JIN WOOK SHIN

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EDUCATION

University of Michigan - College of Engineering **Ann Arbor, MI**
B.S.E. Computer Engineering *Expected April 2027*

- GPA: **4.0**
- Relevant Course Highlights: Discrete Math, Programming & Data Structures, Robotics Mechanisms, Computer Organization, Data Structures & Algorithms, Linear Algebra, Electronic Circuit, Logic Design, Machine Learning, Signals & Systems, Embedded System Design, Computer Vision
- Awards: James B. Angell Scholar, William J. Branstrom Freshman Prize

EXTRACURRICULAR ACTIVITIES

Strategy & Computer Vision Team, WolverBot Kickers *August 2023 – Present*

- Implemented real-time multi-agent A* pathfinding algorithm in C++ for soccer-playing robots competing in the dynamic environment, optimizing individual agent paths by actively processing opponents' positions and desired robot destinations, significantly enhancing route calculation speed, responsiveness, and overall team coordination
- Developed and trained YOLO-based computer vision model on 1,000+ labeled images for real-time soccer ball detection and player robot classification, achieving over 96% mean average precision (mAP) at 30+ FPS

Strategy Division, UM Solar Car *August 2023 – March 2024*

- Designed race simulation program analyzing input data including aerodynamic drag, steady state speed, and road conditions with active differential system, optimizing energy consumption and speed efficiency by 5 percent
- Worked on Machine Learning Optimizer project by developing Ant Colony Optimization algorithm to simulate and produce the most efficient speed incorporated with environmental and kinematic factors for sectors of the race

PROFESSIONAL EXPERIENCE

High School Intern, Qeexo *Summer 2022*

- Created a machine learning demonstration and published an instruction blog of the industrial application of Qeexo's AutoML software, incorporating algorithms such as XGBoost, CNN, and support vector machine
- Developed automation software for converting accelerometer and gyroscope data into labeled data for machine learning training using Fourier transform and Mel-Frequency Cepstral Coefficients for motor anomaly detection in elevator actuators, reducing data collection time by 72% and eliminating error cases by 29%

PROJECTS

On Time Every Time *January 2025 – February 2025*

- Designed and deployed a real-time bus tracking web application using Flask, JavaScript, and the University of Michigan's MBus API, providing dynamic predictions of bus arrival times to improve commuter experience
- Built and integrated an ESP32-based standalone hardware device, enabling users to conveniently access live bus arrival data without relying on smartphones or external applications

Pseudo CD Player *July 2024*

- Built a device that plays the corresponding CD album on Spotify when the RFID tag of the CD is scanned
- Developed a supplementary code to authorize and refresh tokens to use Spotify API automatically

LC2K CPU *June 2024*

- Programmed fully functional LC2K CPU simulator and assembler in C with a multi-cycle pipeline architecture, accurately handling instruction decoding, assembly-to-machine code translation, and execution
- Implemented and synthesized a single-cycle LC2K ISA processor in Verilog using iVerilog and Gowin EDA, validated functionality through VCD waveform analysis, and successfully deployed onto a Tang Nano 20K FPGA

Bark Detector *June 2024 - July 2024*

- Developed and trained TensorFlow model leveraging audio preprocessing techniques, including Fast Fourier Transform and Mel-Frequency Cepstral Coefficients, to accurately detect dog barks amidst household noises
- Deployed a lightweight TensorFlow Lite model onto Arduino 33 BLE Sense microcontroller, building embedded device capable of autonomously identifying barking events and triggering real-time calming command

ADDITIONAL ACTIVITIES

- **EECS 545 (Machine Learning) Grader** *January 2025 – Present*
- **Korean International Student Association, Vice President** *August 2023 – Present*
- **USA Coding Olympiad, Platinum Division** *April 2022*

SKILLS

Languages: C/C++, Python, Verilog, Assembly, Java, HTML, CSS, Javascript, NetLogo
Skills/Framework: ML (TensorFlow, PyTorch, Keras, TinyML), OpenCV, YOLO, Flask, ROS2, soldering, PCB design