William (Will) Kraus
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Education

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

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

Research Experience

Graduate Researcher — 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
- Developing a test platform for a flexible structure controlled via reaction wheels with 2 graduate students
- Maintaining hardware on 3 quadruped robots for a variety of research applications

Undergraduate Researcher — 2022-2023
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 an autonomous robot programmed for defense contractor research project
- Presented 5 refurbished robots 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* — 2023
- Led 11 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 3 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 to save 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* — 2021 - 2023
- Founded 5 foot humanoid dancing robot project utilizing VR technology and ROS for cancer charity event
- Spearheaded manufacturing of over 20 metal and plastic humanoid parts with software and hardware teams
- Expanded club from 6 members over pandemic to 60 members working on semester-long robotics competitions

ACRP National Design Competition | *Device Prototyping, Technical Writing* — 2020
- Developed a prototype Bluetooth device to help seniors at airports navigate terminals with analog display
- 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 for over 6 different customers
- 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
3D Modeling and FEA: Autodesk Fusion 360, SolidWorks, Blender, Abaqus
Hardware: Rapid Prototyping, 3D Printers, Mills, Lathes, GD&T, Soldering
Operations Analysis: Lean Sigma (Yellow Belt), Human-Centered Design, Microsoft Power BI