

# JACKSON ISENBURG

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## EDUCATION

### Georgia Institute of Technology

*Master of Science in Robotics*

Atlanta, GA

August 2024 – Present

- GPA: 4.0/4.0

*Bachelor of Science in Computer Science, Minor in Robotics*

June 2020 – May 2024

- Graduated with Highest Honors
- Concentrations: Systems & Architecture, Computer Intelligence
- Coursework: Control Theory, Deep Learning, Compilers, Processor Design, Operating Systems, Signal Processing

## EXPERIENCE

### Low-power, Adaptive, and Resilient Systems Lab, Georgia Tech

Atlanta, GA

*Undergraduate Research Assistant*

August 2022 – May 2024

- Trained and tested a deep RL model on the AWS DeepRacer stack for autonomous vehicle pathing with camera input
- Created an architecture-agnostic fault injection and resilience framework in TensorFlow for any black-box neural network

### Georgia Tech Research Institute

Atlanta, GA

*Student Research Assistant (TMPO Lab, CIPHER)*

May 2021 – May 2024

- Designed and implemented the first real-time operating system in Rust for the ARM Cortex R4 where nearly 100% of Rust's safety features at abstraction levels above the bootloader were utilized to improve upon the critical safety of the system
- Worked on various FPGA projects related to architecture analysis and bitstream generation (secret clearance)

*Research Intern (ATAS)*

June – July 2020

- Worked and modeled a 5 degree-of-freedom Arduino-powered arm and developed a C++ library for the arm's inverse kinematics
- Researched various OpenCV-extendable libraries such as AprilTags for detecting visual orientation of the end effector

*Research Intern (ATAS)*

June – July 2019

- Improved the design of the battery compartments in the Kennedy Space Center piezoelectric tiles to prevent expansion over time by replacing the neoprene casing with a material that does not absorb and retain heat
- Developed and presented a liquid waste treatment method for the Gates Foundation Reinvented Toilet involving a multi-stage filter and UV-C LED disinfectant system that would have a 99.9% success rate at producing safe drinking water

## PROJECTS

**Neuraphonic** (HackGT X) — *Python, PyTorch, Scikit-Learn, Google Cloud, Twilio, MATLAB, Flask*

- Won 2nd best overall prize (\$3k) out of 189 teams and accepted for the Create-X Startup Launch with \$35k initial funding
- Voice-based diagnostic assistant for Parkinson's disease using signal processing and a vision transformer pipeline
- Implemented the website page using Flask and the signal-to-feature conversion with Praat for the neural network input

**National Characteristics Search** (Capstone Project) — *Python, SQLite*

- Produced a stand-alone application in Python that accesses characteristic data (such as total population, median income, etc.) from the U.S. Census in a way that enables quick and easy access and saves that data to a local database using SQLite
- Created in partnership with Emory Medicine to find the correlation between neighborhood characteristics and schizophrenia

**FTCLib** — *Java, Kotlin, OpenCV*

- Founded and led the development of a Java library for FIRST Tech Challenge with pre-built CV pipelines, hardware wrappers, and path following to raise the floor of software for thousands of competing teams' robots across the world

## EXTRACURRICULAR

### HyTech Racing

*Data Acquisition*

- Designed schematics and fabricated PCBs to retrieve sensor data measuring vehicle motion and power efficiency
- Programmed and tested Arduino/Teensy microcontrollers over a CAN line for messages containing sensor data to be parsed into a useful, readable feedback for the chassis and power systems teams to improve their designs and prevent future failures

### RoboJackets

*IT Coordinator*

- Managed all networks and distributed services maintained by the organization and provided to over 600 members
- Provided assistance to any members experiencing issues with their provided services, connections, or loaned devices

## SKILLS

|            |  |
|------------|--|
| Languages  | Java, Python, C/C++, Rust, Verilog, VHDL, HTML, JavaScript, MATLAB |
| Frameworks | NumPy, PyTorch, TensorFlow, JavaFX, React                          |
| Software   | Git, AWS, Docker, ROS/ROS2, Virtual Machines                       |