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December 2019 School of Graduate Studies Newsletter

Dothang Truong
Embry-Riddle Aeronautical University

Don Metscher
Embry-Riddle Aeronautical University

Mark Friend
Embry-Riddle Aeronautical University

Katie Esguerra
Embry-Riddle Aeronautical University

Jan G. Neal
Embry-Riddle Aeronautical University

See next page for additional authors

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Authors

Dothang Truong, Don Metscher, Mark Friend, Katie Esguerra, Jan G. Neal, and Susie Sprowl

SCHOOL OF GRADUATE STUDIES

NEWSLETTER



DECEMBER 2019

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REMARKS FROM THE ASSOCIATE DEAN

Dr. Steven Hampton



We've had a year of leadership change initiated by the departure of **Dr. Tony Cortés** last Fall. To provide permanent leadership, **Dean Stolzer** offered, and I accepted the position of Associate Dean for the School of Graduate Studies. I'll retain my duties as Associate Dean for Research for the College of Aviation (COA), as reflected in my new title of Associate Dean for Research and the School of Graduate Studies. (Is this a record for longest title?) Combining the responsibilities of graduate program leadership and research makes sense because student learning goals and faculty service goals are focused on conducting and publishing scholarly research.

I want to extend my sincere appreciation to **Dr. Mark Friend** and **Dr. Daniel Friedenzohn** for serving as interim Associate Deans for SGS this year. Their work was not easy. Dr. Friend served as the Associate Dean while standing up a brand new graduate program and maintaining an active graduate teaching and advising role. Then Dr. Friedenzohn took over and served as the Associate Dean for SGS on top of his work as Associate Dean for the college. They ran the school smoothly, making it easy for me to step in and take the helm. Of course, they could not have done so without the joint effort and support of the SGS staff and faculty; so, thank you all very much!



As my "40 Year" designated parking spot alludes to, and as our SGS family knows, I've had a hand in the Ph.D. and MSA programs since their inception. My duties have spanned curriculum development, student advising, chairing and serving on thesis and dissertation committees, and overseeing the Ph.D. in Aviation student admissions. I've also spent many years teaching graduate courses in both programs. Although some of my responsibilities will naturally have to change, I'll continue dissertation service and teaching courses while endeavoring to both grow SGS and expand research opportunities for our school and college.

Scholarship (teaching & learning), research, and publications are strategic goals of high importance for both the COA and University. I'm pleased to report externally-funded research and publishing activities within SGS and COA have expanded significantly in recent years in response to the college-level efforts supporting such activities. We are going to continue to focus on growth in these three areas. Please share your ideas and insights with me so that we might facilitate these goals in the short-term and long-term.

Expanding our suite of graduate degrees is vital to sustaining our success. This Fall term, we added an aviation focused Master of Science in Occupational Safety Management (MSOSM) degree. Dr. Friend is the MSOSM Program Coordinator. He brings a wealth of experience to this position from industry and academia, which is why we have high confidence in the growth of this new program.



Full-time SGS faculty and staff (from top): Steven, Mark, Dahai, Andy, Dothang, Jennifer, Bee Bee, Don, Haydee, Katie, Susie, Jan, Scott

ensure the success of our students. Therefore, we'll continue to recruit and retain highly-qualified personnel to offer the best graduate programs within the aviation discipline and within what I believe is the finest college at ERAU.

My door is always open to everyone! Please feel free to schedule a time through **Susie Sprowl** to see me, or simply speak to me in the hall or send me an email. Let me know how I can help you meet your academic and research goals. I look forward to engaging you all in 2020 and in this next decade!

We are also working to create new programs while improving our current curriculums. Our goal remains to provide SGS students with the most up-to-date and relevant educational experiences to ensure our graduates can perform at the highest levels in the aviation industry today and in the future. Of course, this would not be possible without dedicated professionals whose primary goal it is to

SGS ANNOUNCEMENTS

Susie Sprowl

SGS Administrative Assistant



The invitation-only Doctoral Medallion Presentation ceremony honoring Ph.D. in Aviation graduates **Dr. Travis J. Whittemore** (Graduate 33) and **Dr. Allen G. Peck** (Graduate 34) will be held on Sunday, December 15, 2019 at the College of Aviation.



The [Fall 2019 graduation ceremony](#) for both Ph.D. and Masters' students will be held in the ICI building on the Daytona Beach campus at 3:00 p.m. on Monday, December 16, 2019

The Ph.D. in Aviation program has a new course in the Safety specialization. [DAV 719: Regulatory Environment of Aviation Safety](#), developed by **John**

Sabel, J.D., with much appreciated input from **Dr. Robert (Buck) Joslin** (Graduate 1), will roll out January 7, 2020. All of the course materials are freely available online, so no textbooks must be purchased.



In endorsing this course, **Dr. Alan Stolzer** said, *"Understanding the safety rules, policies, and practices codified and disseminated through the regulatory authorities is indispensable. Indeed, it's the framework upon which an organization's Safety Management System is built. Consequently, I'm glad this important topic is now part of our curriculum."*

Dean Stolzer at the ERAU flight line.

RECOGNITION & AWARDS

Dr. Dahai Liu, Professor for the MSA program, received the **College of Aviation Researcher of the Year Award** for the 2018/19 academic year. The College of Aviation Research Award is designed to recognize outstanding scholars within the college, an individual who has consistently performed at a high level of scholarship and has demonstrated consistent externally-funded research activity. The COA Research Committee, which has representatives from each department, reviews all of the applicants and offers their recommendation for the award to the Dean of the College submitted through the Associate Dean for Research.

Dr. Liu received a trophy and a plaque with his name and an inscription identifying him as the COA 2019 Researcher of the Year.

Congratulations Dr. Liu! Your research contributions are benefiting the SGS, the college, the University, the aviation industry, and society!



Dr. Steven Hampton congratulates **Dr. Dahai Liu** for receiving the College of Aviation Research of the Year Award.



Dr. Haydee Cuevas was presented with the [Human Factors Women's Organization for Mentoring and Networking 2019 HFE Woman of the Year Award](#) at the 2019 Human Factors and Ergonomics Society International Annual Meeting.



Dr. Mark Friend was appointed to serve as a [Public Representative](#) on the [National Advisory Committee on Occupational Safety & Health \(NACOSH\)](#). Members of the 12-person advisory committee are chosen on the basis of their knowledge and experience in occupational safety and health.



Two of our Ph.D. in Aviation students—**Chris Groom** (left) (Cohort 9) and **Joao Garcia** (right) (Cohort 10)—were awarded [first place in the graduate category](#) for their poster submitted to the 2019 [University](#)



[Aviation Association \(UAA\) Graduate Student Research Poster Contest](#). The poster, completed as their group project in DAV 733, was submitted to UAA as a virtual poster.

Dr. Scott Winter, who teaches DAV 733: Globalization and the Aviation Environment, said, "*Congrats, Chris and Joao! And thanks for investing the additional time beyond DAV 733 to complete this submission to UAA!*"



Ph.D. in Aviation student, **Heidi C. Kim** (Cohort 6) became a [Certified Safety Professional](#) (CSP) in 2019 with the [Board of Certified Safety Professionals](#). This is a significant accomplishment, as **Heidi** and **Dr. Friend** might be the only two CSP-credentialed professionals in the College of Aviation and on the Daytona Beach campus!

RESEARCH ACTIVITY

Externally-Funded Grants

Dr. Haydee Cuevas is the principal investigator (PI) on an FAA funded project titled: [Event-based approach to training for improving aircrew go-around safety](#) (Year 1 funding: \$395,115). The investigators are: H. M. Cuevas (PI), B. Martos, R. Ranaudo, and R. Thomas.

Dr. Mark Friend procured \$192,821 annually for five years to support students and student research. Funding is from the University of South Florida Sunshine Education & Research Center (USF ERC) and the National Institute for Occupational Safety and Health (NIOSH).

Dr. Dahai Liu was awarded \$29,369 in 2019 for the [3rd Annual CATM Symposium](#) and is the PI.

Dr. Dothang Truong is a research investigator on the FAA's Center of Excellence for UAS Research (ASSURE) 2019-2021 project titled: [Integrating Expanded and Non-Segregated UAS Operations into the NAS: Impact on Traffic Trends and Safety](#). The entire project includes eight participating universities and has \$1,497,279 in total funding. The ERAU investigators are R. Stansbury (PI), D. Truong, and R. Wallace (ERAU team funding: \$255,000).

Dr. Scott Winter is a co-PI on an 2019 FAA-funded project titled: [ANSP – Aircraft Datalink Security Events Analysis Risk Assessment and Mitigation Solutions](#). The investigators are R. Babiceanu (PI), K. Garfield, S. R. Winter, and R. Seker (\$585,000 total funding)

Refereed Publications

- **Baghdasarin, D.** (2019). The role of stakeholders after development of the baseline scheduled maintenance program. *International Journal of Aviation, Aeronautics, and Aerospace*, 6(4). <https://doi.org/10.15394/ijaaa.2019.1423>

- **Baugh, B. S., & Winter, S. R.** (2019). A trust in air traffic controllers (T-ATC) scale. *International Journal of Aviation, Aeronautics, and Aerospace*, 5(4), 1-15.
- **Chen, J., Liu, D., Namilae, S., Lee, S., Thropp, J. E., & Seong, Y.** (2019). Effects of exit doors and number of passengers on airport evacuation efficiency using agent based simulation. *International Journal of Aviation, Aeronautics, and Aerospace*, 6(5). <https://doi.org/10.15394/ijaaa.2019.1418>
- **Choi, W., O'Connor, M., & Truong, D.** (2019). Predicting the U.S. airline operating profitability using machine learning algorithms. *International Journal of Aviation, Aeronautics, and Aerospace*, 6(5), 1-31.
- Mehta, R., Rice, S., **Winter, S. R.**, Spence, T. B., Edwards, M., & Candelaria-Oquendo, K. (2019). Generalizability of effect sizes within aviation research: More samples are needed. *International Journal of Aviation, Aeronautics, and Aerospace*, 6(5), 1-18.
- Milner, M. N., Bush, D. Z., Anania, E. C., Ito, T., Marte, D. A., Rice, S., & **Winter, S. R.** (2019). Cultural and political attitudes towards paying to support airport sustainability projects. *International Journal of Sustainable Aviation*, 5(1), 54-69.
- **Musselman, B. T.** (2019). Hazards associated with human machine interface in Part 121 operations based on ASRS reports. *International Journal of Aviation, Aeronautics, and Aerospace*, 6(5).
- **Pan, J., & Truong, D.** (2019). Low-cost carriers versus high-speed rail: Understanding key drivers of passengers' choice in China. *Transportation Journal*, 59(1).
- Rice, S., **Winter, S. R.**, & O'Toole, N. M. (2019). There is a bias in aviation against research that is perceived to be "easy." *International Journal of Aviation, Aeronautics, and Aerospace*, 6(4), 1-14.
- **Truong, D.** (2019). Distrust issues in business-to-business e-procurement decisions. *Journal of Enterprise Information Management*, 32(6), 1071-1088.
- **Ward, K.** (2019). Speech interfaces and pilot performance: A meta-analysis. *International Journal of Aviation, Aeronautics, and Aerospace*, 6(1). doi: 10.15394/ijaaa.2019.1305

- **Winter, S. R.** (2019). Government seat pitch regulation of commercial airlines: A multi-study of consumer perceptions. *Collegiate Aviation Review International*, 37(2), 1-15.
- **Winter, S. R.**, Milner, M. N., Anania, E. C., Rice, S., Walters, N. W., Garcia, D., & **Baugh, B. S.** (2019). Examining the perception and effectiveness of a system awareness briefing during cruise flight. *Collegiate Aviation Review International*, 37(1), 1-18.
- **Winter, S. R., Thropp, J. E.**, & Rice, S. (2019). What factors predict a consumer's support of environmental sustainability in aviation? A multi-model analysis. *International Journal of Sustainable Aviation*, 5(3), 190-204.
- **Winter, S. R.**, & Trombley, J. (2019). A prediction model for the type of consumer willing to travel to and live on Mars. *International Journal of Aviation Research*, 11(1), 36-56.
- **Winter, S. R., Truong, D.**, & Keebler, J. R. (2019). The flight risk perception scale (FRPS): A modified risk perception scale for measuring risk of pilots in aviation. *International Journal of Aviation Research*, 11(1), 57-72.

Technical Reports

- **Dattel, A. R.**, Klemm, M. R., **Pruksaritanon, S., Babin, A. K.**, & Perini, R. L. (2019). HF011- Part 141 pilot school model feasibility study. Washington, DC: Center of Excellence for Technical Training and Human Performance.
- **Liu, D.**, Namilar, S., Cheng, Y., Lee, S., Derjany, P., Chen, J., **Thropp, J. E.**, & Seong, Y. (2019). Multi-scale models for transportation systems under emergency (Report No. CATM-2019-R2.ERAU). Retrieved from <https://www.ncat.edu/cobe/transportation-institute/catm1/files/erau-final-report-61471-v2.pdf>
- **Winter, S. R.**, Rice, S., Ragbir, N. K., **Baugh, B. S.**, Milner, M. N., **Lim, B.**, Capps, J., & Anania, E. C. (2019). Assessing pedestrians' perceptions and willingness to interact with autonomous vehicles. Report prepared for the Center for Advance Transportation Mobility. U.S. Department of Transportation Grant 69A3551747125.

Book Chapter

- **Lamb T. L.** (2019). The changing face of airmanship and safety culture operating unmanned aircraft systems. In T. Kille, P. R. Bates, and S. Y. Lee. (Eds.), *Unmanned aerial vehicles in civilian logistics and supply chain management* (pp. 243-265). Hershey, PA: IGI Global.

Presentations

- **Choi, W., & Truong, D.** (2019). *An optimization model for airport capacity planning in the metropolitan areas*. Air Transportation Research Society (ATRS) 23rd World Conference, July 2-5, 2019. Amsterdam, Netherlands.
- **Fussell, S. G.,** Derby, J. L., Smith, J. K., Shelstad, W. J., Benedict, J. D., Chaparro, B. S., Thomas, R., & **Dattel, A. R.** (2019). *Usability testing of a virtual reality tutorial*. Paper presented at the Human Factors & Ergonomics Society 63rd International Annual Meeting, October 28 - November 1, 2019. Seattle, WA.
- Milner, M. N., **Winter, S. R.,** Rice, S., Ragbir, N. K., **Baugh, B.,** Capps, J., & **Lim, B.** (2019, October). *Identifying assistive factors for ensuring safe interactions between pedestrians and autonomous vehicles*. Poster presented at the 63rd International Annual meeting of the Human Factors and Ergonomics Society, Seattle, WA.
- O'Neil, J. P., **Dattel, A.,** & Allen, R. D. (2019). *Upset prevention training*. IATA Flight Operations Group 29. Montreal, CA: International Air Transport Association, Montreal, Canada.
- **Truong, D.** (2019). *Internet of things and artificial intelligence for smart airports*. *Proceedings of the Decision Sciences Institute Conference*, 557-568. New Orleans: LA. Decision Sciences Institute.
- **Truong, D.** (2019). *Big data analytics in aviation research – Data Mining and SAS Enterprise Miner*. 72th University Aviation Association Conference, October 1-4, 2019. Memphis, TN.
- **Truong, D., & Choi, W.** (2019). *Using machine learning algorithms to predict the risk of small unmanned aircraft system violations in the National Airspace System*. Air Transportation Research Society (ATRS) 23rd World Conference, July 2-5, 2019. Amsterdam, Netherlands.

- **Ward, K., Winter, S.,** & Rice, S. (2019, July). *Aircraft systems and passenger willingness to fly in autonomous air taxis*. Poster presented at the 10th International Conference on Applied Human Factors and Ergonomics, Washington, DC.

Proceedings

- **Cheng, Y., Liu, D., Metscher, D.** & Vincenzi, D. (2019). Systems engineering design of interactive runway taxiing application. *Proceedings of the 2019 IISE Annual Conference*, Orlando, Florida, May 18-21, 2019.
- **Dattel, A. R.,** Henry, A., D'Souza, G., Zhang, T., **Song, J., Tagoe, B.,** Perini, R. L., Lim, B., L., & Babin, A. K. (2019). Analog and digital clock refresher training form improvement in identifying aviation traffic. *Proceedings of the 2019 International Annual Meeting of the Human Factors and Ergonomics Society*, 131-135, Seattle, WA.
- **Dattel, A. R., Babin, A. K., Teodoravic, S., Brooks, J., Pruksaritanon, S., & Shetty, P.** (2019). How personality, intelligence, and working memory predict situation awareness and flight performance. *Proceedings of the 20th International Symposium on Aviation Psychology*, Dayton, OH.
- **Guo, S., Liu, D.,** Namilae, S., **Thropp, J.,** & Seong, Y. (2019). Effect of strategies on the efficiency of airport emergent evacuation. *Proceedings of the 2019 IISE Annual Conference*, Orlando, Florida, May 18-21, 2019.
- Lubner, M., **Dattel, A. R.,** Henneberry, D., & DeVivo, S. (2019). Follow-up and comparison of intensive, simulator-based vs. traditional pilot training. *Proceedings of the 20th International Symposium on Aviation Psychology*, Dayton, OH.
- Milner, M. N., Rice, S., **Winter, S. R.,** Trombley, J., & Rice, C. (2019, October). *Hijacking mitigation techniques: Should pilots act?* Poster presented at the 2019 Technology, Mind and Society Conference, Washington, D.C.
- Milner, M. N., **Winter, S. R.,** Rice, S., Rice, C., Ragbir, N., & **Baugh, B.** (2019, July). *Identifying influencing factors affecting pedestrians' willingness to interact with driverless vehicles*. Paper session presented at the meeting of the 10th International Conference on Applied Human Factors and Ergonomics, Washington, D.C.

- **Truong, D.** (2019). Internet of things and artificial intelligence for smart airports. *Decision Sciences Institute: 2019 Proceedings* (pp. 557-568). New Orleans: LA. Decision Sciences Institute.
- **Winter, S. R.,** & Rice, S. (2019, July). *A prediction model of consumer's willingness to fly in autonomous air taxis*. Paper session presented at the meeting of the 23rd Air Transport Research Society World Conference, Amsterdam, Netherlands.

Editorial Review

Dr. Dahai Liu has been selected to serve on the [editorial board](#) for [Human Factors and Ergonomics in Manufacturing & Service Industries](#).

Sang-A Lee, an MSA student specializing in Aviation Safety Management Systems, has been selected as one of the [2019-2020 Student Editors](#) for [Beyond: Undergraduate Research Journal](#), a research publication of the Embry-Riddle Aeronautical University Office of Undergraduate Research.

Symposium

Dr. Dahai Liu and **Dr. Sirish Namilae** (ERAU Aerospace Engineering) organized the 3rd Annual Center for Advanced Mobility Transportation (CAMT) Symposium. Held at ERAU Daytona Beach campus on November 4, 2019, it attracted more than 50 researchers, faculty and graduate students from the three CATM consortium member institutions: North Carolina A&T State University, Virginia Tech, and Embry-Riddle. The symposium began with welcoming remarks from **Dr. Lon Moeller**, ERAU Provost, and **Dr. Maranda McBride**, CATM Director. The keynote speech given by **Mr. Ken Graham**, Director of National Hurricane Center, was well received and highly complimented by the attendees.

The main themes for this year's symposium were enabling safe and efficient mobility for vulnerable road users, and optimizing mobility in emergency situations. There were 10 oral presentations and 25 research posters presented. The research covered a variety of areas within various academic fields and provided a valuable opportunity for research scientists, faculty, and students to share their recent experiences and new findings. The symposium concluded with a tour of the College of Aviation's Simulation Center.



From top left to right: **Dr. Lon Moeller**, **Dr. Maranda McBride**, **Mr. Ken Graham** and **Dr. Dahai Liu**, and 2019 CATM poster session.

PH.D. IN AVIATION NEWS

Dothang Truong, Ph.D. —

Program Coordinator



We had a very successful [Ph.D. in Aviation Residency](#) in August 2019! Twelve new students were admitted to Cohort 11 and began their doctoral journey. Their expertise spans from aviation safety, aerospace engineering, aviation training to airport management.



Left to right: Mikkea Carter, Joseph (Pat) Dunagan, Rafael Borges, Michael Pettit, Nathan Phillips, Jesse Guillen, David Zubowski, Shereen Hashemi, Jason Moll, Borvorn (Dee) Kasemtanakul, Chuck Simpson, Jennifer Herr.

We also welcomed back Cohort 9, Cohort 10, senior students, and alumni. The students and alumni received warm welcomes from the University Provost, **Dr. Lon Moeller**, and the Dean of College of Aviation, **Dr. Alan Stolzer**. During the Residency week, SGS faculty provided presentations and seminars on program requirements and guidelines for student success. The poster session allowed students to present their research ideas and receive peer and faculty feedback, which helped them finalize their dissertation topics. Our keynote speaker, **Dr. Fariba Alamdari**, former

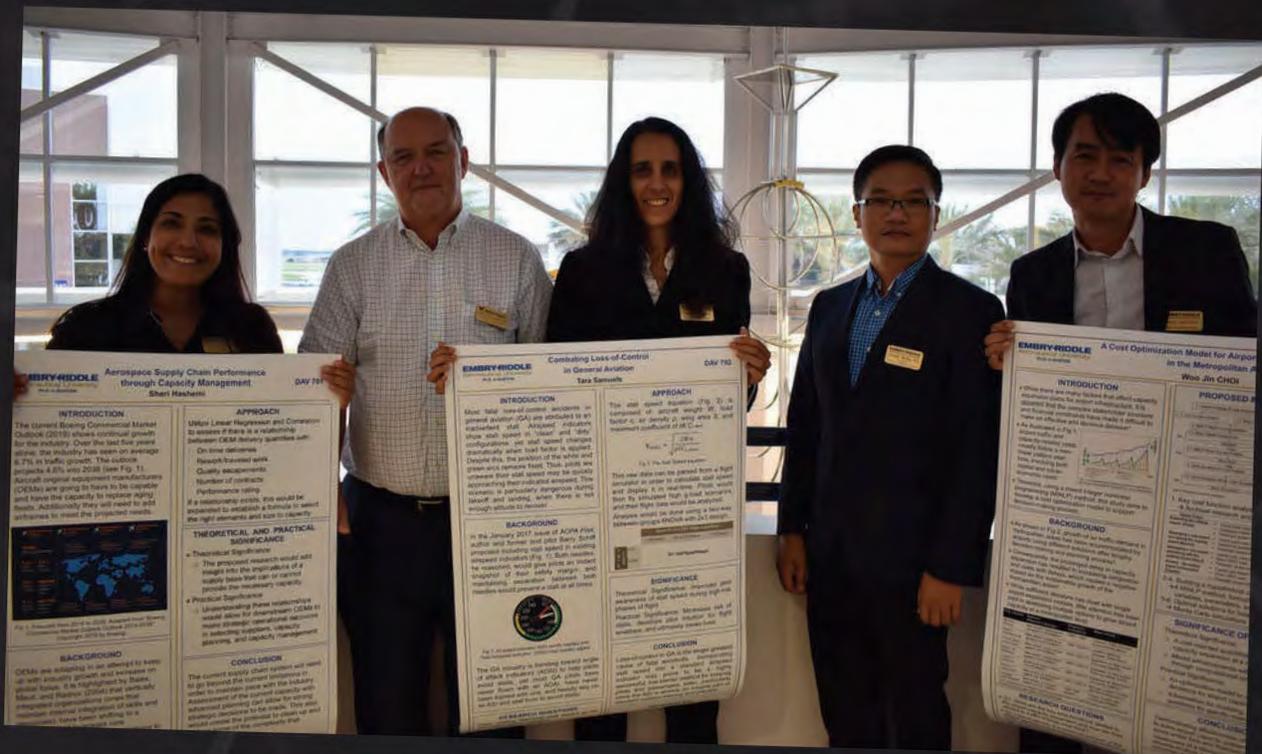
Vice President of Boeing and a Ph.D. in Aviation Advisory Board member, gave an inspiring speech on the path to academic success. Our students also received research ideas from our guest speaker, **Dr. Eric Neiderman**, Manager of Aviation Research Division at the FAA Technical Center, presented cutting edge research projects in aviation safety. The Residency also provided many networking opportunities for students to communicate cross cohorts and exchange thoughts and experiences to help them succeed in the program. Students also had a chance to meet with their Academic Advisors and Dissertation Chairs to discuss their coursework planning and dissertation progress. Once more, the 2019 Residency was a great success!

Comments from students included, "*this year's residency week program was a lot practically supportive and beneficial,*" and "*the faculty, staff, and other students in this program are incredibly supportive.*" New students said, "*the Residency exceeded my expectations.*" They were "*on the right path to achieve their goal of becoming a world's leading aviation scholar,*" and they are "*ready for this life's adventure.*"



Jan Neal (left foreground) taking a 360-degree photo during the residency reception, while **Jason Moll** (left), **Dr. Bruce Conway** (center), **Katie Esguerra** (right center), **Madhur Gupta** (right foreground), and other attendees watch.

The poster session was a huge success. All of the residency students presented posters addressing their proposed dissertation research ideas. Each poster was evaluated separately by a committee and then each student's presentation of their poster was also evaluated by multiple judges. After the results from the scoring rubrics were tallied, **best poster prizes** were awarded to **Shereen Hashemi** (DAV 701), **Tara Samuels** (DAV 702) and **Woo Jin Choi** (DAV 703). Congratulations Shereen, Tara, and Woo Jin!



From left: **Shereen Hashemi, Dr. Hampton, Tara Samuels, Dr. Truong, Woo Jin Choi**

Embry-Riddle's Ph.D. in Aviation program is the world-leading doctoral program in the area of aviation, and we continue to grow with outstanding support from our university and college leadership, faculty, and staff. The Ph.D. in Aviation program was founded in 2010, and we currently have an impressive **34 graduates** and expect to have more dissertation defenses very soon. Dissertations have received best dissertation awards and been published in top tier aviation and air transportation journals, indicating the quality of our dissertations. Our leadership, faculty, and staff continue to provide unconditional support to students to help them succeed in becoming outstanding scholars in research and teaching in the aviation field.





Doctoral candidates, **Nicole Bier** (Cohort 4) and **Ross Stephenson** (Cohort 5), attended the AUVSI XPONENTIAL 2019 conference in Chicago, held April 29th to May 2nd.



Big sister, **Tesla Jean Inara** (5) with baby sister, **Ada**.

Dr. Kadie Mullins, Director of Undergraduate Research, who teaches DAV 717: Instructional Design in Aviation, welcomed **Ada Beatrice Jean** into the world on August 3, 2019. We are so excited to see Kadie's family, and ours, grow!

Dr. Paul L. Myers (Graduate 32) received his Ph.D. in Aviation hood and diploma from **Dr. Dothang Truong**, Ph.D. in Aviation Program Coordinator, and **Dr. Lon Moeller**, Senior Vice President for Academic Affairs and Provost, on May 6, 2019 during the Spring 2019 commencement ceremony.



We are very proud of your accomplishment and wish you much future success as a doctoral scholar!

Your continued support of the Ph.D. in Aviation program epitomizes the term, "**Once an Eagle, Forever an Eagle.**" We appreciate and thank you for your contributions!



determine the extent to which four potential factors influenced an operator's intention to submit safety concerns using the military ASAP. While many factors have the ability to influence an individual's decision-making, the four primary factors of interest for this dissertation included repercussion, inconvenience, significance of event, and program value. The focus of this study involved identifying which factors influenced an operator's intentions to submit ASAP reports by examining six relationship-based hypotheses.

The researcher conducted a survey of 376 mobility aircrew members (302 required) at Scott AFB, IL, to examine responses toward safety reporting. After removing invalid responses, 332 samples were collected, cleaned, and analyzed. Confirmatory factor analysis was used to test the measurement model, while a hypothetical structural model was used to test the six relationships.

The results indicated the factors program value and significance of event directly affect an operator's intent to submit an ASAP report and positive correlations were reported between the factor program value and the factors inconvenience and significance of event. The data suggests that despite a lack of trust among upper management, operators still report significant events even if they fear repercussion, often simply omitting personal details. In addition, the data suggests the inconvenience of the program is not enough to dissuade reporting safety concerns; operators primarily submit safety concerns based on the magnitude of the event.

It is suggested for the Air Force to focus attention on promoting the value of ASAP and explaining the importance of reporting all magnitudes of events. It is believed that by encouraging operators to report less-significant events, while promoting the success of the program, the Air Force will see an increase in ASAP reports.

Well done, Travis! We are very proud of your accomplishment.

PHD DISSERTATION DEFENSE

Congratulations to **Allen G. Peck, Ph.D.**, (Graduate 34) for defending his dissertation successfully on October 11, 2019 at the Daytona Beach Campus!

Thanks to his dissertation committee (left to right): **Dr. Andy Dattel**, **Dr. Tim Brady** (Chair), **(Dr. Allen Peck)**, **Dr. Robert Owen**, **Dr. Frank Ayers**, and **Dr. Ben Lambeth** (not pictured).



Assessing Impacts of Decentralizing Airpower Command and Control

Abstract

Centralized control is a fundamental tenet of joint airpower doctrine, yet there are operational situations in which some degree of decentralization may be appropriate. The purpose of this research was to quantitatively assess the impacts of decentralizing airpower command and control (C2) under varying operational conditions. The research used the experimental method to test hypotheses regarding decentralization of control. JAEX, a stochastic, attrition-based Blue-versus-Red wargaming model, generated the required data.

The mean difference between JAEX outcomes under centralized control and outcomes under decentralized control constituted the dependent variable for each experiment. The independent variables were the operational condition and the scenario complexity. Three operational conditions were assessed under both an uncontested scenario and a contested scenario in which Red was equipped with fighter and surface-to-air missile defenses.

The first operational condition increasingly imposed range limitations

on Blue aircraft, limiting their ability to attack Red targets in other than their assigned sectors. In this experiment, the initial Blue centralized C2 advantage, ranging from 20% to 40% depending on scenario complexity, dropped to nil when Blue aircraft were unable to range all Red target sectors. Thus, centralized control's advantage of using Blue aircraft to attack the highest-priority Red targets was negated when Blue aircraft could not reach targets outside their assigned sector.

The second operational condition was assessed in two related experiments: one that increased the numbers of Blue aircraft, and one that increased their capabilities. For the experiment in which asset numbers were increased, the initial Blue centralized C2 advantage, ranging from 50% to 60%, dropped to nil when the Blue inventory was doubled. For the experiment in which Blue asset capability was increased, the initial Blue centralized C2 advantage, ranging from 50% to 110%, dropped to nil when the modeled capability of Blue aircraft was increased from low to high quality. Thus, the advantage provided by centralized control in managing scarce or lower-capability assets was negated as the number or quality of Blue assets in each sector was increased.

The third operational condition increasingly degraded the Blue centralized C2 node, reducing its ability to coherently execute centralized control. The initial centralized C2 advantage, ranging from 40% to 80%, dropped to -20% (indicating Red advantage) when the Blue C2 node was severely degraded. Thus, the severely degraded Blue centralized C2 node generated less effective airpower than the combined airpower generated by the three decentralized C2 nodes.

The results of this research contribute quantitative insights into the relationships between the operational conditions of interest and the mean difference between outcomes under centralized control and decentralized control. The results of this study can provide input into the myriad factors that commanders consider when designing C2 structures. In addition, the experimental framework can serve as a template for deeper analyses into the topic of decentralizing command and control of airpower. Finally, the research methodology and model could be adapted to provide a tool for professional military education, enabling practitioners to gain a deeper understanding of the impacts of decentralizing airpower C2.

Great job, Allen! We are very happy for your achievement.

PHD DISSERTATION DEFENSE

Congratulations to **Richard W. Cole, Ph.D.**, for defending his dissertation successfully on Monday, December 9, 2019 at the Daytona Beach campus. He will graduate May 2010.

Much appreciation to his committee (right to left): **Dr. Dave Esser**, (**Dr. Richard Cole**), **Dr. Steven Hampton** (Chair), **Dr. Kshitija Deshpande**, **Dr. Navin Mathur** (external member), **Dr. Kevin Rigby** (external member).



Risk Mitigation for Low Latituded GBAS Precision Approach Operations

Abstract

The ground-based augmentation system (GBAS) is a safety-critical system consisting of the hardware and software that augments the Global Positioning System (GPS) to provide precision approach and landing capability and is one of the navigational cornerstones of the International Civil Aviation Organization's (ICAO) global transition to space-based technologies. In low latitude regions, where the space-based augmentation system (SBAS) cannot provide adequate precision approach service due to large system errors induced by ionospheric delays, GBAS is the best option to provide the primary navigation function for the modernized global air traffic system. The purpose of the study was to identify patterns of ionospheric event behavior during nighttime hours to determine if the hours of operation and availability of CAT I service for GBAS operations at Galeão airport in Rio de Janeiro, Brazil can be expanded beyond hours established by the GBAS safety case. This study investigated the potential correlation of scintillation to time, azimuth, satellites in view, and satellite elevation as these variables pertain to operational safety (use of the system). The study included analysis of GBAS approach operations based on system

performance, ionospheric activity, and satellite geometry to establish safe levels of service, Category (CAT) I or higher, during periods of increased ionospheric activity. The analysis was conducted utilizing archived system performance data collected from the GBAS installation located at Galeão International Airport and ionospheric data collected from the Rede Brasileira de Monitoramento Contínuo do GPS, as well as three reference receivers installed in proximity to Galeão airport. The goal of the research was to determine the impact of scintillation, if any, on the ability of GBAS to support low latitude precision approach operations. The results of the study provided information critical to development of system mitigations to possibly support System Design Approval (SDA)/certification by Brazil and lay a foundation for development of operational mitigations, if required. The research may be applicable to all commercial aircraft conducting GBAS operations in low latitude regions around the world; approximately $\pm 20^\circ$ of the magnetic equator.

Great defense, Rich! We are delighted in your accomplishment!

MSA NEWS

Donald Metscher, D.B.A. —
Program Coordinator



The Spring 2019 graduation took place on May 6th. It was the largest MSA graduating class ever! A total of 24 students participated in the hooding/commencement ceremony. The Fall 2019 graduation takes place on December 16th. A total of 17 plan to participate in the graduation events.

Five MSA students graduated with Distinction: **Curtis Dukart, Mwangi Karuri, Bee-Ling Lim, Jingfang Peng, and Ji Yeon Song.**

Congratulations to each of you. We are very proud of everyone's accomplishments and wish each of you continued success as ERAU alumni!



MSA graduates, faculty, and staff excited about the hooding ceremony!

MSA 2019 GRADUATES

Dominic Amato

Kimberly Bracewell

Taylor Crutchfield

Curtis Dukart*

Mustafa Hunbuthathah

Mwangi Karuri*

Bee-Ling Lim*

Connor McLernon

Daniel Noboa

Jingfang Peng*

Marion Schilling

Gurpreet Sokhal

Ji Yeon Song*

Saravanan Suppiah

David Toon

Kai Ping Wang

Dongyun Yi

Mohamed Al Riyami

Amy Everett

Seungjin Kim

Matthew Meyer

Permpoon Mongkonsangsuree

Alexandra Orr

Sergio Taleisnik

Ricardo Aquilla

Carlos Aguilar-Velin

Sojeong Choi

Godfrey D Souza

Mark Dellorto

Huaxing Gou

Madhur Bharat Gupta

Andrew Henry

Zhe Huang

Yuxin Li

Uzoma Nwachukwu

Alex Ortega

Giri Pratomo

Kazimierz Ryder

Alex Shin

Beathi Tagoe

Vishnu Vaikathusseril Ravindrana

* Graduated with Distinction (4.0 GPA).

Prospective Fall 2019 graduates.

MSA THESIS DEFENSE

Sergio Taleisnik was successful in defending his Master's thesis on Thursday, August 1, 2019, at the Daytona Beach Campus.

Congratulations, Sergio! We are so proud of your accomplishment.

Benefits of Additional Runway Crossings on Parallel Runway Operations

Abstract

As the air transportation industry expands, airports face numerous challenges to manage the increasing traffic. Among these problems, runway crossings are a considerable source of ground traffic inefficiency and risk. Building end-around taxiways are the only strategy to avoid crossings, but these are not always feasible, and therefore, airport planners must find alternatives. This study consisted of a simulation over an airport that currently requires a vast amount of its arrivals to go through runway crossings in order to reach the apron; the airport simulation software utilized was the Total Airspace and Airport Modeler (TAAM). The process began with a thorough validation of a baseline model against the historical data of the airport, followed by the design and simulation of three alternatives, which had one, two, and three runway crossings subsequently added. The simulation also included two flight schedules resembling the operations of 2016 and 2026, in order to forecast the impact of the additional crossings in the upcoming years. Finally, an analysis with ANOVAs and t-tests of

the simulation outputs revealed significant decreases in arrival and departure taxi times, along with no significant changes in runway or sequencing delay.



Left to right: **Dr. Dahai Liu, Sergio Taleisnik, Professor Carlos Castro, Dr. Don Metscher**

MSOSM NEWS

Mark Friend, Ed.D.
Program Coordinator



The [Master of Science in Occupational Safety Management \(MSOSM\)](#) degree offered on the Daytona Beach campus was approved in March and launched in the fall term. New students had the opportunity to take courses in Human Factors & Ergonomics; Safety, Health, & Environmental Legislation; and Safety Management. Spring offerings include Disaster Preparedness & Emergency Response and Industrial Hygiene & Toxicology. Enrollments are strong at this point with at least nine students expected for the spring term.

This new program has been selected to participate in the [Sunshine Education and Research Center \(ERC\) in the College of Public Health at the University of South Florida](#). The ERC, run by Dr. Thomas Bernard, has been supported by the [National Institute for Occupational Safety and Health \(NIOSH\)](#) for nearly 20 years. The program and the students now receive strong financial support



for this participation, and are included in ERC professional activities throughout the year.

Future graduates of the program will have many opportunities to work in a variety of fields that relate to their own interests, but the primary emphasis of the new MSOSM is on the aviation industry. Strong opportunities also occur in smaller, newer companies, the chemical/petroleum industries, and private consulting services. In environmental industries, there are good prospects for those with knowledge and skills in handling hazardous materials, dealing with hazardous wastes and a variety of environmental safety and health problems. As more companies become self-insured, greater emphasis is placed on safety and health issues and the need for educated safety professionals. Largest employment groups include insurance companies, health care facilities, service industries, construction, manufacturing, chemical/petroleum industries, municipalities, school systems, and transportation industries. Local, state, and federal agencies are hiring more safety professionals in anticipation of needing to comply with OSHA and EPA standards. A growing number of occupational safety specialists are employed by consulting firms or are self-employed. The number of jobs depends on the state of the economy and manufacturing. As facilities become self-insured, safety becomes a higher commitment. Lateral and vertical advancement exists within most organizations and between organizations. According to [Salary.com](https://www.salary.com), the annual Health and Safety Manager salary range is from \$87,880 to \$122,278, with an average of \$109,424, as of November 25, 2019. A person with a Master's degree employed as a Health and Safety Manager in the U.S. with 0-2 years of experience earns a salary between \$102,350 and \$112,302. Rewarding jobs with strong salaries are definitely obtainable!

Feel free to contact Dr. Friend anytime to explore how an MSOSM degree from ERAU's School of Graduate Studies can help you or someone you know obtain these career goals.

BROWN BAGS & PRESENTATIONS



We take pride in learning from our shared experiences, from casual brown-bag lunches routinely held in the College of Aviation to professional presentations held at industry meetings and symposium. That's why we encourage all SGS members to share their experiences by presenting during a brown-bag lunch or by sending your photos and a paragraph or two about presentations given off campus to **Katie Esguerra** or **Jan Neal**. Be sure to include the title of presentation; the venue date, time, and location; the full names of each person in pictures (please only provide high resolution images), and permission to use them in the newsletter. See the last page for Katie and Jan's contact details. As a reminder, all COA members are welcome to attend SGS brown-bags (BYOL: Bring Your Own Lunch)!

Carlos Aguilar, an MSA student (seated front right), attended ALTA's Pan American Aviation Safety Summit held in Quito, Ecuador in June 2019. **Dr. Tony Cortés** said, "It was great to see Carlos so fully engaged in the proceedings, asking a question and identifying himself as an ERAU graduate student. The event was in Spanish, so he was in his natural element speaking about aviation safety in his native language and in his native country!" There were about 100 participants from all parts of Latin America and the Caribbean using the event to discuss the most pressing challenges of airline safety in the region.



Seated front: **Dr. Tony Cortés** and **Carlos Aguilar** at the ALTA Pan summit in Ecuador.

MSA student, **Sun (Tim) Ruitian**, gave a brown-bag talk on November 12, 2019, *My Experience at Mitsubishi Aircraft Corporation America*, about his experience as an Safety Intern. He began with background on Mitsubishi and then discussed his work tasks, which dealt with AMOS (Aircraft Maintenance Engineering System), SRB (Safety Review Board) based on FAA Order 4040 Aircraft Certification Service Flight Test Risk Management Program, SIB (Safety Investigation Board), VSR (Volunteer Safety Report), and the Emergency Notification System.

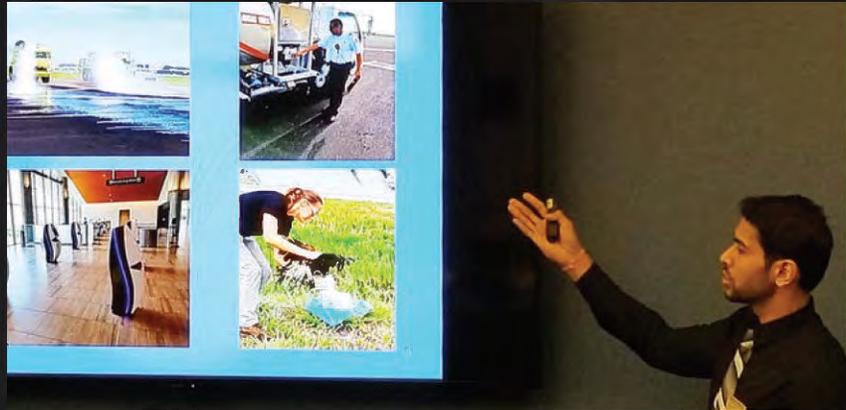


Doctoral candidate and Graduate Teaching Assistant, **Stephanie Fussell** (Cohort 9), gave a brown-bag talk about the research paper, *Usability Testing of a Virtual Reality Tutorial*, she presented at the 63rd Meeting of the Human Factors and Ergonomics Society (HFES). **Stef, Andrew Henry**, and **Dr. Dattel** (pictured in lower left corner) also toured Boeing while in Seattle.



MSA student, **Madhur Gupta**, gave a presentation to the College of Aviation Industry Advisory Board in October 2019 about his internship experiences. He worked as an Airport Operations Intern at Tampa International

Airport from June through August in 2018 and as a Flight Operations Safety Intern at Southwest Airlines from January through May 2019. He also had the opportunity to shadow workers for Silver Airways and American Airlines.



Among his many tasks, he conducted airfield (runway, taxiway) and terminal (airside) inspections, an Aircraft Rescue and Fire Fighting Drill; communicated and coordinated movement (runways) and non-movement areas (ramps) and closures with the Air Traffic Control Tower; designed Safety Culture survey for the airport employees; and supported Safety Management System initiative by reviewing Safety manuals. He said, *"I used knowledge and skills obtained from several MSA courses, including Statistics, Safety Program Management, Accident Investigations, Airport Modeling, Air Carrier Operations, and Project Management."*



He has also worked tirelessly as a student assistant for SGS. We'll miss you when you graduate in December 2019!

Resident doctoral candidate, **Marisa Aguilar**, gave an interesting presentation on December 3, 2019. The title was **Application of a Skill Taxonomy in Aviation**.

Abstract

The objective of this project was to develop a preliminary taxonomy for defining the construct 'skill,' drawing from the various definitions described in the extant literature. Three separate cognitive task analyses (CTA) were conducted utilizing interviews and observations with subject matter experts within the context of: (1) a virtual reality part task trainer for airborne refueling, (2) 20 skills required by pilots in commercial aviation, and, (3) aviation maintenance skills for unmanned aircraft systems. The findings from the CTAs were applied to refine the preliminary taxonomy.



Marisa Aguilar gave the last SGS brown-bag presentation of the year.

Looks like another 🍕 presentation. No 🛍️ in sight!

We're investigating the BYOL rule! 😎

Embry-Riddle is truly representing the world over! During November 18th to the 22nd, the university celebrated [International Education Week \(IEW\)](#) along with other universities in the United States and around the world. A joint effort between the U.S. Department of State and the U.S. Department of Education, IEW seeks to "promote programs that prepare Americans for a global environment and attract future leaders from abroad to study, learn, and exchange experiences."

ERAU's IEW team provided a huge global map for students, faculty, and staff at the Daytona Beach campus to place stars marking where they are from or live. Embry-Riddle students, faculty, and staff hail from around the world! Along with the College of Aviation, SGS celebrates our diverse population!



ALUMNI NEWS



MSA alumni—**Amber Davis** and **Natkamon Panyavuthilert** (both pictured left)—began working at [Mitsubishi Aircraft Corporation America](#). Amber is working as an SMS Developer and Natkamon Panyavuthilert is working as a Safety Analyst.

Natkamon Panyavuthilert (3rd from the left) and **Dr. Tony Cortés**, Director of Safety for Mitsubishi Aircraft Corporation and the former Associate Dean for the School of Graduate Studies (far right), outside of the assembly hangar in Nagoya, Japan in June 2019.



It's 'thumbs up' for MSA alumni at Mitsubishi Aircraft. From left to right: **Amber Davis** (second), **Natkamon Panyavuthilert** (third), **Dr. Tony Cortés** (fourth), along with other safety professionals.

Dr. Jonathan Velazquez (Graduate 12) and two of his students attended the 2019 International Symposium on Aviation Psychology (ISAP) to present their research paper. He also ran into Dr. Andy Dattel who was also attending the conference.

- Nunez, B., Lopez, C., **Velazquez, J.**, Mora, O., & Roman, K. (2019, May). *Hazardous attitudes in U.S. Part 121 airline accidents*. Paper presented at the 20th International Symposium on Aviation Psychology, Dayton, OH. [[CORE Scholar Link](#)]



Left to right: **Dr. Jonathan Velazquez, Brian Nunez, Carlos Lopez, Dr. Andy Dattel**

Dr. Velazquez was chosen as the 2019 graduation Mace-bearer during the Inter American University of Puerto Rico's most recent commencement ceremony. Carrying the Mace is a true honor because it is the University's symbol of authority and power.



He also was awarded tenure at his university. Becoming tenured is a huge accomplishment, especially nowadays when both the island and the institution are facing an economic crisis. Dr. Velazquez said, "*I am very grateful for this and am sure that my Ph.D. in Aviation had a lot to do with it, as some before me within the*

Department and Campus have requested it unsuccessfully. As a matter of fact, in a conversation (last week) with Human Resources, we reached the conclusion that I may very well be the first to achieve tenure within the department (School of Aeronautics)."

Happy Holidays!

*As this year of change comes to an end
may you and your loved ones enjoy a
wonderful holiday season, and
experience fulfillment, peace,
and cheer throughout
the coming year.*



COLLEGE OF AVIATION

SCHOOL OF GRADUATE STUDIES NEWSLETTER

Ph.D. in Aviation

Dr. Dothang Truong

Dothang.Truong@erau.edu

386.323.5080

M.S. in Aeronautics (MSA)

Dr. Don Metscher

Donald.Metscher@erau.edu

386.323.5061

M.S. in Occupational Safety Management (MSOSM)

Dr. Mark Friend

Mark.Friend@erau.edu

386.226.7747

Send your announcements, photos, and updates to:

Katie Esguerra at Katie.Esguerra@erau.edu

or **Jan G. Neal** at Jan.Neal@erau.edu

for future newsletters.

Embry-Riddle Aeronautical University

1 Aerospace Blvd. | Daytona Beach, FL 32114

The University will be closed from December 23, 2019 through January 1, 2020. It will reopen for normal business on January 2nd.

SGS Newsletter produced by Jan G. Neal