFFILIATIONS

Laboratories

- 2015-Present Prodigy Lab, University of Central Florida
- 2009-2015 Applied Cognition and Training in Immersive Virtual Environments (ACTIVE), University of Central Florida
- 2009-2011 - ACQUIRE Team
- 2011-Present - Human Performance and Neuro-Sensing Team
- 2006-2009 Minds in Technology Machines in Thought (MIT²), University of Central Florida
- 2007-2009 Scalable Research Design Group, University of Central Florida

Organizations

- 2007-2010 American Psychological Association (APA)
- 2002-2007 Psychological Society at University of Central Florida
- 2010-Present Human Factors and Ergonomics Society (HFES)
- 2012-Present Society for Modeling & Simulation International
- 2012-2013 Modeling and Simulation Knights at University of Central Florida (MaSK)
- 2011-Present American Sailing Association (ASA)
- 2011-Present National Association for Underwater Instruction (NAUI)
- 2013-Present Professional Association of Diving Instructors (PADI)

CERTIFICATIONS

- 2006-Present Collaborative Institutional Training Initiative (CITI) – Behavioral Research Investigator
- 2011-Present Advanced Certified SCUBA Diver
- Rescue Certified
 - Emergency Response Certified
 - NITROX certified
- 2014 Graduate Grantsmanship Certificate
- 2014 Preparing Tomorrow's Faculty (UCF) – Teaching Certificate

COURSEWORK
Available upon request

REFERENCES
Available upon request