Joseph P. E. Gabel

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Summary

Add value, as an Intern, to a work effort or team, while gaining experience and knowledge in the field of Electrical Engineering with a focus on circuit technology, signal and information processing, and product development.

Education

Georgia Institute of Technology | Atlanta, GA

Bachelor of Science in Electrical and Electronics Engineering, Minor in Spanish   GPA 3.896
Expected graduation May 2025

Experience

Georgia Tech Research Institute, Atlanta GA (System Engineering Intern)   *May 2024-August 2024*
- Worked with embedded systems and electronics to test, document, and develop technologies to function as robust and reliable systems in harsh environments.
- Wrote demo code in C and C++ for an embedded device. Designed and created for test systems.

Intelligent Digital Communications (Student Researcher)   *August 2023-Present*
- Research goals include enhancing spectrum utilization, enabling improved use of smart devices and creating intelligent mechanisms for debugging, monitoring, policing, and enhancing all types of wireless communications through the use of software defined radio techniques, machine learning, digital signal processing, and RF communication technologies.

Programming for Hardware/Software Systems Teachers Assistant | Atlanta, GA   *January 2024 Present*
- Provide guidance and support to students for in-class exercises, and assignments. Conduct review and study sessions, grade homeworks and projects, providing constructive feedback to help students improve. Host office hours as well as moderate an online discussion board and collaborate with professors to improve class content.

Texas Instruments, Dallas TX (Product Engineering Intern)   *June 2023-August 2023*
- Worked in the Richardson Semiconductor Fab, improved yield performance of products, through in-depth analysis, test data extraction, and wafermap review. To ensure customer satisfaction, maintain low cost and increase profit margins on analog chip devices.
- Worked frequently with data extraction programs, performed statistical analysis, developed an understanding of the semiconductor industry, used my understanding to solve complex engineering problems.
- Conducted a component and layout analysis that involved a large portion of devices in production, with the goal of determining the cause of edge loss on wafers. Worked with multiple departments to gather data. Presented findings and possible actions to multiple teams and upper management.
- Performed a yield loss analysis on wafers with unusual fail patterns, analyzed fabrication steps and test data to determine source of chip failure. Worked with other teams and device owner to determine device specifications. Recommended actions regarding next steps to resolve the issues.

Lewis Johs Avallone Aviles, Islandia NY (Intern)   *June 2022-August 2022*
- Lead an interdisciplinary effort to populate missing customer data within a Law Firms Attorney Information system (AIM). Worked with Law Firm Management, Operations, and IT department on various projects utilizing the MS suite, primarily Access, Excel, Word, and Visual Studio Code.
- Created a web crawler using the Selenium extension for Python to find missing address data for over 15,000 records spanning in excess of 3000 clients. Which was utilized to notify the clients that they may have been compromised by a cyber-attack.

Skills

Programming: C/C++, Python, MIPS Assembly, Java, VHDL, MATLAB, HTML, CSS
Platforms: Microsoft, OSX, Linux
Hardware: Arduino, Raspberry PI, Oscilloscope, FPGA's, PCB Fabrication (LPKF Protomat, Protolaser)
Software: Altium, Arduino IDE, Aurora Solar, AutoCAD, Excel, Keil Studio IDE, Spotfire, VSC,
Languages: English (Native), Spanish (Advanced)
Relevant Coursework: Digital Design, Circuit Analysis, Programming Hardware/Software Systems, Signals and Systems, Embedded Systems Design, Microelectronic Circuits, Digital Signal Processing, Electromagnetics, Integrated Circuit Fabrication, Analog Electronics

Projects

Stack Filters (Intelligent Digital Communications Research Team)   *February 2024-Present*
- Interdisciplinary project between machine learning and digital signal processing teams to research and create a stack filter, with the purpose of filtering noise out of signals in high signal density areas. Developed a rudimentary median filter on python, with the eventual goal of designing an ASIC for smart device communication.

Autonomous RC Car   *March 2024-May 2024*
- Using an Mbed LPC1768 and various sensors, created a Bluetooth controlled RC car that could autonomously drive and parallel park. Created a custom API to implement a LED ring lamp and displayed information to the user on a uLCD-144G2. Worked with threading and I2C, SPI, USB, and UART protocols.

Mbed Quest Game   *October 2023-December 2023*
- Designed the Hardware and Software systems for a custom RPG in C using Keil Studio Online, created a hashtable, custom sprites, animations, quests, and other functionalities utilizing hardware components such as pushbuttons, speakers, LEDs, and navigation switches.

Hobby Servo   *November 2023-December 2023*
- Using VHDL and concepts from signal processing, coded a peripheral for a simple computer, and created an API for higher level coding implementation, that creates a pulse to control a hobby servo. Using Intel Quartus, an FPGA, and Oscilloscope.

Brookhaven National Laboratory Mini Semester Program   *January 2023*
- Using an Adafruit microcontroller and various sensors, proved Ohm's law along with its common oversimplifications, presented our work and findings to BNL faculty and staff. As part of a selective program where interdisciplinary students of diverse and underrepresented backgrounds participate in workshops, tours, and projects.

Leadership

Student Government Association – Academic Affairs Committee Member   *September 2023-Present*
- Work with administrators and departments to promote the academic growth and well-being of students. To create an inclusive, fair, and holistic academic environment inside and outside of the traditional classroom. Spearheading a project to improve Georgia Tech's international study/exchange programs by working with the Office of International Education to refine information, resources, and processes related to the study abroad experience. Additionally, increasing accessibility of programs to a wider range of disciplines and class years.

Team Leader - Solar District Cup| Atlanta, GA   *September 2021-May 2023*
- Coordinated and assigned work with an interdisciplinary team, focused on creating a development plan detailing all codes and policies for a PV system in Columbus County, Ohio. As well as lead a Distribution Impact Summary for a PV and Floatovoltaics system in Lake Nona, Florida to determine the threshold of interconnection points and the need for energy storage systems and surge protection. Presented our work to the DOE and received an honorable mention.

FreShGA (First Year Leadership Organization)   *September 2022-May 2022*
- A selective group that prepares freshmen to assume leadership positions within organizations at Georgia Tech. Collaborated on two major projects: designing a comprehensive resource guide to help students efficiently find and access campus resources, and planning and hosting a wellness event at the campus recreation center, where students could destress during finals season.

Sustainability and Infrastructure Committee | Atlanta, GA   *January 2022-May 2022*
- Worked with the Student Government Association and Undergraduate House of Representatives, to promote sustainable policies and improve campus Infrastructure and Sustainability efforts.
- Planned a campus wide Earth week, in collaboration with various sustainability organizations on campus, promoting campus recycling programs and raising awareness, hosted events in excess of 100 participants.

New York District Key Club Lieutenant Governor – New York State Board   *March 2020- May 2021*
- Managed Portfolio of events for 8 schools; active participant and conduit between the local and state levels of the organization.
- Accountable for all aspects of the day-to-day planning, finances and Service Hours tracking for the 8 schools within my Division. Ensuring schools had proper finances, access to resources for events, and smooth communication between local and state level.