Arthur K. Zhang

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

Work Experience

Sandia National Laboratories (Software Engineering R & D Intern) ***May - August 2019***
- Architected SQL database and automated data processing pipeline to analyze radiological data from nuclear detectors for scientists in Lawrence Livermore and Pacific National Labs
- Optimized regression algorithms for radiation particle analysis to improve computation accuracy by 20% and built 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***
- Developed and optimized website features on Spotlight AI platform across full web stack to improve user experience for global corporate clients, such as isBank and USAA
- Designed an end-to-end automated testing infrastructure that reduced bugs pushed to production by 40%

Extracurricular Activities

Michigan Aeronautical Science Association (MASA) ***August 2019 - Present***
- Programming firmware for various flight boards, such as: auto ignition sequence abort case handling for the primary engine controller and high speed in-flight telemetry logging onto flash chips
- Building custom sensor testbeds for onboard measurements and architecting PCBs for the engine controller and main flight computer using KiCAD for circuit design and PCB layout as well as LTSpice for circuit simulation

Miniature Tether Electrodynamics Experiment Lab (MiTEE) **January 2020 - Present**
- Working towards the development of a miniature orbital satellite using tethers to prolong orbital period before failure
- Engineering onboard code in C to perform real-time detumbling procedure post deployment using custom linear quadratic regulator control algorithm
- Solving ongoing difficulties with attitude determination and control mid-orbit using reaction wheels and Triad method

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
- Designed 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: Altium PCB Designer, LTSpice, KiCAD, Autodesk Inventor, Autodesk Eagle, Solidworks

Projects

Dead Reckoning (https://github.com/KingArthurZ3/Dead-Reckoning) ***May - September 2019***
- A distributed embedded system that deploys sensor fusion algorithms for performing attitude determination on inertial measurement units (IMUs) and position state estimation with Kalman Filters; built for STM32 ARM-based microcontroller and completely written in C
- Controls three microcontrollers and IMUs in parallel with custom written clock synchronization and Byzantine Generals algorithm to support triple fault redundancy

Electric Longboard (http://www.arthurkzhang.com/#/projects) ***August 2018 - Present***
- Electric Longboard with a custom battery management system and Bluetooth nunchuck controller; designed with Altium, Autodesk Inventor, and programmed in C
- Retrofitting Wii Nunchuck and speed controllers with Bluetooth sensor module to control speed controllers; developed CAN communication code in C to synchronize dual wheel motors

Mr. MarketWatch (https://github.com/KingArthurZ3/MrMarketWatch) **January 2018 - August 2018**
- A collection of machine learning (ML) models that analyze stock market technical data and recommend specific stocks to buy based on their predicted profit/loss ratio; written in Python and Javascript with Tensorflow and Vue.js frameworks
- Automated hyperparameter tuning on Random Forest, XGBoost, and Convolutional ML models; Developed web parser to scrape numeric financial data and automatically retrain ML models