

EMANUELE BOSSI

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EDUCATION

Embry-Riddle Aeronautical University

Prescott, AZ

B.S., Software Engineering

Expected May 2026

Minor: Mathematics

Undergraduate Research Scholar Candidate

GPA: 4.0/4.0

Embry-Riddle Aeronautical University

Prescott, AZ

B.S., Data Science

Expected May 2026

Minor: Mathematics

Undergraduate Research Scholar Candidate

GPA: 4.0/4.0

RESEARCH EXPERIENCE

Purdue University

West Lafayette, IN

Incoming Undergraduate Research Fellow

May 2025 – August 2025

Sensor-Scheduling for Cognitive State Estimation During Automated Driving

Jain Research Lab, Department of Mechanical Engineering

Advisors: Neera Jain

- Developing algorithms to estimate cognitive states (e.g., trust, mental workload) in automated driving using behavioral, physiological, and self-reported data
- Applying machine learning, Gauss-Markov theorem and feedback control principles to model and improve human-machine collaboration, with experience in driving simulation, human subject experiments, and state estimation algorithm implementation
- Will present at Purdue Summer Symposium 2025
- Funded by NSF Career Award (Prof. Jain)

Embry-Riddle Aeronautical University

Prescott, AZ

Undergraduate Research Fellow, Undergraduate Research Institute

August 2024 – Present

AI-Driven Optimization of the Actual Take-Off Weight (ATOW)

August 2024 – Present

Department of Mathematics

Advisor: Abd AlRahman Rasheed AlMomani

- Developing AI-driven models to optimize aircraft take-off weight for improved fuel efficiency and reduced emissions
- Implementing machine learning techniques for predictive analysis and operational optimization

- Ranked in the top 25 out of 132 teams at the PRC Data Challenge organized by EUROCONTROL
- Funded by Embry-Riddle Aeronautical University Undergraduate Research Institute

Modeling Human Behavior in Safety-Critical Aviation Systems

August 2024 – Present

College of Engineering and College of Aviation

Advisors: Timothy King and Stacey McIntire

- Developing an experimental study to assess AI's impact on decision-making in aviation safety
- Modeling human behavior using dynamical systems to capture pilot responses and control strategies in high-stakes scenarios
- Funded by Embry-Riddle Aeronautical University CBSI Philanthropy Council

AI-Based Phishing Countermeasures

August 2024 – April 2025

Department of Computer, Electrical, and Software Engineering

Advisor: Sameer Abufardeh

- Conducted a public awareness survey to analyze people's understanding of phishing and its risks
- Trained machine learning models on historical and contemporary phishing datasets to evaluate their adaptability to modern threats
- Presented at the National Conference on Undergraduate Research (NCUR) 2025
- Funded by Embry-Riddle Aeronautical University CBSI Philanthropy Council

Dimensionality Reduction in Sentiment Analysis

August 2024 – December 2024

Department of Mathematics

Advisor: Faisal Ahmed

- Investigated the impact of feature extraction and dimensionality reduction on sentiment analysis performance
- Implemented Bag of Words, TF-IDF, and Chi-Square techniques to optimize machine learning models
- Achieved performance comparable to BERT with reduced training and inference times
- Published in Lecture Notes in Networks and Systems; will present at the Intelligent Systems Conference (IntelliSys) 2025
- Funded by Embry-Riddle Aeronautical University, College of Arts & Sciences

TEACHING EXPERIENCE

Embry-Riddle Aeronautical University

Prescott, AZ

Teaching Assistant, Operating Systems

August 2025 - Present

- Developing a comprehensive course notebook to supplement lectures, guiding in-class activities, and grading programming assignments and exercises

Teaching Assistant, Physics III for Engineers Laboratory

August 2025 - Present

- Setting up experiments, reviewing course content, assisting students during lab sessions, and grading lab notebooks

Teaching Assistant, Software Engineering Practices January 2025 - Present

- Developing interactive quizzes to assess students' understanding of the course material, assisting students with the semester-long project and grading project's milestones

Teaching Assistant, Machine Learning & Big Data Analysis August 2024 - Present

- Developing new 400-level machine learning course structure (lectures, quizzes, and exams), hosting review sessions, grading assignment and presenting material to 120 students across 4 sections

West Virginia University Institute of Technology

Beckley, WV

Teaching Assistant, Computer Science

January 2023 – July 2023

- Developed course material and taught middle school students Computer Science core concepts covering various topics such as problem solving, web developing and machine learning

PUBLICATIONS

- Bossi, E. "Don't Bother the Driver: Sensor-Scheduling for Cognitive State Estimation During Automated Driving," 2025. Bachelor's Thesis. In preparation.
- Bossi, E., AlMomani, R. "An Information-Theoretic Framework for Modeling Aircraft Actual Takeoff Weight (ATOW)," 2025. Sent to AIAA SciTech 2025. In preparation.
- Bossi, E., Ahmed, F. "Enhancing Sentiment Analysis with Feature Extraction and Dimensionality Reduction in Traditional Machine Learning Models," Lecture Notes in Networks and Systems, 2025. In press.

PRESENTATIONS

- "Dimensionality Reduction: A Key to Optimizing Sentiment Analysis Models," Accepted for Presentation at Intelligent Systems Conference (IntelliSys). Oral Presentation. Amsterdam, NL, August 2025.
- "Don't Bother the Driver: Sensor-Scheduling for Cognitive State Estimation During Automated Driving," will present at Purdue University Summer Research Symposium. Oral Presentation. West Lafayette, IN, July 2025.
- "Measuring Human Trust in Artificial Intelligence in Safety-Critical Systems," Arizona Space Grant Symposium. Oral Presentation. Scottsdale, AZ, April 2025.
- "AI-Driven Smart Agriculture for Climate Resilience," Global Stage of Invent For The Planet 2025. Poster and Oral Presentation. College Station, TX, April 2025.
- "Phishing in the Digital Age: Surveying Public Awareness and Leveraging AI for Defense," National Conference on Undergraduate Research (NCUR). Oral Presentation. Pittsburgh, PA, April 2025.
- "AI-Driven Optimization of the Actual Takeoff Weight (ATOW)," Prescott Regional SciTech Fest. Poster Presentation. Prescott, AZ, March 2024.

HONORS & AWARDS

Invent for the Planet 2025 – Engineering Challenge Global-Stage Finalist	2025
Department of Computer Science Outstanding Student Award	2023

GRANTS & FELLOWSHIPS

Purdue University Summer Undergraduate Research Fellowship (\$10,000)	2025
Embry-Riddle Undergraduate Research Institute Eagle Prize Award (\$6,000)	2024-2025
Embry-Riddle CBSI Philanthropy Council Award (\$8,900)	2023-2025
Embry-Riddle Soccer Athletic Grant (\$60,000)	2023-2026
Embry-Riddle Transfer Scholarship Award (\$30,000)	2023-2026

PROFESSIONAL EXPERIENCE

True Course Simulations Prescott, AZ
Data Scientist Intern May 2024 – August 2024

- Developed machine learning models to optimize pilot training flight simulations, reducing data retrieval times by 70%
- Analyzed large datasets using Python and MySQL to extract actionable insights, improving decision-making efficiency
- Collaborated with cross-functional teams to design a predictive model for pilot aptitude, increasing program completion rates by 35%

Jointek Srl Somma Lombardo, IT
Data Scientist Intern May 2023 – August 2023

- Processed and analyzed historical sales and procurement data using SQL and Python, enhancing data retrieval efficiency by 30%
- Designed predictive analytics models for business operations, improving decision making
- Created visual reports and dashboards in MS Power BI, improving stakeholder engagement and seniority business awareness

LEADERSHIP & OUTREACH

Undergraduate Research Team Leader	2024-2026
Embry-Riddle Aeronautical University Men's Soccer Varsity Vice-Captain	2025-2026

PROFESSIONAL AFFILIATIONS

ISSNAF Mentoring Program for Students	2025 - Present
IEEE Eta Kappa Nu Honor Society	2025 - Present
Tau Beta Pi Engineering Honor Society	2024 - Present
Phi Kappa Phi Honor Society	2024 - Present
National Society of Leadership and Success Honor Society	2024 - Present