

Neal Cronin

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EDUCATION

Georgia Institute of Technology <i>Bachelor of Science in Computer Science</i> <i>Courses: Artificial Intelligence, Objects and Design, Computer Organization and Programming, Data Structures and Algorithms, Discrete Math</i>	Atlanta, Georgia <i>August 2024 - Present</i>
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EXPERIENCE

Georgia Tech Research Institute (GTRI) <i>Research Intern (STEM@GTRI)</i> Autonomous Robotics: Collaborated in the CIPHER lab to develop navigation code for an autonomous robot using a LIDAR sensor for environment mapping. Data Structures: Optimized LIDAR data storage and accessibility using Quadrees to enable efficient spatial indexing and real-time visualization. Data Visualization: Utilized Matplotlib to create accurate visual representations of robot surroundings for safety testing.	Atlanta, GA <i>June 2023 - July 2023</i>
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PROJECTS

Tissue-Integrated Bionic Knee: Modeled the e-OPRA™ Implant System from specifications listed in technical drawings to render visuals used in the paper.
Tony Shu et al. ,Tissue-integrated bionic knee restores versatile legged movement after amputation.Science389,eadv3223(2025).DOI:10.1126/science.adv3223

OTIS Challenge: Won 2nd place (\$15,000) for a solution focused on inclusive mobility and climate change. I led the development of a functional "breathing vest" prototype that utilized piezoelectric sensors to harness energy from chest expansion during breathing.

Osu! World Cup Prediction Model: Built a predictive neural network using PyTorch to forecast international tournament outcomes. I developed a custom data pipeline to ingest player statistics, match history, and heatmap metadata via the osu! API and the rosu-pp library to create the training dataset.

RoboSumo Robot: Led a multi-disciplinary team to develop a combat robot under SRS Robothon rules. I designed the chassis and mechanical assemblies in Onshape, managed the physical assembly and wiring (including 3D printing and CNC machining), and programmed the autonomous logic in C++ to integrate IR and line sensors for opponent detection.

VEX Robotics World Championship: Qualified and competed at the global level (2024) by programming a robot capable of high-speed autonomous scoring. I optimized C++ PID controllers for drivetrain precision.

Hall Effect Keypad: Engineered a custom analog keypad using hall effect sensors for high-frequency rhythm game performance. I modified open-source firmware to support adjustable actuation points, significantly reducing input latency compared to mechanical switches.

Combat Robotics: Designed "Cat5," a 1lb ant-weight robot, using Fusion 360 to optimize for weight distribution and durability. I executed the full build process, including high-clearance 3D printing and precise soldering of compact ESC and receiver components.

Home Game Server: Configured a dedicated Ubuntu server with customized DHCP and DNS settings for private game hosting.

HONORS AND AWARDS

HOPE Scholarship: \$40,000 for college tuition.
OTIS 2nd Place Nationally: \$15,000 for high school.
Laws of Life Essay School Winner: \$100 prize.

SKILLS SUMMARY

Software: PyTorch, TensorFlow, Matplotlib, Django
CAD: Autodesk Fusion 360, Autodesk Inventor, Onshape
Platforms: Linux (Ubuntu), Windows, Arduino, Raspberry Pi
Hardware: Soldering, 3D Printing, Makerspace Trained

REFERENCES

Brandon Horsley: Former Robotics Coach – bhorsleyphysics@gmail.com
Stephen Cochran: Former Mechatronics Teacher – Stephen.Cochran@gcpsk12.org