

Gregory Aiosa, EI

🏠 Evanston, IL | ✉ gregory.aiosa@gmail.com | 📞 (904) 446-6239 | [in linkedin.com/in/gregory-aiosa](https://www.linkedin.com/in/gregory-aiosa)
🌐 gregaiosa.github.io | github.com/gregaiosa

Education

Northwestern University, Master of Science in Robotics **Sept 2025 – Dec 2026**
University of Florida, Bachelor of Science in Mechanical Engineering, *Cum Laude* **Aug 2016 – Dec 2020**

Experience

Mechanical Engineer, Slice Engineering – Gainesville, FL **Jan 2021 – Jul 2025**

- Lead design engineer for industrial 3D printer end-effector, ensuring compliance with MIL-STD 810H and ITAR
- Utilized GD&T principles to prepare engineering drawings sent to contract manufacturers to create hotends
- Devised test procedures to optimize polymer melt, driving a 70% increase in volumetric flow rate via iteration
- Developed Python scripts to process thermal sensor data, automating the validation of mechatronic end-effectors
- Conducted FAIs and established inspection protocols to prevent defects and capture data for future iterations

Projects

Human-Following Robot **Winter 2026**

- Built a real-time human-tracking architecture for a Clearpath Jackal using ROS 2 and YOLO
- Configured Nav2 and the opennav-following server to autonomously drive a Jackal behind a designated person
- Tracked individuals using YOLO and BotSort algorithms to feed dynamic waypoints to the robot

Extended Kalman Filter SLAM **Winter 2026**

- Developed an Extended Kalman Filter SLAM system in C++ to track robot pose and map environment landmarks
- Built a C++ library for 2D rigid body transformations and differential drive kinematics for odometry
- Implemented circle detection and data association to identify and track landmarks from laser scan data
- Leveraged CMake and Catch2 to build and validate a modular navigation stack with extensive unit tests

Mechatronic Motor Control System **Winter 2026**

- Developed C firmware for a Raspberry Pi Pico 2 to regulate brushed motor speed and position
- Implemented interrupt driven PID control loops and quadrature encoder feedback for precise motion
- Configured H bridge drivers and peripheral sensors via PWM and SPI protocols for feedback control

7-DOF Robot Domino Artist **Fall 2025**

- Built a ROS 2 pipeline for a Franka Panda to autonomously perceive, pick, and place dominoes in user-defined patterns
- Applied OpenCV and AprilTags for sub-centimeter pose estimation via a wrist-mounted RealSense camera
- Generated collision-free MoveIt trajectories using virtual obstacles to ensure safe manipulation in a cluttered scene

Pen Grasping Robot **Fall 2025**

- Developed a Python script to control a 4-DOF PincherX-100 arm for autonomous pick-and-place tasks
- Leveraged OpenCV and a RealSense camera for real-time pen detection and centroid calculation
- Mapped camera-space detections to robot task-space via coordinate frame transformations in Python

Bio 3D Printer **Fall 2019 – Spring 2020**

- Collaborated with a team of 4 to design the motion system for a delta-style bio 3D printer weighing less than 100 grams
- Modeled custom aluminum joints using SolidWorks and sourced lightweight, low-friction rod end bearings
- Led the electro-mechanical integration of the motion system with three subsystems, managing interface tolerances

PID Control of Floating Ping Pong Ball **Fall 2020**

- Moved a ping pong ball to 3 positions in a tube using a fan while minimizing steady-state error to 5 mm for 3 seconds
- Computed data from a TOF sensor into a DAQ with LabVIEW and output a PID control signal to the motor controller

Skills

Robotics: ROS 2, SLAM, Navigation, OpenCV, Gazebo, Embedded Systems, Control Systems, MoveIt, RViz, Mechatronics

Programming Languages: Python, MATLAB, C, C++

Software: SolidWorks (CSWA)/Onshape/Fusion360, Git, Linux, CoppeliaSim, LabVIEW, Unit Testing, KiCad

Hardware: GD&T, Arduino, Raspberry Pi, PCB Design, 3D Printing, Soldering, Machining, Infrared Thermography