Zekun L. Li

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Education

Georgia Institute of Technology | Atlanta, GA *August 2020 – Present*
Bachelor of Science in Computer Engineering *Expected May 2024*
Economics Minor, German Minor
GPA: 3.89

Experience

Kernel Research Group at Georgia Tech | Atlanta, Georgia *August 2023-Present*
Undergraduate Research Assistant

- Working on projects for the Semiconductor Research Corporation's PRISM Center under Dr. Gavrilovska in the School of Computer Science.
- Developing user interface to demonstrate distributed graph processing research performed by a PhD student in the lab.
  - Presented results at the PRISM Annual Review at the University of California San Diego in November 2023.

Tesla | Palo Alto, California *May 2023-August 2023*
Intern, BMS Firmware

- Completed firmware bringup of internal tester product used for manufacturing and hardware-in-the-loop testing.
  - Eliminated major firmware bugs that caused 2 to 5 millisecond delays in SPI communication
  - Added RTOS module to read feedback from ADCs and send data over ethernet.
  - Developed automated calibration routines for shunt resistor current measurement, DAC voltage output, and ADC voltage feedback.
    - Current sense calibration achieves ~2% accuracy at microamp current levels.
    - DAC and ADC calibration achieve ~0.1% accuracy throughout operating voltage range.
  - Implemented board temperature measurement using NTC thermistor.
  - Designed and completed Python library to support command, calibration, and feedback functionality over ethernet, allowing teams within company to rapidly begin use of tester product.
- Tech stack: C++, C, Python, RTOS, SPI, UDP

Gilded | Remote *June 2022-May 2023*
Intern

- Engaged in development of core distributed ledger technology.
  - Developed functional prototype of distributed ledger using new software platform.
  - Raised test coverage of existing codebase by 20%.
- Designed and developed interactive web apps for company client and educational initiatives:
  - A client-facing webpage providing account funding instructions based on real-time gold price and purchase amount.
  - A portfolio tool, which uses five historical and projection datasets to offer insight into portfolio asset allocations.
  - A budget calculator, which compares the user's income and expenses to budgeting best practices.
- Tech stack: Kotlin, Go, ES6 JavaScript, Papa Parse, Chart.js, Bootstrap

Sharc Lab at Georgia Tech | Atlanta, Georgia *August 2022-May 2023*
Undergraduate Researcher

- Investigated the MoveIt2 library for Robot Operating System 2 for potential speedup opportunities.
  - Focused on the hybrid planning pipeline and scheduling of the hybrid and local planners.

HyTech Racing | Atlanta, Georgia *June 2021-June 2022*
Electrical Systems Lead

- HyTech Racing earned 3rd overall at the Formula SAE Electric June 2022 competition in the EV class, the best result in team history.
- Overall responsibility for system-wide development and testing of the electrical systems for HT06, HyTech Racing's 2022 competition car for the annual Formula SAE Electric competition.
- Architected clean-sheet design of battery management system software.

    - Wrote new software library for communication between SPI-capable Arduino compatible microcontrollers and the Analog Devices LTC6811 battery stack monitor via the isoSPI protocol.
- Wrote Arduino program using the new library to collect data from battery stack monitor, perform safety critical checks, and send data to main electronic control unit for logging over CAN.
    - Implemented passive balancing algorithm for battery cells to keep cell voltages equal and maintain safe temperatures when charging.
- Further team-implemented electrical improvements: new 84-cell battery pack, new high voltage precharge circuitry, enhanced driver dashboard with seven-segment error code display, integration of new motor controller unit.

Awards

ImmerseGT XR Hackathon *April 7-9, 2023*

ChatPCB: Winner, Best in Commercial Use

- Hackathon team developed MVP android AR application to aid in manual assembly and rework of printed circuit boards.
    - App listens to voice commands to drop AR markers on PCB placements and bring up associated part numbers.
    - Greatly simplifies parts search process, reducing per-part work time upwards of 30 seconds.
- Contributions: primary ideation, PCB XML parsing, virtual marker placement logic

Skills

Programming: C, C++, Python, Java, Kotlin, JavaScript, Bootstrap, HTML, CSS, Go, MIPS Assembly
Hardware: STM32 series microcontrollers, Teensy, Arduino, Analog Devices LTC6811 battery stack monitor, Raspberry Pi
Software: Autodesk EAGLE, Dassault SolidWorks
Communication Protocols: SPI, isoSPI, CAN2.0, I2C, UART, UDP
Languages: English (native), Chinese (fluent), German (B1 Certification)