Ayse S. Okatan

(413) 667-7093 | okatana@my.erau.edu | linkedin.com/in/ayse-okatan | maverai.co

Education

Embry–Riddle Aeronautical University (ERAU), Daytona Beach, FL — Expected May 2026
B.S. in Electrical Engineering — Minor: Computer Science

Technical Skills

Programming	Python, C/C++, Go, MATLAB, Java, Lua, Bash
RF / EDA	Altium Designer, KiCad, Ansys HFSS, Keysight ADS, multi-layer PCB layout, controlled-impedance routing, matching networks, RF verification
Hardware	Soldering, hand assembly, rework, connectorization, board bring-up, schematic review, design-for-manufacture and test review
Simulation	NVIDIA Isaac Sim, electromagnetic simulation, circuit co-simulation, test planning, hardware/software integration workflows
ML / Research	Transformer-model security research, Whisper, Kaldi, Plotly/Dash, Poetry
Tooling	Git (GitHub/GitLab), Linux, Shell, Azure DevOps, MobaXterm, LaTeX, Scrum, Agile, React
GNSS / DSP	GPS L1 C/A concepts, PN/Gold codes, acquisition theory, introductory signal-processing simulations

Publications

[1] Okatan, A. S., Akbaş, M. İ., Kandel, L. N., & Peköz, B. *Keys in the Weights: Transformer Authentication Using Model-Bound Latent Representations*. 2025 IEEE Cyber Awareness and Research Symposium (CARS), Grand Forks, ND, USA, pp. 1–6. DOI: 10.1109/CARS67163.2025.11337776 | IEEE Xplore | arXiv

[2] Okatan, A. S., Akbaş, M. İ., Kandel, L. N., & Peköz, B. *Seed-Induced Uniqueness in Transformer Models: Subspace Alignment Governs Subliminal Transfer*. 2025 IEEE Cyber Awareness and Research Symposium (CARS), Grand Forks, ND, USA, pp. 1–6. DOI: 10.1109/CARS67163.2025.11337559 | IEEE Xplore | arXiv

Research in Progress. Developing a model-to-model authentication protocol in which seed-bound latent representations function as implicit cryptographic keys, with emphasis on identity verification, transfer incompatibility, and security properties across independently trained models. Funded by the Embry–Riddle Aeronautical University Undergraduate Research Scholarship; Advisor: Prof. Berker Peköz.

Project Experience

IEEE SoutheastCon 2026 Hardware Competition — *Fall 2025 – Present*
IEEE Competition Team

- Develop the simulation environment and technical development workflow for the team's competition system using NVIDIA Isaac Sim.
- Build task-relevant simulation scenes, validate sensor and robot behavior, and use simulation results to inform hardware integration and system-level design decisions.
- Support end-to-end development from simulation and subsystem verification through physical build, integration, and competition preparation.

Starlink-Based Navigation System for Fixed-Wing UAV — *Fall 2025 – Spring 2026*
Senior Design

- Support system architecture and electrical requirements definition for a fixed-wing UAV navigation platform.
- Integrate teammate-developed APIs into a React front end for telemetry, navigation, and health/status visualization.
- Develop a Go backend component that translates MQTT messages into MAVLink-compatible data flows for UAV system integration.
- Contribute to interface planning across avionics, navigation logic, and operator-facing software to maintain integration readiness.
- Presented the project at the Florida Undergraduate Research Conference (FURC), Florida National University, Mar. 7, 2026.

Telemetry & Tracking RF Board (Sounding Rocket) — *Aug 2025 – Present*
IEEE Club Project

- Design a compact 4-layer dual-band RF front end operating at 1.575 GHz (L1 GNSS) and 915 MHz (ISM), including controlled-impedance routing, grounding strategy, and layout constraints for high-frequency performance.
- Perform EM simulation in Ansys HFSS and circuit co-simulation in Keysight ADS to evaluate antenna/feed transitions, tune matching behavior, and assess RF-path performance before fabrication.
- Review and verify PCB designs produced by other students by evaluating schematic intent, layout decisions, return-path continuity, RF isolation, stack-up usage, connector placement, and manufacturability.
- Execute practical hardware work including soldering, rework, assembly, and board bring-up to support testing and integration of student-designed boards.
- Established technical review criteria covering via fencing, reference-plane integrity, routing discontinuities, test-point access, and design-for-test considerations for downstream validation.

AnnoUncER *Spring 2026*
SE 300: Software Engineering Practices Class Project

- Develop a web-based scheduling and announcements system for display on televisions outside laboratories in the College of Engineering.
- Design the platform to communicate lab schedules, room-specific announcements, and operational information through a centralized interface.
- Serve as a technical mentor within the team by guiding classmates in Git-based collaboration and Scrum/Agile project-management workflows.

SaLED — Speech & Language Editing Software *Feb 2024 – Jun 2024*
Research Assistant · Advisor: Dr. Liu Jianhua

- Developed a Python toolchain integrating Whisper/Kaldi with LLM prompts for assisted speech editing.
- Built interactive dashboards in Plotly/Dash and reproducible development environments using Poetry to support experimentation and demonstration.

Ambassador Bot *Apr 2024*
IEEE Club Project

- Built an Arduino + Python robotic assistant with NLP (TalkLLaMA) and TTS (ElevenLabs); sensor-driven gaze tracking and CRT mouth display.

Project VOLTRON — Eagle Flight Research Center *Oct 2022 – Jan 2023*
Hybrid-Electric Powerplant Project

- Supported Project VOLTRON, a hybrid-electric powerplant effort within the Eagle Flight Research Center.
- Integrated a BME280 environmental sensor into the LabVIEW-based instrumentation system to support acquisition and monitoring of temperature, pressure, and humidity data.

Experience

NSF REU — Cybersecurity on Unmanned Aerial Systems *May 2024 – Aug 2024*
Research Intern, Daytona Beach, FL

- Investigated whether Transformer latent structure can serve as an implicit identity signal or cryptographic primitive in seq2seq model families.
- Designed and executed controlled experiments evaluating cross-model decoder transfer, seed-induced uniqueness, and incompatibility across identically configured but independently trained models.
- Contributed to the research program that resulted in two IEEE CARS 2025 publications and ongoing work on model-to-model authentication protocols.

Department Front Desk — Electrical Engineering & Computer Science *Aug 2024 – Present*
ERAU

- Provide front-office support for students, faculty, and visitors while coordinating departmental communication and administrative workflows.

Outreach Manager — ERAU Volunteer Network *Oct 2024 – Apr 2025*
Student Engagement & Student Union

- Managed external email communication with nonprofit organizations to coordinate events, partnerships, and information exchange.
- Maintained the organization's website and supported dissemination of event and program information to the campus community.

- Prepared and distributed campus-wide email communications promoting volunteer opportunities, events, and organizational updates.

Awards

Lockheed Martin STEM & Vocational Scholarship 2022 – 2026
Embry–Riddle Aeronautical University Undergraduate Research Scholarship Spring 2026
EECS Department Service Award Spring 2025

Leadership & Involvement

IEEE — Chair *2025 – 2026*

- Lead branch operations, strategic planning, and technical programming for the student organization while coordinating meetings, project execution, and member engagement across multiple IEEE initiatives.
- Attend IEEE Daytona Beach Section Executive Committee (ExCom) meetings to represent the student branch, communicate chapter activities, and maintain alignment with section-level priorities and opportunities.
- Organize and manage three IEEE SoutheastCon hardware competition teams, including coordination of timelines, team meetings, technical check-ins, and cross-team communication throughout the design and build process.
- Coordinate additional project teams within the branch and prepare annual planning updates, including reporting the organization's yearly plan, priorities, and operational objectives.
- Manage sponsorship relationships and external support efforts involving organizations such as Lockheed Martin and Rohde & Schwarz.
- Develop partnerships with other student organizations that route third-party PCB design work through the IEEE team, supporting technical collaboration, project intake, and board-design assistance.

IEEE Women in Engineering — President/Chair *2025 – 2026*

- Support programming, leadership initiatives, and community-building efforts that expand participation and professional development opportunities for women in engineering.

Muslim Student Association — Treasurer *Fall 2025 – Spring 2026*

- Managed treasury responsibilities in support of student organization operations, event planning, and financial coordination.

DEI Coalition — Director *2024 – 2025*

- Coordinated diversity, equity, and inclusion programming through event planning meetings conducted with Student Union administration and in collaboration with Student Government.
- Supported funding processes for DEI-focused student organizations, including planning documentation, proposal development, and coordination of organizational needs.
- Managed substantial administrative and organizational work through email correspondence, spreadsheet tracking in Excel, meeting coordination, and preparation of proposals for student-facing initiatives and events.

Turkish Students Association — Founder & President *2022 – 2026*

- Founded and led a student organization centered on cultural community-building, member engagement, and campus representation.

Languages

Turkish (Native) | Spanish (High-school level)