Arthur K. Zhang

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University of Michigan, Ann Arbor ***May 2022***
Bachelors in Science and Engineering in Computer Engineering *GPA: 3.9/4.0*
Coursework: Algorithms and Data Structures, Embedded Systems Design, Circuit Analysis & Design, Digital Logic Design

Work Experience

Northrop Grumman (Software Engineering Intern) ***May - August 2020***
- Built multithreaded TCP/IP socket to handle high speed satellite and ground station communications for command line app in C and flight software for distributing telemetry commands to avionics system
- Programmed Softbench in C and Simics to simulate real time avionics hardware for NASA's JPSS and Landsat9 satellites, improving flight software validation lifecycle by up to 6 months

Sandia National Laboratories (Software Engineering R & D Intern) ***May - August 2019***
- Architected noSQL database and full stack web components for automating data analysis for radiological instruments
- Optimized website user experience by implementing front end state management using Redux and a continuous integration/deployment pipeline (CI/CD) for unit and integration testing
- Published internal white paper detailing improvements on data management in complex user facing applications

Clinc (Software Engineering Intern) ***June - August 2018***
- Refactored REST APIs and integrated single page application to improve server response times by up to 50%
- Designed end-to-end automated testing infrastructure in Selenium that reduced bugs pushed to production by 40%

Projects

Pressurization Tank Balancing PCB ***May - November 2020***
- Designed custom PCB to actively balance tank pressures for liquid fuel rockets, complete with STM32 microcontroller, ADCs for analog peripheral sensing, and redundant RS-422 communication chips
- Architected virtual timer task scheduling system and programmed embedded libraries for command and data handling, DC motor control, and PID controller calculations in C

Dead Reckoning (https://github.com/KingArthurZ3/Dead-Reckoning) ***May - September 2019***
- Built fault tolerant embedded system to perform real time attitude determination using sensor fusion methods with three IMUs and STM32 chips
- Researched and tested custom clock synchronization procedure between microcontrollers and Byzantine Generals algorithm for fault detection and resolution in C

Extracurricular Activities

Michigan Aeronautical Science Association (MASA) ***August 2019 - Present***
- MASA is a collegiate rocketry organization that designs and manufactures liquid fuel rockets for launch competitions
- Leading firmware development on embedded PID controller project, ground side RS-422 communications, and high performance peripheral libraries (ADCs and DC motors)
- Assembled/tested PCBs with oscilloscope and electronics tools to support rocket engine testing

Miniature Tether Electrodynamics Experiment Lab (MiTEE) ***August 2019 - Present***
- MiTEE lab develops orbital satellites that use electrodynamic tethers to leverage potential energy in atmospheric currents to extend service period before failure
- Developed linear quadratic regulator controller in C to perform satellite stabilization using magnetorquers and reaction wheels

University of Michigan Spark Electric Motorcycle Racing Team ***August 2018 - September 2019***
- Built in-browser telemetry system GUI and programmed onboard sensor payload in C for displaying real-time motorcycle performance metrics during circuit races
- Engineered custom PCBs for telemetry and battery management systems using Altium Designer and programming embedded control systems in C for battery cooling systems and cell pack balancing

Skills

Computer Programming: C++, C, Javascript, Python, Java, Matlab, Tensorflow, React.js, Vue.js, Django, Selenium, MySQL
Computer-Aided Design: KiCAD, Altium PCB Designer, LTSpice, Autodesk Inventor, Autodesk Eagle, Solidworks