Zachary P Gunther

Electrical Engineering & Computer Science Dual Major

Contact Info

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Education

Rensselaer Polytechnic Institute - Troy, New York

September 2019 - Current (Expected graduation: May 2023 - anticipating master's program 2023-2024)
GPA - 3.76 - Electrical Engineering & Computer Science Dual Major

Work Experience

Automation Engineering Internship - *Intuitive Surgical*

May 2022 - August 2022 - Sunnyvale, California
Created and modified C# GUI applications controlling robotic assemblies for manufacturing
Used and improved a custom state machine based automation framework
Wrote documentation for and tested automated systems

Electrical Engineering Co-op - *SimpliSafe*

August 2021 - January 2022 - Boston, Massachusetts
Designed equipment and setups for camera testing and automation
Wrote web applications using JavaScript, HTML, and CSS for video image quality analysis
Wrote GUI Python applications for flashing camera firmware and hardware automation
Designed circuits and, prototyped custom PCBs for hardware automation projects

Automation and Control Engineering Internship - *Cree*

May 2020 - August 2020 - Durham, North Carolina
Created GUI applications for data collection, analysis, and storage
Learned SQL and implemented data collection and management applications
Implemented algorithms and made .dll's for high-speed data analysis

Relevant Experience

Programming Languages - Python, Java, JavaScript, HTML, CSS, SQL, C, C#, C++, VB.Net
Software -Visual Studio, Git, BitBucket, Github, Jira, Confluence, Fusion 360, NX, Onshape, EasyEDA,

Programming

Created web-based analog circuit, digital circuit, and physics simulators (see zgunther.com)
Used WebGL, OpenGL, and Unity to develop 3D renderers for CAD programs, simulators, games
Wrote standard and raytracing shaders for OpenGL and WebGL
Wrote multithreaded python GUI apps (PyQt6, OpenCV, NumPy) for data and video analysis

Electrical Circuitry

Designed custom FM & AM receivers & transmitters for audio transmission and RC car controllers
Used analog audio filtering and modulating for guitar amps, guitar pedals, effect boxes, mixers
Designed MOSFET & IGBT gate driver circuitry for amplifiers, induction heaters, tesla coils, etc.
Built high power class D (digital) power amplifier design for PA speakers

Embedded Control

Designed controllers for custom-built CNC routers (for milling PCBs & rapid prototyping)
Programmed microprocessors for audio manipulation using custom ADC & DAC circuits
Built custom sound-activated RGB strip controllers to be used with speakers & drum sets
Designed electric drum set controllers with digital sound synthesizing & analog filtering