Surafel Anshebo

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Education

Virginia Polytechnic Institute and State University **May 2025**
Master of Science in Mechanical Engineering

Addis Ababa Science and Technology University **May 2018**
Bachelor of Science in Mechanical Engineering

Skills

- Software: Python, C++, MATLAB, ROS/ROS2, Flask, Docker, OpenCV, Dronekit-Python, MAVProxy, Leaflet,Solidworks, QGIS, SAP
- Hardware: Raspberry pi, STM32, Arduino, Vicon motion capture system, 3D printing

Professional Experience

Virginia Tech | Graduate Research Assistant **May 2023 - Present**
- Provided guidance to up to 50 students for drone technology and flight operations class through office hours. Assisted with coursework, assignments, and projects.
- Developed a BVLOS (Beyond Visual Line of Sight) flight simulator using Python, Docker, MAVProxy, Leaflet, and Dronekit-Python, enabling mission planning, risk analysis, and flight risk assessment.

Coca Cola Beverages | Line Process Engineer **Dec 2018 - Dec 2022**
- Maintained compliance with Safety, Health, Environment, and Quality (SHEQ) standards.
- Optimized overall Equipment Efficiency (OEE) by understanding the structure of all machines to detect abnormalities and conduct Root Cause Analysis (RCA) on different breakdowns using SAP.
- Achieved and maintained 90% Machine Efficiency (ME) and 85% Unconstrained System Line Efficiency (USLE), exceeding production targets and ensuring operational reliability.

Projects

Comparative Analysis of Vehicle Detection and Tracking **May 2024**
- Conducted a study comparing deep learning methods with traditional approaches for vehicle detection and tracking.
- Presented findings at the Xponential Conference, highlighting key performance metrics and potential applications in the real-world.

Flood Hazard Mapping and Drone-Based Life-Saving Vest Delivery System **Nov 2022**
- Mapped areas that are prone to flood hazard using aerial image using QGIS and designed a gripper in SolidWorks to be mounted on S500 drones used for delivering life saving vests.

Industrial 8 Ton boiler modification **Dec 2019**
- Modified 8-ton boiler fuel tank and condensed water tank level control to improve efficiency of boiler to reduce fuel cost annually by $12,000.

Full state feedback control using pole placement **Dec 2023**
- Developed a smooth and controlled landing system for a simulated drone by implementing full-state feedback control in MATLAB. Utilized pole placement techniques to optimize system dynamics, ensuring a stable and precise descent.

Vicon motion capture for an indoor flight **Nov 2024**
- Implemented and calibrated a Vicon motion capture system to track and control drone movements in an indoor environment.
- Integrated a Raspberry Pi as a companion computer, leveraging ROS/MAVROS, and the flight controller's built-in Extended Kalman Filter (EKF) for sensor fusion and position estimation.

Leadership

American Society of Mechanical Engineers Virginia Tech Chapter | Treasurer **May 2024 - Present**
- Maintain financial records and ensure that all accounts and records are maintained in accordance with school and ASME policies.