Keshav Shankar

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RESEARCH INTERESTS

Human-centered AI, assistive robotics, and machine learning for healthcare. Focused on perception-driven autonomy, alternative control interfaces, and integrated software-hardware systems for rehabilitation and clinical applications.

EDUCATION

Aug 2025 - 2029 exp.
University of Pittsburgh
Ph.D., Electrical and Computer Engineering
Advisors: Dr. Wei Gao, Dr. Dan Ding

Aug 2021 - Apr 2025
University of Pittsburgh
B.S., Computer Engineering
Advisor: Dr. Samuel Dickerson
GPA: 3.64 | Magna Cum Laude | Dean's List

RESEARCH EXPERIENCE

Jan 2025 - Present
Intelligent Systems Lab, *University of Pittsburgh*
Research Assistant (with Dr. Wei Gao)
- Developed a vision-language planning framework (env2robo) using retrieval-augmented generation for high-level robot task sequencing in semi-dynamic assistive environments.
- Evaluating system in simulation for clinical deployment using real-time robot state and 3D environment context.

Sep 2023 - Present
Human Engineering Research Lab, *University of Pittsburgh*
Research Assistant (with Dr. Dan Ding)
- Built a modular control stack for mobile assistive manipulation, integrating mapping, localization, sensor fusion, and alternative control modalities (IMU, gaze).
- Designed smart home research devices (ESP32/ESP-NOW) and developed a PyQt-based interface for robotic arm testing in home environments.

Oct 2021 - Apr 2022
ENIGMA Lab, *University of Pittsburgh*
Research Trainee (with Dr. Rajkumar Kubendran)
- Explored neuromorphic vision and gesture recognition using event-based sensing and temporal contrast video.

PROFESSIONAL EXPERIENCE

May 2024 - Aug 2024
GE Healthcare, Milwaukee, WI
Software Engineer Intern
- Designed and deployed a real-time audio suppression system for MRI intercoms

using custom LSTM-based deep learning models, improving speech clarity by 60%.
- Delivered production-ready software for Linux-based medical devices, approved for integration into future MRI systems.

May 2023 - Aug 2023 **SMS Group, Inc.**, Pittsburgh, PA
Software Engineer Intern
- Developed full-stack control software for PLC-driven steel manufacturing systems, with a focus on backend services and reliability in industrial environments.

May 2022 - Aug 2022 **FireFly Technologies, Inc.**, Allentown, PA
Computer Engineer Intern
- Built embedded automation systems using PLCs and structured text; accelerated hardware testing by 60% with a custom validation device.
- Prototyped a reinforcement learning-based horticulture control system for adaptive environmental regulation.

SELECTED TECHNICAL PROJECTS

Apr 2025 **DickerBot**
- Created a low-cost, Wi-Fi-controlled ESP32 robot for robotics education with real-time sensor streaming and Python-based control. Developed custom PCBs, a PyPI library, and a WebSocket setup tool for seamless classroom deployment.

Dec 2024 **ArmSense**
- Designed an 8-channel sEMG armband for gesture-based control of prosthetic hands. Built custom acquisition hardware and implemented a meta-learning neural classifier for robust, real-time control and user personalization.

PRESENTATIONS

Apr 2022 **First Year Engineering Research Conference**, *Swanson School of Engineering*
Machine Learning Techniques for Lower-limb Myoelectric Prosthetics
- Presented a literature review on EMG signal processing and deep learning techniques for intelligent prosthetic control.

TECHNICAL SKILLS

Python, C++, MATLAB, Java, C#, C, VHDL; Hugging Face, TensorFlow, PyTorch, OpenCV, NumPy, Scikit-learn; Git, CI/CD, Linux, Docker, VS/VS Code; Microcontrollers, PCB Design, CAD, PLCs, FPGAs

LEADERSHIP

Dec 2021 - Dec 2024 **Institute of Electrical and Electronics Engineers**, *University of Pittsburgh*
President
- Led all operations for a 100+ member student chapter, including strategic planning, fundraising, partnerships, and event execution.

Nov 2021 - Jul 2023 **Design Hub**, *University of Pittsburgh*
Workshops Head
- Organized and led biomedical tech workshops on modern medical systems.