Kevin Ji

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Education

University of Michigan **Ann Arbor, MI**
Bachelor of Science in Engineering in Computer Science *2020 - 2024*

- GPA: 3.86/4.00
- Relevant Coursework: Data Structures and Algorithms, Web Systems, Introduction to Computer Organization, Introduction to Computer Security, Introduction to Logic Design
- Awards/Honors: Dean's List, University Honors

Experience

Caterpillar, Inc. **Chicago, IL**
Cat Digital Intern *Summer 2022*

- Implemented scheduled service allowing more than 10 software teams to manipulate scenarios ingesting messages to virtual assets, eliminating need to maintain own testing software and enabling significant time and cost savings
- Instituted DynamoDB backups for nearly 10,000 virtual devices and implemented AWS lambda functions with SpringBoot platform, ensuring backend data protection for over 50 developers cross more than 10 teams
- Enhanced virtual device onboarding by consolidating APIs and adding three additional parameters to input, reducing calls by 66% and increasing search functionality by 60% to allow significantly better testing for development teams

Michigan Mars Rover Project Team **Ann Arbor, MI**
Senior Advising Mentor *2020 - Present*

- Designed algorithm to calculate distance of closest obstacle and find new clear path of rover to strengthen rover navigation in C++, reducing path recalculation time by over 15%
- Led development of new rover mapping system (SLAM) to create logarithmic obstacle detection confidence metrics on field and enhanced motor controls in C, increasing object accuracy to within half a meter
- Managed over $100,000 team budget for over 100 members, reduced operational costs by 6%, and fundraised $6,500, resulting in 53% increase for subteam budgets while maintaining $25,000 buffer for future years

Multidisciplinary Design Program - Heliophysics Spacecraft Instrumentation **Ann Arbor, MI**
Software Engineer *2021 - 2022*

- Developed software calculating phase that shifted signals of satellite in space with fourier transformation capabilities for generation of more than 10 beamformed images, allowing greater accuracy in solar flare analysis
- Created program filtering relevant space weather information from unfiltered instrument data into binary image file of space weather events for classification in Python, reducing noise over two standard deviations
- Planned future integration of pipeline subdivisions in clear and concise fashion and mapped out final software pipeline to start proper progression of tasks and steps for key semester objects

Course Projects

Zookeeping | *C++*

- Solved traveling salesperson problem (TSP) using fast nearest neighbor heuristic and found most optimal solution from fast heuristic, resulting in 70% time reduction from original algorithm
- Implemented nested loop Prim's algorithm using MSTs, receiving optimal solution in best time complexity possible

Log Manager | *C++*

- Constructed program filtering various log messages using nearly 20 various command prompt inputs in C++
- Built manager using unordered maps and deques, cutting overall access and filter time by up to 30 seconds

Technical Skills

Programming Languages: C/C++, Java, MATLAB, Python, CSS
Developer Tools: Git, AWS, Azure DevOps, IntelliJ, Android Studio, Postman