Yevhenii Kovryzhenko

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https://yevheniikovryzhenko.github.io/Portfolio/

Education

Auburn University

Doctor of Philosophy in Aerospace Engineering, GPA: 4.00/4.00 Masters of Science in Aerospace Engineering (Thesis), GPA: 4.00/4.00 Bachelor of Science in Aerospace Engineering, GPA: 3.47/4.00

Engineering Experience

Graduate Research Assistant

ACE LAB, Department of Aerospace Engineering, Auburn University

- Developed and experimentally validated novel real-time motion planning techniques based on Finite Fourier series and minimum-snap trajectories for UAVs. Hardware deployments using MATLAB/SIMULINK and PX4.
- Developed and tested various linear and non-linear control systems and strategies in MATLAB/SIMULINK and PX4 environments: TECS, EMF, LQR, PID, and data-driven control (quadcopters and tilt-wing aircraft).
- Embedded system development in C/C++: Control system implementation for multirotor VTOL aircraft. Full autopilot development in Unix-based RTOS (NuttX-PX4 and RTLinux) and general-purpose Linux distros (Ubuntu and Debian): CAN-based servo drivers, GPS drivers, radio communication protocols (MAVLINK), user interface and remote control pipeline development and integration, guidance and control system algorithms implementation, etc.
- Hardware design and testing: CAD design Solidworks, extensive use of 3D manufacturing (plastics, composites), general electrical system-level design, electrical hardware assembly, soldering, configuration, and testing.

Undergraduate Researcher

ACE LAB, Department of Aerospace Engineering, Auburn University

- Developed quadcopter 6DoF simulations in MATLAB/SIMULINK and written custom autopilot for Beaglebone Blue board from scratch. The autopilot was written in C and C++ for RTLinux OS.
- Developed constrained minimum-snap motion planning algorithms using FFS and deployed to hardware.
- Written communication software, all in C, and resolved in-lab WiFi interference.

3D Printing Technician

RBD Library Makerspace Lab, I&RC, Auburn University

Projects, Leadership, and Extracurricular Activities

President

Vertical Flight Society at Auburn University

Controls, Systems and Hardware Integration Engineer

Air Force Agility Prime Project, Phase II

- Designed and developed 3D printable tilt-wing aircraft for hardware and software integration.
- Developed software pipelines (C++ bridge for PX4 and MATLAB/SIMULINK) for HITL testing and ground station-to-vehicle communication (MAVLINK via Serial/UDP).

Controls and Systems Engineer, C/C++

Air Force Agility Prime Project, Phase I

• 6-channel flight control law development, hardware integration, and testing for the vectored thrust airship.

Team Leader (Controls, C/C++, Aerodynamics, CAD)

Embedded Systems Team

- Auburn University Rocketry Association (AURA) • 2018-2019: designed, 3D-printed, and tested air-brake design for sounding rocket apogee control. The team placed 5th out of 46 in our category and 10th place overall out of 103 teams at Spaceport America Cup 2019.
- 2019-2020: was in charge of the mechanical and structural design of the new altitude control module, manufacturing, and testing. Carried out a CFD test campaign on a new air brake design. This was the first successful externally mounted air-brake design for AU.
- 2020-2021: designed and developed a completely new Rocket Control System (RCS) module. Supervised hardware and firmware development. As a result, this was the first successfully flight-tested and fully functional rocket control system for AURA.

Auburn, Alabama

May 2021 - May 2026 May 2021 - August 2023 August 2017 - May 2021

May 2021 - Current

May 2020 – April 2021

January 2020 – April 2021

30 September 2021 – Current

Department of Aerospace Engineering, Auburn University

August 2021 – September 2021 Auburn, AL and Wewahitchka, FL

August 2018 - April 2021

September 2022 – August 2024 Auburn, AL