Nicholas Pianfetti

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Education

Georgia Institute of Technology, School of Mechanical Engineering Atlanta, GA
Bachelor of Science in Mechanical Engineering | Minor in Computer Science GPA: 3.82/4.0 *Expected Graduation: May 2027*

Experience

Tesla Inc. January 2025 – August 2025
Manufacturing Controls Engineering Intern *Austin, TX*

- Integrated 30 Human Machine Interfaces into a Giga-Press die-casting machine; ensured device communication and user authentication through PLC logic in Siemens TIA Portal
- Designed and deployed a material tracking system, replacing manual logs with a real-time web and mobile Ignition apps; improved traceability for 100+ employees and automated tracking of quantity and type for $10 million of production materials
- Optimized SQL queries and high-frequency data pipelines handling millions of process parameters per second, improving system responsiveness and reducing factory network load by 35%
- Built analytics dashboards that quantified $2M+ in savings from recycled aluminum over 8 months, giving leadership visibility into sustainability metrics and supporting expanded metal recovery initiatives

Advanced Controls Research Laboratory May 2024 – August 2024
Undergraduate Research Assistant *Champaign, IL*

- Simulated emergency landing algorithms for tricopter UAVs using ArduPilot SITL and Gazebo to evaluate autonomous safety procedures in complex environments
- Automated a 6-step UAV simulation setup process, cutting preparation time per test by 90% with a single Python/ROS script
- Developed control algorithms for autonomous UAV flight in Gazebo simulations, supporting future implementation

Projects

Local AI Data Governor June 2025 - Present

- Developed a local-first AI data governor that integrates open-source LLMs with cloud-hosted models to ensure secure handling of sensitive data while unifying local and cloud models
- Developed a React + Electron desktop application with real-time conversational UI and Firebase authentication
- Implemented a multi-tier subscription system with Stripe APIs, enabling scalable feature access control for initial beta users

Autonomous Robot Development August 2024 - December 2024

- Designed and prototyped a fully autonomous robot to execute predefined mechanical tasks with mechanical sensing and actuation
- Integrated Arduino microcontrollers, pneumatic pistons, and motor drivers to enable autonomous navigation and task execution
- Documented design process through engineering reports, CAD models, and system-level analyses following engineering standards

Algae Bloom Clean-Up Robot November 2023

- Designed an autonomous robot to remove harmful algae in fish farms, improving water quality and promoting sustainable aquaculture practices for global food security
- Developed and iterated CAD models to optimize mechanical design and functionality, resulting in a high-quality 3D printed prototype with 95% assembly accuracy
- Awarded 1st Place in Sustainability of Engineering Design by the Georgia Tech Office of Sustainability for innovation

Involvement and Leadership

Georgia Tech RoboJackets August 2023 – December 2024
Robo-Wrestling Software Team *Atlanta, GA*

- Designed and programmed a fully autonomous sensor-driven robot for national and international robotic wrestling competitions
- Implemented control strategies on Arduino-based microcontrollers, integrating light and distance sensors for real-time actuation
- Iterated hardware/software designs to optimize stability and autonomous decision-making under competition constraints

Georgia Tech Wrestling Club May 2024 – January 2025
Vice President of Internal Affairs *Atlanta, GA*

- Coordinated with Georgia Tech administration to manage schedules, competition logistics, and budget allocation for 50+ athletes
- Fostered a welcoming community by organizing inclusive team events and recruitment initiatives to double club membership

Academic Awards & Honors

Pi Tau Sigma Mechanical Engineering Honor Society 2024
First Place for Sustainability of Engineering Design — ImpactHack 2023
Good Citizen Award — Daughters of the American Revolution 2023
Eagle Scout — Boy Scouts of America 2019

Technical Skills

Languages: Python, SQL, Java, Arduino, MATLAB, HTML, CSS, C++, TypeScript, SCL, Ladder Logic
Softwares: Ignition, Siemen's TIA Portal, MySQL Workbench, ePlan, SolidWorks, UaExpert, Gazebo, RoboGuide
Relevant Coursework: Engineering Design, Object-Oriented Programming, Data Structures and Algorithms, Material Science, Thermodynamics, Numerical Analysis, Fluid Mechanics, System Dynamics, Mechanics of Deformable Bodies