PETER KIM

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EDUCATION

Wayne State University   **Graduation: December 2026**
Honors Bachelor of Science in Electrical and Computer Engineering   *Detroit, MI*
Minor in Computer Science and Mathematics   *GPA: 4.00/4.00*

EXPERIENCE

Engineering Capstone Project | GitHub | *Arduino, 3D Printing, Computer Vision*   **September 2024 – May 2024**
Designer, Engineer, Programmer   *Canton, MI*
- Developed an automated snowplow model capable of navigating a 3ft x 3ft area by programming and wiring an Arduino and designing a 3D-printed chassis.
- Achieved a significant improvement in data transmission speed by implementing MQTT over Wi-Fi, resulting in a rate of 6 MB/s which represents a 2457% increase in performance compared 250 KB/s obtained with an NRF module.
- Detected April Tags with an 85% detection rate during optimal runs using a Raspberry Pi and camera.

Plymouth District Library   **August 2023 – August 2024**
Internship   *Plymouth, MI*
- Managed lab equipment, including 3D printers, while assisting patrons with software such as Fusion 360.
- Developed a Problem Bank website, leveraging JavaScript to store data on Microsoft Excel, which streamlined the process for users to access and solve programming problems, resulting in improved user engagement and satisfaction.
- Contributed to the successful execution of library programs for the lab, enhancing community engagement.

PROJECTS

Hand Gesture Race Car Game | GitHub | *PixiJS, Google MediaPipe, Express.js* | Hack Dearborn 3   **October 2024**
- Developed a race car simulation with gesture-based control via webcam, demonstrating skills in sensor data processing and real-time control relevant to embedded systems and automation.
- Achieved over 90% accuracy in hand gesture recognition using Google MediaPipe, optimizing data handling for responsive, low-latency control suitable for hardware applications.

Decimal to IEEE 754 Converter | GitHub | *Flask, Gunicorn, Heroku*   **September 2024**
- Developed a Flask web app to convert decimal numbers to IEEE 754 floating-point format with up to 256-bit precision, optimizing accuracy for high-precision engineering computations.
- Integrated user authentication and designed a user-friendly UI for seamless management of conversion history, catering to precision-demanding engineering tasks

3D Math Rendering Software | GitHub | *C++, SFML*   **April 2024**
- Created a 3D rendering tool using SFML to visualize complex mathematical functions, handling up to 9 billion points for high-precision engineering applications.
- Implemented dynamic camera controls using linear transformations to enhance data visualization and interactivity in technical environments.

Missile Pathfinding Simulation | GitHub | *C++, SFML*   **March 2024**
- Developed a missile pathfinding simulation using ray marching and pursuit curve algorithms, achieving an 88% interception rate across 100 trials with obstacles.
- Implemented an efficient hit detection system with O(nh) time complexity using the Jarvis March method for optimal performance in dynamic environments.

ORGANIZATIONS

Wayne State Robotics   *October 2024 - Present*
Society of Computer Developers - Computer Science Club at Wayne State University   *September 2024 - Present*
Institute of Electrical and Electronics Engineers - ECE Club at Wayne State University   *September 2024 - Present*
Filipino Society at Wayne State University   *September 2024 - Present*
Irvin D. Reid Honors College at Wayne State University   *August 2024 – Present*

SKILLS & ASSETS

Programming Languages: MATLAB, C & C++, Python, JavaScript, Java, HTML5/CSS3
Technical Skills: Digital Circuit Design, AutoCAD, Microprocessor and Microcontroller Architecture, ROS2, Git/GitHub, Raspberry Pi, Arduino, Combinatorial Logic, Memory and Data Storage Systems

November 13th, 2024