

Surafel Anshebo

Blacksburg, VA | Surafela@vt.edu | 540-558-3768 | linkedin.com/in/surafeltesfaye21/

Education

Virginia Tech MSc - Mechanical Engineering	May 2025 (Expected)
Addis Ababa Science and Technology University BSc - Mechanical Engineering	May 2018

Experience

Graduate Research Assistant, Virginia Tech	May 2023 – Present
<ul style="list-style-type: none">Developed a Dockerized simulation environment for ArduPilot SITL with Flask integration to simplify UAV testing workflows and ensure consistency across development setups.Created ground and air risk maps for BVLOS simulations using Leaflet.js and QGIS, enhancing flight planning by visualizing potential hazards and improving safety assessments.Designed and deployed flight management software to meet Association for Uncrewed Vehicle Systems International (AUVSI) standards. The system included modules for flight requests, pre/post-flight procedures, and safety reporting to ensure regulatory compliance and operational safety.	
Line Process Engineer, Coca Cola Beverages	Dec 2018 – Dec 2023
<ul style="list-style-type: none">Designed an optimized level control system for an 8-ton boiler to enhance efficiency, reduce risks, and comply with ISO 12100 safety standards, achieving \$12,000 cost saving annually.Analyzed machine structures and operational data to detect abnormalities and conducted Root Cause Analysis (RCA) using SAP, enabling the optimization of Overall Equipment Efficiency (OEE) and minimizing production downtime.Consistently maintained 90% Machine Efficiency (ME) and 85% Unconstrained System Line Efficiency (USLE) by monitoring performance, addressing issues proactively, and ensuring smooth operations across the production line.Enforced compliance with Safety, Health, Environment, and Quality (SHEQ) standards to maintain a safe workplace and align with corporate and regulatory requirements.	

Skills

Software: Python, C++, MATLAB, ROS, Flask, Docker, OpenCV, SolidWorks, QGIS, SAP
Hardware: Raspberry Pi, STM32, Arduino, Vicon motion capture, 3D Printing
Certifications: Part 107, SolidWorks Associate (CSWA)
Selected coursework: Applied Linear Control, Computer Vision, Advanced Mechatronics

Projects

Vicon Motion Capture for Indoor Flight	Jan 2025
<ul style="list-style-type: none">Conducted system calibration to minimize tracking errors, ensuring sub-millimeter accuracy.Implemented an Extended Kalman Filter (EKF) for sensor fusion enabling precise position and altitude estimation.Deployed ROS nodes on a Raspberry Pi companion computer to handle communication between the motion capture system and Pixhawk flight controller.	
Full State Feedback Control for Simulated Drone Using Pole Placement	Dec 2024
<ul style="list-style-type: none">Optimized system dynamics using pole placement techniques, ensuring stable descent.Developed closed-loop control using Linear-Quadratic Regulator (LQR) and Luenberger Observer for accurate trajectory tracking with 5% settling time in 3 seconds in MATLAB.	
Flood Mapping, Search and Rescue Operation Using S500 Drone	Nov 2022
<ul style="list-style-type: none">Mapped areas prone to flood hazards using aerial imagery processed in QGIS.Designed a gripper in SolidWorks to be mounted on S500 drones for delivering lifesaving vests.	

Publications

- D. Aggarwal, **S.T. Anshebo**, K. Kochersberger, A.L. Abbott. “Comparative Study of Vision-Based Methods for Real-Time Traffic Monitoring” *XPONENTIAL 2024 Conference*, pp. 68–79. DOI: 10.52202/075106-0004.

Leadership

Treasurer, ASME Chapter at Virginia Tech	Aug 2023 – Present
<ul style="list-style-type: none">Managed \$5,000 budget, ensuring compliance with ASME and university policies.Secured 15% additional funding for student projects by collaborating with university administration.Organized 3 workshops and events by engaging 25+ students in professional development.	