

# Keshav Shankar

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## RESEARCH INTERESTS

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Human-Robot Interaction, Assistive Robotics, AI for Healthcare

## EDUCATION

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Aug 2025 - 2029 exp. **University of Pittsburgh**  
Ph.D., Electrical and Computer Engineering  
Advisors: Dr. Wei Gao, Dr. Dan Ding  
GPA: 4.0

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

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Jan 2025 - Present **Intelligent Systems Lab, University of Pittsburgh**  
Research Assistant (with Dr. Wei Gao)

- Investigating LLM/VLM reasoning for human-robot interaction with paralysis users.
- Developed a vision-language planning framework (env2robo) using retrieval-augmented generation for high-level robot task sequencing in semi-dynamic assistive environments.

Sep 2023 - Aug 2025 **Human Engineering Research Lab, University of Pittsburgh**  
Research Assistant (with Dr. Dan Ding)

- Built a modular control stack for mobile assistive robot 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.

## SELECTED PUBLICATIONS

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Mar 2026 **Shankar, K.,** Ding, D., & Gao, W. (2026). Low-Burden LLM-Based Preference Learning: Personalizing Assistive Robots from Natural Language Feedback for Users with Paralysis. arXiv preprint arXiv:2604.01463. In *Proceedings of the IEEE RO-MAN 2026*.  
<https://doi.org/10.48550/arXiv.2604.01463>

## PROFESSIONAL EXPERIENCE

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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

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- 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

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- 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

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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

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- 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.