

## William (Will) Kraus

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### EDUCATION

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#### Carnegie Mellon University

*Master of Science in Mechanical Engineering, Concentration in Robotics and Controls*

Pittsburgh, PA

2025 (expected)

#### Pennsylvania State University

*Bachelor of Science in Mechanical Engineering, Minor in Engineering Leadership Development*

State College, PA

2023

### RESEARCH EXPERIENCE

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#### Undergraduate Researcher

*Networked Robotic Systems Lab at Pennsylvania State University*

August 2022 - May 2023

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

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#### Autonomous Vehicle Test Track Surveillance (PSU) | *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 (PSU) | *Manufacturing, Educational Outreach*

August 2021 - May 2023

- Founded full-sized 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

#### Humanoid Robotics Elective (PSU) | *Python, OpenCV, Webots*

January 2023 - May 2023

- Programmed Raspberry Pi-based humanoid robot in Python to complete objectives such as dancing, unstable exercise movements, and face tracking in undergraduate course
- Planned robot movements in Webots and uploaded to physical robot to compare results in stability analysis

#### 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

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#### Engineering Intern (Vibration Analyst)

*KCF Technologies*

June 2022 - August 2022

State College, PA

- Analyzed data to detect root causes of equipment failures in industrial machinery
- 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

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**Software:** Python (Matplotlib, Numpy, OpenCV), MATLAB/Simulink, Webots, C++ (Arduino IDE), Linux

**Hardware:** 3D Modeling (Fusion360, SolidWorks, Blender, Abaqus), 3D Printers, Mills, Lathes, Waterjet, Soldering

**Operations Analysis:** Lean Sigma (Yellow Belt), Human-Centered Design, Microsoft Power BI