Keaton Kraiger

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Education

Pennsylvania State University, PhD in Computer Science & Engineering — Expected 2026
- Advisors: Dr. Yanxi Liu and Dr. Robert T. Collins

Portland State University, BS in Computer Science — June 2020
- Advisor: Dr. Dan Hammerstrom

Technologies

Languages: Python, C, C++, SQL, JavaScript

Software & Frameworks: PyTorch, Tensorflow, OpenCV, Matlab, Vicon Nexus, Mturk, Blender, IsaacSim

Experience

Graduate Research Assistant, Pennsylvania State University – State College, PA — Jan. 2021 – Present
- Designed and deployed a multimodal data collection system integrating ROS2-based RGB-D camera arrays, Meta Project Aria smart glasses, and insole pressure sensors
- Estimated human stability from multimodal data (video, motion capture, and foot pressure)
- Collected, cleaned, and released motion capture, video, and foot pressure dataset of over 60,000 frames
- Performed multimodal action recognition and established classification dataset and benchmark in Python
- Developed class-agnostic object detection method and its downstream application in scene understanding

Head Teaching Assistant, Pennsylvania State University – State College, PA — Aug. 2021 – Dec. 2023
- Lead T.A. for Vision and Language, Computer Vision I & II, and Machine Learning
- Designed and implemented course projects focused on vision, deep learning, and reinforcement learning

Undergraduate Research Assistant, Portland State University – Portland, OR — Dec. 2018 – Jan. 2020
- Developed biologically-inspired algorithms to perform object detection in Python
- Implemented brain-inspired algorithms to detect objects with position and scale invariance

Technical Course Specialist, Portland State University – Portland, OR — Sep. 2017 – June 2020
- Led homework recitation sessions on undergraduate programming assignments and algorithm development

Publications

Estimating Foot Pressure and Stability from Visual Input — To appear, Nov. 2025
Keaton Kraiger, Jingjing Li, Skanda Bharadwaj, Jesse Scott, Yanxi Liu, Robert T. Collins
BMVC 2025 (To appear)

Novel 3D Scene Understanding Applications From Recurrence in a Single Image — Aug. 2023
Shimian Zhang, Skanda Bhara, **Keaton Kraiger**, Yashasvi Asthana, Hong Zhang, Robert T. Collins, Yanxi Liu
arXiv preprint arXiv:2210.07991

Presentations

Learn From Human Eyes: Zero-Shot Recurring Pattern Detection — May 2025
Symmetry 2025 Abstract Track — **Best Oral Presentation Award**
Conference | Slides

Vision to Dynamics: Estimating Stability from Visual Input — Apr. 2024, Feb. 2025
NYC Vision Day [2025] | Poster
NYC Vision Day [2024] | Poster

Humanoid Robots (Real and Simulated) Feb. 2024

Pittsburgh Robotics Network Discovery Day 2024 [Event] | Poster

Additional Experience And Awards

Outstanding Teaching Assistant Award: Recognized by the CSE college for Vision and Language TA

Conference Reviewer: Served as a reviewer for multiple years of WACV, ECCV, and CVPR

Undergraduate Research & Mentoring Program (URMP): Selected to participate in the URMP at Portland State University. Received funding to conduct research with a faculty mentor and training on conducting research

Keywords

Machine Learning/AI: Semi-supervised, self-supervised, language models, applied machine learning, applied deep learning, pretraining
Vision: multimodal data, multimodal learning, Mocap, pose estimation, tracking, counting, simulation
Robotics: reinforcement learning, robot learning, ROS, Blender, IsaacSim, simulation, real-to-sim