Min Kyu Kim

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EDUCATION

University of Michigan - Ann Arbor   May 2026
M.S. Robotics

University of Illinois at Urbana-Champaign   May 2024
B.S. Mechanical Engineering | Minor in Computer Science   GPA: 3.93/4.0

EXPERIENCE

BIRDS Lab - Ann Arbor, MI   Sep 2024 – Current
Research Assistant
- Development of control algorithms for a hexapod robot, aimed at optimizing start-climbing efficiency
- Utilizing existing IR, IMU, and time-of-flight sensors to collect data and develop pose estimation
- Apply Homography transformation to April Tag detections for state estimation of the robot

Kinetic Intelligence Machines LAB - Champaign, IL   Jan 2023 – May 2024
Research Assistant
- Collected motor and sensory data using ROS in C++ for a biped robot, streamlining the data collection process
- Processed OptiTrack Motion Capture data with Matlab, improving the efficiency of data analysis
- Trained neural network to map robot position to structural deformation using PyTorch
- Debugged code to optimize rigid body pose extraction, enhancing system integration

Hinetics LLC - Champaign, IL   Aug 2023 – Jan 2024
Mechanical Engineering Intern
- Design and FEA of Kevlar spoke mechanism with Ansys, ensuring structural integrity of high-density motors
- Experimental designs for Kevlar conductance tests using RTD and load cells.
- Designed and manufactured tools for motor assembly, improving assembly efficiency and product quality

Cai Research Group - Champaign, IL   Jan 2023 – Jun 2023
Research Assistant
- Automated sensitivity tests for intelligent textiles using LabView, improving testing quality control
- Built resistance meter using Arduino, ensuring reliable measurements up to 300,000 ohms

PROJECTS

SpotMicro Robot / Jetson Nano   Fall 2024
- Configured Jetson Nano with Ubuntu 20.04 to control the robot's movements
- Integrated ROS2 Foxy to manage motor control and communication between sensors and actuators
- Integrated a2D LiDAR and MPU6050 IMU for environment sensing and state estimation

RX200 Robotic Arm / Intel Realsense Lidar Camera   Fall 2024
- Developed autonomous motion control functionality for 5-DOF robot using ROS2 in Python
- Calibrated camera extrinsic/intrinsic parameters and performed depth/block detection with OpenCV
- Implemented forward/inverse kinematics, and calculated distances between waypoints to optimize speed

Soccer Tracking Analysis   Fall 2023
- Fine-tuned YOLOv8 with ~2000 custom-labeled images for Object Detection of soccer players and ball
- Applied HSV color filtering to distinguish uniforms, enabling ball possession analysis

CRS Robot Arms Control   Spring 2023
- Implemented PID control and inverse dynamics joint control for 3-DOF robot arm in C
- Applied position/impedance control to automate arm movements, achieving efficient task performance

LEADERSHIP

Data Science and Artificial Intelligence Society (DAIS) - UIUC   Aug 2022 – May 2024
President
- Conducted weekly meetings with ~25 students, focused on machine learning and data science projects
- Collaborated with board members to design workshops, providing direction for team-based learning

SKILLS

Hardware: SolidWorks / Autodesk Inventor / Ansys / FEA / 3D Printing / Arduino / LabView / Engineering Drawings
Software: Python / C++ / ROS / R Studio / OpenCV / Matlab / Simulink / Signal Processing / Linux