William (Will) Kraus
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Education

Carnegie Mellon University — Pittsburgh, PA
Master of Science in Mechanical Engineering - Research — *2025 (expected)*

Pennsylvania State University — State College, PA
Bachelor of Science in Mechanical Engineering, Minor in Engineering Leadership Development — *2023*

Research Experience

Graduate Researcher — September 2023 - Present
Robotic Exploration Lab (REx Lab) at Carnegie Mellon University — *Pittsburgh, PA*
- Collaborating with graduate students to deploy model predictive path integral (MPPI) control on quadruped robot
- Assisting in developing a testing platform for a flexible structure controlled via reaction wheels
- Maintaining hardware on a fleet of quadruped robots for a variety of research applications

Undergraduate Researcher — August 2022 - May 2023
Networked Robotic Systems Lab at Pennsylvania State University — *State College, PA*
- Collaborated with graduate students to integrate A* path planning research in MATLAB to mobile robot and Vicon motion capture setup
- Developed hardware for autonomous robots programmed for defense contractor research project
- Presented refurbished robot fleet on RC car chassis using Arduino microcontrollers and Nvidia Jetson boards alongside refurbished lab space to professors for cooperative research and lab coursework opportunities

Projects

Autonomous Vehicle Test Track Surveillance | *Python, OpenCV* — January 2023 - May 2023
- Led students from Chalmers University and Pennsylvania State University to program a DJI drone in Python to detect fence breaches at AstaZero autonomous vehicle research facility in Sweden
- Guided project development of key software deliverables: view fence from a top-down perspective, identify fence breaches from intrusions, and store video feed for further review
- Presented to industry professionals a drone test video and research poster of project that saves employees from hiking for 2 hours each month
- Awarded Lockheed Martin First Place for Best Project among hundreds of senior Penn State teams

Penn State Robotics Club President | *Manufacturing, Educational Outreach* — August 2021 - May 2023
- Founded 5 foot humanoid dancing robot project utilizing VR technology and ROS2 for cancer charity event
- Spearheaded manufacturing of metal and plastic humanoid parts while coordinating software and hardware teams
- Expanded club from 6 members over pandemic to 60 members working on semester-long Arduino competitions

ACRP National Design Competition | *Device Prototyping, Technical Writing* — January 2020 - May 2020
- Developed a Bluetooth device to help seniors at large airport navigate terminals with analog display and inputs
- Orchestrated field research efforts at a local airport terminal using Human-Centered Design principles
- Awarded Second Place nationwide in Management and Planning category for research paper, commercial video, and preliminary ROI analysis

Work Experience

Engineering Intern (Vibration Analyst) — June 2022 - August 2022
KCF Technologies — *State College, PA*
- Analyzed data to detect root causes of equipment failures in industrial machinery
- Interacted with customers to ensure proper sensor readouts on job site
- Proposed integration plan for integrating sensors on FANUC robots in Ford manufacturing plant into machine health platform by timing vibration sensor collection windows to robot G-code

Skills

Software: Python (Matplotlib, Numpy, OpenCV), MATLAB / Simulink, Webots, C++, Linux
Hardware: 3D Modeling (Fusion360, SolidWorks, Blender, Abaqus), 3D Printers, Mills, Lathes, Soldering
Operations Analysis: Lean Sigma (Yellow Belt), Human-Centered Design, Microsoft Power BI