Maansa Krovvidi

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RESEARCH OVERVIEW

My research interests are focused on the Internet of Things (IoT), wearable sensing, sensor fusion, and cyber-physical systems. I am particularly interested in developing novel sensing techniques and end-to-end systems that address real-world challenges in healthcare, wellness, and environmental monitoring. This includes work on activity recognition, posture correction, and resource intake tracking. Moving forward, my goal is to design sustainable, energy-efficient sensing solutions that leverage non-traditional energy sources and operate reliably in real-world environments.

EDUCATION

- **University of California, Santa Cruz** — *Sept 2025 - May 2030*
  PhD in Electrical and Computer Engineering - Advisor: Prof. Colleen Josephson — California, USA
  - Research Interests: Wireless sensing, Internet of things(IoT), Energy-efficient systems, Wireless sensor networks
  - Scholarships: UC Regents Scholarship recipient (Fall 2025).

- **Carnegie Mellon University** — *Aug 2022 - May 2024*
  Master of Science in Mobile and IoT Engineering (MSMITE) - Advisor: Prof. Quinn Jacobson — California, USA
  - Thesis: Activity Detection using RF and Sensor Data Fusion
  - GPA: 3.76/4.00

- **Chaitanya Bharathi Institute of Technology** — *Aug 2017 - Aug 2021*
  Bachelor of Engineering in Electronics and Communication Engineering - Advisor: Prof. Sai Krishna Kondoju — Hyderabad, India
  - Thesis: Performance Analysis of ZF-SIC and MMSE Equalizers for MIMO Systems in the Presence of Alpha(α)-Mu(μ) Fading Channel
  - Grade: 8.49/10.00

RESEARCH EXPERIENCE

- **Bosch & Carnegie Mellon University** — *Sept 2023 - Aug 2024*
  Wireless AI Student Researcher — Sunnyvale, CA, USA
  - Enhanced a multimodal transformer by incorporating new features for precisely classifying 14 different human activities, achieving a 30% reduction in activity misprediction by leveraging both IMU and RF data.
  - Leveraged existing RF data from BLE protocols for fine-grain relative positioning to improve the precision of human biomechanical motion tracking.

EXPERIENCE

- **Zappix** — *Feb 2025 - June 2025*
  R&D Intern — Boston, MA, USA
  - Developed a Retrieval-Augmented Generation (RAG) chatbot using LangChain, integrating web-scraped data, ChromaDB for vector search, and Streamlit for a functional UI.
  - Designed and integrated advanced prompt engineering techniques with context-aware retrieval, enhancing the chatbot's ability to generate accurate and coherent responses across diverse queries.

- **Rite Aid** — *Aug 2024 - Feb 2025*
  Data Analyst — Remote, USA
  - Worked on a custom AI copilot to enhance response accuracy by analyzing security risks in healthcare, using Anomali ThreatStream to identify compromised IPs.

- **Qualcomm** — *May 2023 - Aug 2023*
  IoT Systems Intern — San Diego, CA, USA
  - Designed an adaptive flexible scheduler to optimize process allocation on Qualcomm's AI and 5G-enabled RB5 platform to maximize per-core utilization while meeting power and 5ms latency requirements for an IoT-automated smart grid system.
  - Improved the efficiency of resource allocation across three gold cores by implementing dynamic scheduling while taking the per-core DMIPs into account, leaving a 25% margin in RTLinux.

PUBLICATIONS
C=Conference, J=Journal, P=Patent, S=In Submission, T=Thesis

[C.1] **Maansa Krovvidi**, Zhiyi Shi, Sushanta Rakshit, Anagha Ravi Shankara, Vivek Jain, Quinn Jacobson, "Activity Recognition using RF and IMU Sensor Data Fusion," In Proceedings of the 3rd International Workshop on Human-Centered Sensing, Modeling, and Intelligent Systems (HumanSys '25).Association for Computing Machinery, New York, NY, USA, 104–109.

[T.1] **Maansa Krovvidi**, "Activity Detection Using RF and Sensor Data Fusion," M.S. thesis, Dept. of Information Networking Institute, Carnegie Mellon University, Mountain View, CA, 2024.

ACADEMIC PROJECTS

- **Wearable Sensor-Based Meal Tracker** *Jan 2024 - May 2024*
  Carnegie Mellon University Mountain View, CA, USA
  ○ Modified the Movesense device firmware to interpret hand gesture data for monitoring drinking, snacking, and other daily activities by utilizing Nordic Semiconductor's nRF52832 controller.

- **Practicum Project: Human Activity Recognition through Multi-Sensor Data Fusion** *Sept 2023 - Dec 2023*
  Carnegie Mellon University Mountain View, CA, USA, USA
  ○ Developed a Proof of Concept (PoC) for detecting 7 physical activities using 4 on-body BLE nodes by integrating additional sensing modalities such as RSSI and IMU.
  ○ Demonstrated that integration of additional sensing modalities resulted in improved performance in complex movements such as squats (100% accuracy) and static poses like Warrior Pose (100% accuracy).

- **PostURight: IoT Wellness App with Posture Monitoring** *Jan 2023 - May 2023*
  Carnegie Mellon University Pittsburgh, PA, USA
  ○ Created a hybrid IoT application to monitor back posture in real-time, using wearable sensors and interactive UI prompts developed with Flutter and Figma to enhance human physical well-being.
  ○ Conducted a comprehensive survey with 63 participants to evaluate security and usability risks linked to the wearable sensor, guiding personalized modifications to enhance application security via the Firebase database.

- **Smart Hand Gesture Recognition using Vision Transformer** *Sept 2022 - Dec 2022*
  Carnegie Mellon University Pittsburgh, PA, USA
  ○ Devised a robust ML algorithm for sign language-to-text translation using a web camera, fostering communication for speech-impaired individuals. Analyzed model accuracy for both the vision transformer and VGG-18 CNN models, achieving a test accuracy of 98.45% with a best cross-entropy loss of 0.037.

- **Performance Analysis of MIMO Systems** *Aug 2020 - May 2021*
  Chaitanya Bharathi Institute of Technology Hyderabad, TS, India
  ○ Successfully implemented a cost-effective and less complex method to minimize interference in a MIMO system through QPSK modulation, incorporating (α, μ) channel parameters. Achieved a 60% reduction in BER from ZF-SIC to MMSE.

SKILLS

- **Programming Languages:** C/C++, Python, R, MATLAB, LATEX, Java, XML, MATLAB
- **Software and Analytical tools:** Scikit-Learn, NumPy, Pandas, PyTorch, TensorFlow, Matplotlib, Wireshark
- **App Development:** Figma, Flutter, Kotlin
- **IoT systems and protocols:** Linux, Windows, RTOS, Arduino, BLE, Firebase database, TCP/IP, BGP, OSPF

HONORS AND AWARDS

- **Best Team Project Award Winner** *April 2023*
  School of Computer Science, Carnegie Mellon University
  ○ Received the best project award for the project titled "PostuRight" in the course Mobile and IoT Computing Services (Spring 2023) conducted by Prof. Norman Sadeh.

TEACHING & MENTORSHIP EXPERIENCE

- **Mentor** *Sept 2024 - Present*
  INI Mentorship program, Carnegie Mellon University
  ○ Mentoring three students in the CMU Universe network, providing one-on-one guidance on course selection, networking through conferences, and interview preparation.

- **Teaching Assistant** *Jan 2023 - May 2023*
  Information Networking Institute, Carnegie Mellon University
  ○ Mentored four teams on customer preference modeling and acted as a liaison between the professor and students to clarify course material.
  ○ Offered office hours for one-on-one student support, addressing individual queries, guiding project work, and facilitating a deeper understanding of topics discussed in class.

COMMUNITY ENGAGEMENT AND OUTREACH

- **Judge** *Nov 2025*
  Reboot The Earth Hackathon, UC Santa Cruz
  ○ Served as a first-round judge at the hackathon, evaluating 5 startup pitches against defined scoring criteria to help select finalists.

PROFESSIONAL MEMBERSHIPS

- **Women in Cybersecurity**, Membership ID: 71350942 — *March 2023 - Present*
- **AnitaB.org**, Membership ID: maansa.madhuri — *Sept 2023 - Present*

CERTIFICATIONS

- **Cybersecurity Essentials, Cisco Networking Academy** — *Aug 2021*
- **Data Science: Visualization, HarvardX** — *June 2020*
- **Data Science: R, HarvardX** — *May 2020*
- **Machine Learning, Stanford University** — *May 2020*

HOBBIES

- Music: Indian Classical, Baking, Hiking, Photography: Landscape and Macro, Sports: Badminton