NICOLETTA FALA, Ph.D.

Assistant Professor

Mechanical and Aerospace Engineering

Oklahoma State University, Stillwater OK

nfala@okstate.edu ☎ (405) 744-7523 ✆ (765) 518-6598

NICOLETTAFALA.COM; AEON.NICOLETTAFALA.COM

EDUCATION

2019 **Doctor of Philosophy (Ph.D.), Purdue University, West Lafayette IN**
Aeronautical and Astronautical Engineering
Concentrations: Aerospace Systems, Astrodynamics and Space Applications
Advisor: Dr. Karen Marais
Thesis: Data-driven safety feedback as part of debrief for General Aviation Pilots

2014 **Master of Science (M.Sc. AAE), Purdue University, West Lafayette IN**
Aeronautical and Astronautical Engineering
Concentrations: Aerospace Systems, Astrodynamics and Space Applications

2014 **Bachelor of Science (B.Sc.), Purdue University, West Lafayette IN**
Aeronautical and Astronautical Engineering
Honors Engineering Program
Concentrations: Design, Dynamics and Controls
Minors: Manufacturing Graphics, French Language

PROFESSIONAL EXPERIENCE

2020-present **Assistant Professor**
Mechanical and Aerospace Engineering
Oklahoma State University, Stillwater OK
Aviation Engineering Operation Analysis (AEON) lab

2019 **Post-Doctoral Research Associate**
Purdue University Libraries and School of Information Studies
Purdue University, West Lafayette IN
Advisor: Prof. Michael Witt

2018-2019 **Instructor of Record**
School of Aeronautics and Astronautics
Purdue University, West Lafayette IN

2014-2019 **Graduate Research Assistant**
Value through Reliability, Safety, and Sustainability Lab
School of Aeronautics and Astronautics
Purdue University, West Lafayette IN
Advisor: Dr. Karen Marais
Project sponsor: Federal Aviation Administration

2012-2014 **Resident Assistant**
University Residences-Shreve Hall
Purdue University, West Lafayette IN

2011-2013 **UAV Systems and Policy Intern**
Autonomous Flying Platforms for Atmospheric and Earth Surface Observations (APAESO)
The Cyprus Institute, Nicosia Cyprus

TEACHING EXPERIENCE

Design courses
Introduction to Mechanical and Aerospace Engineering Design, Undergraduate, MAE 3153 Oklahoma State University, Fall 2020, Spring 2021, Summer 2021, Fall 2021, Fall 2022.
Introduction to Aerospace Design, Undergraduate, AAE 251 Purdue University, Spring 2019.

Systems courses
System Safety, Graduate, MAE 5020 Oklahoma State University, Fall 2022.
Aerospace Systems Engineering, Graduate, MAE 5953 Oklahoma State University, Fall 2020.
Aerospace Systems Design, Undergraduate, AAE 351 Purdue University, Fall 2018.

Flight Test Engineering
Aerospace Laboratory, Undergraduate, MAE 4223 Oklahoma State University, Spring 2020.

Flight Instruction (Ground class courses)
Private Pilot Ground School Weekend Course, Purdue University, Fall 2019.
Private Pilot Ground School Semester Course, Purdue University, Spring 2017, Fall 2017.

PUBLICATIONS

Peer-Reviewed Journal Articles
student advised on paper

7. **Fala, N.**, Georgalis, G., and Arzamani, N. (2023). A Study on Machine Learning Methods for General Aviation Flight Phase Identification. *Journal of Aerospace Information Systems. [under review]*
6. Whitford, D.K, Wulle, B.W., and **Fala, N.** (2022). Universal Design for Learning (UDL): A Contemporary Approach to Professional Flight Instruction. *Journal of Aviation/Aerospace Education & Research. [in press]*
5. **Fala, N.**, Falas, C., and Falas, A. (2022). A Method for Automatic Airport Operation Counts Using Crowd-Sourced ADS-B Data. *Aviation* **26** (4): 209-216. doi:10.3846/aviation.2022.18025
4. **Fala, N.**, and Marais, K. (2022). Cognitive Biases in Risk Communication During Post-Flight Debrief Feedback. *The International Journal of Aerospace Psychology* **32** (4): 227-239. doi:10.1080/24721840.2022.2086129.
3. **Fala, N.** (2022). An analysis of stall-type accidents in the United States. *Aerospace* **9** (4): 478. doi:10.3390/aerospace9040178

2. Ostroumov, I., Marais, K., Kuzmenko, N., and **Fala, N.** (2020). Triple Density Distribution Model in the Task of Aviation Risk Assessment. *Aviation* **24** (2): 57-65. doi:10.3846/aviation.2020.12544
1. **Fala, N.**, Uday, P., Le, T., and Marais, K. (2015). Surface Operations of End-Around Taxiways. *Air Traffic Control Quarterly* **22** (4): 327-351. doi:10.2514/atcq.22.4.327

Conference Proceedings

*+ peer reviewed paper, * peer reviewed extended abstract, student advised on paper*

15. Jacob, J. D., Bailey, S., Brewster, K., Chilson, P., Detweiler, C., Elbing, B., **Fala, N.**, Faruque, I., Houston, A., Pinto, J., Smith, S., and Woolsey, C. (2024). WINDMAP: Wind Intelligent Navigation Data and Models for Aviation Planning. *Scitech Forum. [under review]*
14. *Tabassum, A., Bai, H., and **Fala, N.** (2023). A Study on Workload Assessment and Usability of Wind-Aware User Interface for Small Unmanned Aircraft System Remote Operations. *25th International Conference on Human-Computer Interaction. [in press]*
13. *Georgalis, G., and **Fala, N.** (2023) Automated Identification of Phase of Flight via Probabilistic Clustering for General Aviation Operations. *AIAA Aviation 2023 Forum.*
12. *Tabassum, A., DeSantis, M., Bai, H., and **Fala, N.** (2022). Preliminary Design of Wind-Aware sUAS Simulation Pipeline for Urban Air Mobility. *AIAA Aviation 2022 Forum.* doi:10.2514/6.2022-3872
11. ***Fala, N.**, Wallace, J.W. (2021). Identification of Potential Gaps in Pilot Knowledge and Use of Weather Sources in General Aviation and UAS Operations. *AIAA Aviation 2021 Forum.* doi:10.2514/6.2021-2960
10. Wallace, JW., and **Fala, N.** (2021). A Systematic Review of Weather Observation and Forecast Resources Available to General Aviation Pilots. *21st International Symposium on Aviation Psychology.* doi:10.5399/osu/1148
9. **Fala, N.**, and Whitford, D. (2021). Surveying Collegiate Pilots for Their Perspectives on their Collegiate Flight Training Experience. *21st International Symposium on Aviation Psychology.* doi:10.5399/osu/1148
8. +**Fala, N.** (2020). A Review of Stall-Type Accident Statistics Over the Past Fifty Years. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* **64** (1): 127-128. doi:10.1177/1071181320641033
7. *Jdiobe, M., Hickman, K., Kidd, J. A., and **Fala, N.** (2020). Improving Undergraduate Aerospace Engineer Professional Readiness through Boeing 737-Max 8 Crash Case Study. *AIAA Aviation 2020 Forum.* doi:10.2514/6.2020-2937
6. *Chakraborty, A., **Fala, N.**, and Marais, K. (2019). Investigation of Feasibility of Using Low-Cost AHRS Devices to Detect General Aviation Hazardous States. *AIAA Aviation 2019 Forum.* doi:10.2514/6.2019-3444
5. ***Fala, N.**, and Marais, K. (2019). Assessing Potential Biases in Risk Perception for General Aviation Pilots. *AIAA Aviation 2019 Forum.* doi:10.2514/6.2019-3443
4. **Fala, N.**, and Marais, K. (2019). Communicating Data-Driven Risk Information to Pilots. *20th International Symposium on Aviation Psychology.* uuid:dea325d6-1bc7-4e9f-89f6-31503d07ec86
3. ***Fala, N.**, and Marais, K. (2016). Detecting Safety Events During Approach in General Aviation Operations. *16th AIAA Aviation Technology, Integration, and Operations Conference.* doi:10.2514/6.2016-3914

2. *Rao, A.H., **Fala, N.**, and Marais, K. (2016). Analysis of Helicopter Maintenance Risk from Accident Data. *AIAA Infotech @ Aerospace.* doi:10.2514/6.2016-2135
1. *Goblet, V., **Fala, N.**, and Marais, K. (2015). Identifying Phases of Flight in General Aviation Operations. *15th AIAA Aviation Technology, Integration, and Operations Conference.* doi:10.2514/6.2015-2851

TALKS

Invited Talks

5. **Fala, N.** (2022, August). Bridging the Gap: Opportunities and Challenges in General Aviation Research. The Aerospace Human Factors Research Division (AHFRD) New and Emerging Aviation Technologies (NEAT), FAA.
4. **Fala, N.** (2021, May). Writing a Successful Scholarship Application. *Ladies in Flight Training. Online.*
3. **Fala, N.** (2020, June). Putting the Human in Human Systems Integration. *FAA Human Systems Integration Summit. Online due to COVID-19.* presentation
2. **Fala, N.**, and Marais, K. (2019, May). Communicating Data-Driven Risk Information to Pilots. *Stanley Roscoe Student Paper Competition Final, 20th International Symposium on Aviation Psychology in Dayton, OH.* presentation
1. **Fala, N.** (2017, May). Evaluation of Safety-Driven Feedback for General Aviation Pilots. *Women in Aviation Symposium in Boulder, CO.* poster presentation

Invited Panels

2. AUVSI/SAE Business of Automated Mobility Forum: Flight Path to UAM 2022. *Weather Intelligent Navigation Data and Modeling for AAM Planning.* (October, 2022)
1. AVIATIONx *Automation and Autonomy in General Aviation: opportunities and challenges for safety, accessibility and sustainability*. AIAA/PEGASAS FAA COE. (July, 2022)

Conference Presentations

6. **Fala, N.**, and Wallace, J.W. (2021, August). Identification of Potential Gaps and Requirements in Weather Sources for General Aviation and UAS Operations. *AIAA Aviation 2021 Forum; Online due to COVID-19.*
5. **Fala, N.**, and Whitford, D. (2021, May). Surveying Collegiate Pilots for Their Perspectives on their Collegiate Flight Training Experience. *21st International Symposium on Aviation Psychology; Online due to COVID-19.*
4. **Fala, N.** (2020, October). A Review of Stall-Type Accident Statistics Over the Past Fifty Years. *Human Factors and Ergonomics Society; Online due to COVID-19.*
3. Chakraborty, A., **Fala, N.**, and Marais, K. (2019, June). Investigation of Feasibility of Using Low-Cost AHRS Devices to Detect General Aviation Hazardous States. *AIAA Aviation 2019 Forum in Dallas, TX.*
2. **Fala, N.**, and Marais, K. (2019, June). Assessing Potential Biases in Risk Perception for General Aviation Pilots. *AIAA Aviation 2019 Forum in Dallas, TX.*
1. **Fala, N.**, and Marais, K. (2016, June). Detecting Safety Events During Approach in General Aviation Operations. *16th AIAA Aviation Technology, Integration, and Operations Conference in Washington, D.C.*

RESEARCH GRANTS (Awarded and Pending)

Title	*ULI: Real-time Weather Awareness for Enhanced Safety Assurance in UTM*
Agency	NASA
Duration	2020-2024 (4 years)
Award	$5.2 million (awarded)
Role	Co-PI (PI: J. Jacob; Co-PIs: B. Elbing, I. Faruque)

Title	*NRI: INT: Safe Wind-Aware Navigation for Collaborative Autonomous Aircraft in Low Altitude Airspace*
Agency	NSF
Duration	2020-2023 (4 years)
Award	$1,454,513 (awarded)
Role	Co-PI (PI: H. Bai; Co-PIs: R. Kamalapurkar, K. Kara, J. Jacob)

Title	*CAREER: Using virtual reality to advance research and learning and promote positive skill transfer in complex environments with applications in flight training*
Agency	NSF CISE HCC
Duration	2023-2028 (5 years)
Award	$564,845 (awarded)
Role	PI (Sole)

Title	*Work-induced fatigue and burnout among flight instructors: impact on flight training safety and quality*
Agency	Southwest Center for Occupational and Environmental Health
Duration	2023-2024 (1 year)
Award	$19,999 (pending)
Role	PI (Sole)

Title	*Grad4Her A pilot program to address the difficulties of female graduate students in engineering fields through a cohort model*
Agency	NSF IGE
Duration	2023-2026 (3 years)
Award	$498,948 (pending)
Role	Co-PI (PI: A. Azoug; Co-PI: E. Dyke)

Title	*Readiness and Feasibility of Automatic Dependent Surveillance-Broadcast (ADS-B) Data for Airport Use Cases*
Agency	Airport Cooperative Research Program, National Academies
Duration	2023-2024 (1 year)
Award	$399,667 (pending)
Role	PI (Co-PI: G. Georgalis)

Title	*Mitigating chronic headaches in pilots*
Agency	CEAT Engineering Research and Seed Funding
Duration	2023-2024 (1 year)
Award	$24,562 (pending)
Role	Co-PI (PI: J. Hausselle)

SELECT HONORS AND AWARDS

2019 Estus H. and Vashti L. Magoon Award, graduate student excellence in teaching, Purdue University College of Engineering

2018 William T. Piper, Sr. General Aviation Systems Graduate Award
American Institute of Aeronautics and Astronautics (AIAA)

2018 Student of the Year 2017 for Outstanding Achievement in Aviation Research
FAA Center of Excellence for General Aviation: Partnership to Enhance General Aviation Safety, Accessibility, and Sustainability (PEGASAS)

2018 Outstanding Service Award
Purdue University College of Engineering

2014 Rogers Award
Purdue University School of Aeronautics and Astronautics
Named for alumnus Herbert F. Rogers, this is one of AAE's most important awards, awarded to Purdue AAE senior students who are "deemed most worthy and deserving by his/her contributions to the growth of the School of Aeronautics and Astronautics in fostering engineering as an academic discipline."

Flying Awards

2021 Ladies in Flight Training (LIFT) Scholarship for **Certified Flight Instructor – Instrument** training ($1,500)

2020 Oklahoma 99s Wings of the Future Scholarship for **Multi-Engine Commercial Pilot** training ($5,000)

2018 Female Aviators Sticking Together (FAST) Scholarship for **Certified Flight Instructor** training ($1,000)

2018 International Council for Air Shows (ICAS) Lovelace-Drake Scholarship for basic **Aerobatics Flying** course with Billy Werth at Grayout Aerosports ($5,000 value)

2018 Women in Engineering Program Travel Grant for attendance at the **Women in Aviation International** Conference in Reno, NV ($1,500)

2017 Esther Lowry Safford Rookie Racer Award awarded at **Air Race Classic**

SCHOLARLY ACTIVITIES

Editor

2022 Aviation

Journal Reviewer

IEEE Systems Journal (ISJ), Safety Science, Journal of Advanced Transportation (JAT), Journal of Aviation Technology and Engineering (JATE), Journal of Aerospace Technology and Management (JATM), Journal of Aerospace Information Systems (JAIS), Journal of Unmanned Vehicle Systems (JUVS), Aerospace, Aviation, Risks, Safety, Drones, International Journal of Environmental

Research and Public Health (IJERPH), Mathematics, Energies, Sustainability, Aircraft Engineering and Aerospace Technology (AEAT), Applied Sciences.

Awards Committees

2021 ISAP Stanley Roscoe Student Paper Competition
2020-2022 AIAA William T. Piper, Sr. General Aviation Systems Graduate Award (yearly)
2019 HFES Health Care Technical Group Sue Bogner Student Paper Award

Technical Committees

2022-2024 AIAA General Aviation Technical Committee (GATC) Chair
The committee sponsors sessions at the annual Aviation conference, reviews paper submissions, manages a student and professional award, produces a year in review article, and holds semi-annual meetings.
2022 International Symposium on Aviation Psychology (ISAP) Planning Committee

Conference Reviewer

2017-2023 AIAA Aviation Extended Abstract (yearly)
2020 HFES Annual Meeting – Safety Technical Group Technical Papers
2022 HFES Annual Meeting – Aerospace Systems Group Technical Papers

Session Chair

2023 ISAP, International Symposium on Aviation Psychology
AIAA, Aviation TF-06/GA-04, Improved Certification and Safety Assurance Approaches for Existing or New Concepts
2022 AIAA, Aviation GA-08 Partnership to Enhance General Aviation Safety, Accessibility and Sustainability (PEGASAS) Invited Session
2022 AIAA, Aviation GA-03/TF-07 Improved Certification and Safety Assurance Approaches for Existing or New Concepts III
2018 AIAA Aviation ATIO.ATM-17 Environmental Impact Mitigation
2018 AIAA Aviation ATIO.ATM-21 Operations Management IV

Professional Memberships and Organizations

2014-Present AIAA, American Institute of Aeronautics and Astronautics, member
2020-2021 HFES, Human Factors and Ergonomics Society, member
2022-Present Sigma Gamma Tau, Honors Society for Aerospace Engineers
Faculty Advisor, Oklahoma State University student chapter
2018-Present The Ninety-Nines 99s, International Organization of Women Pilots, member
Aviation & Space Education Chair 2021-2023
Amelia Earhart Scholarship Chair 2021-2023
Okie Derby Planning Committee 2021-2023
2020-Present Ladies in Flight Training LIFT
Ladies in Flight Training Scholarship Committee
Ladies in Flight Training Library Curator
2015-Present EAA, Experimental Aircraft Association, member
2019-2020 NAFI, National Association of Flight Instructors, member

2018-2020 WAI, Women in Aviation, International, member

OUTREACH

2022 NSF/EPScOR Women in Science Conference: Virtual Reality flight intros, ~1200 female students
2022 CEAT Discovery Day: Introduction to research and aerospace engineering through simulator flights
2022 Oklahoma Aeronautics Commission Stillwater Middle School Airport Day (tours of MD-80 airliner)
2022 Oklahoma Aeronautics Commission Stillwater Middle School introductory flights
2016-2019 Purdue Pilots, Inc., Flying club president (100 members, fleet of three aircraft)
2017-2019 Air Race Classic Purdue Pilots, Inc. Team: Captain (founded race team, fundraised for three races)
2017-2018 Women Graduate Gatherings (Aerospace Engineering), President
2010-2019 Purdue Space Day: Director, Volunteer (annual event for ~650 children)

WORKSHOPS & CERTIFICATIONS

2022 NSF ENG CAREER Workshop and Mock Panels
2019 Effective College Teaching with Richard Felder & Rebecca Brent
2018 9th Annual Conference for Pre-Tenure Women
2017 Workshop on Convergent Data Science Solutions to Safer Systems
2017 Women in Aerospace Symposium (at CU Boulder, CO)
2016 Effective College Teaching with Richard Felder & Rebecca Brent
2016 Preparing Future Faculty
2015 College Teaching Workshop Series
2015 6th Annual Conference for Pre-Tenure Women
2015 Academic Coaching Tools
2014 Safe Zone Training
2014 QPR Suicide Prevention Gatekeeper Training
2013 Conference for Indiana Student Staff (at Indiana University, IN)
2012 Conflict Resolution Workshop (at School for International Training, VT)

TECHNICAL SKILLS

Programming Matlab, Python, C, LabView, RobotC, NXT-G, KML, HTML, CSS, PHP
Databases SQL, Access
CAD Catia V5R20, NX 7.5

Languages English, French, Greek

FLYING CREDENTIALS

Certificates

Commercial Pilot
Airplane Single Engine Land
Airplane Multi Engine Land
Instrument
Remote Pilot
sUAS

Flight Instructor
Airplane Single Engine
Instrument
Ground Instructor
Advanced
Instrument

Flight Time

Total/PIC	610/520
Cross Country	240
Night	63
Simulated/IMC	93/10
Dual Given	90
AMEL/ASEL	17/595

Endorsements

High Performance; Complex Endorsement; Spin Training

Other Experience

Purdue Pilots, Inc.—President

- *Flying club with 100 members and a fleet of three aircraft. Managed day to day operations, educational programming, administration, and outreach.*
- *https://engineering.purdue.edu/PPI/*

Air Race Classic—2017 & 2018 Captain

- *Founded a flying club race team, fundraised $15,500 for a race team, and raced twice as captain.*