Phone: (479)282-6433
Abhinav Komanduri
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Research Interests

Embedded systems; Wearable and Ubiquitous systems; Internet of Things (IoT); Embedded Cybersecurity; Machine Learning; Assistive Technology Design; Reconfigurable Computing

Education

- **University of Arkansas** — Fayetteville, AR
  B.S. in Electrical Engineering — *August 2022-Present*
  - GPA: 3.93
  - Minor in Mathematics
- **University of Oxford, Oriel College** — Oxford, UK
  Study Abroad — *Summer 2023*
  - Completed 3 US Credits/6 ECTS course on Quantum Computing that included 45 total hours of workshops, lectures, projects, and seminars.

Research Experience

- **Inan Research Lab** — Atlanta, GA
  SURE Program, Georgia Institute of Technology — *May 2025-present*
  - Principal Investigator: Omer T. Inan
  - Working to develop deep learning models for prediction of blood volume decomposition status (BVDS) based on ECG, SCG, and PPG signals from pig hearts.
  - Reading scientific literature, understanding the context of a research question, using a deep learning framework to code, train, validate, and test an AI model with minor supervision, and will interpret and present my results in an oral and written form.
  - Attending seminars and will present poster at program final research symposium.
- **Applied Embedded Systems and IoT Research Lab (ÆSIR)** — Fayetteville, AR
  Undergraduate Research Assistant, University of Arkansas — *August 2023-present*
  - Principal Investigator: Alexander H. Nelson
  - Conducted research in embedded systems and hardware security. Focus areas include capacitive sensor arrays, fault injection on SRAM PUFs, and secure microcontroller architectures.
  - Designed and tested custom PCBs, implemented embedded C firmware across MSP430 and ESP32 platforms, and utilized FPGA-based acceleration for real-time data processing.
  - Contributed to peer-reviewed conference publications; awarded funding through the Honors College Research Grant and Goldwater Scholarship.
- **GRAPES Research Group** — Fayetteville, AR
  Honors Research Experience, University of Arkansas — *August 2022-May 2023*
  - Principal Investigator: Roy A. McCann
  - Developed a wireless circuit utilizing an ATMega328 microprocessor to measure Electric and Magnet Fields and Temperatures of power lines, enabling cost-effective monitoring for local power grids and relaying data to a centralized database. Awarded Best Poster prize at the 2023 Honors Research Symposium

Peer-reviewed Publications

P2: **A. Komanduri** and A. Nelson, "Power PUFs: Strengthening SRAM PUFs Against Fault Injection on Low-Cost IoT Devices," 2025 IEEE International Conference on Pervasive Computing and Communications Work-in-Progress Session (PerCom WiP) (To Appear)

P1: **A. Komanduri** and A. Nelson, "Daisy-Chaining Embedded Processors for Enhanced Capacitive Sensor Array Resolution," 2024 IEEE Green Technologies Conference (GreenTech), Springdale, AR, USA, 2024, pp. 166-167, doi: 10.1109/GreenTech58819.2024.10520578.

Presentations and Posters

T5: "Predicting Hemodynamic Blood Volume Loss based on Multi-Channel Physiological Signals using Deep Learning", 2025 Georgia Tech SURE Research Symposium, Atlanta, GA, July 2025. (presentation + poster)

T4: "Power PUFs: Strengthening SRAM PUFs Against Fault Injection on Low-Cost IoT Devices", 2025 IEEE International Conference on Pervasive Computing and Communications (PerCom), Washington, D.C. March 2025. (poster)

T3: "Daisy-Chaining Embedded Processors for Enhanced Capacitive Sensor Array Resolution", 2024 IEEE Green Technologies Conference (GreenTech), Springdale, AR. April 2024. (poster)

T2: "An Analysis of a Finite Element Based Framework for Capacitive Sensing Simulations", 85th Annual Meeting of OK-AR MAA Section, Fayetteville, AR. April 2024. (presentation)

T1: "Designing Embedded Systems to Monitor EMFs and Power Grids in Real-Time", 15th Annual Honors Engineering Symposium, Fayetteville, AR. April 2022. (presentation + poster)

Selected Honors and Awards

Barry Goldwater Scholarship Mar. 2025

Honors College Travel Grant Feb. 2025

Honors College Research Grants Jan. 2024/25

Best Poster Award, Honors Research Symposium Apr. 2023

Honors College Fellowship Aug. 2022

Arkansas Governor's Distinguished Scholarship Aug. 2022

Professional Experience

- **Wolfspeed Inc.** Fayetteville, AR
  Power Modules Backend Operations Intern *May 2024-August 2024*
  - Worked with Power Modules Test Engineering team to design high reliability modules for electrical testing on Wolfspeed Power Modules to run a Gage R&R study.
  - Analyzed past module test data using JMP to compile module failure trends.
  - Coordinated with offshore assembly and test sites to streamline the flow of incoming test data and created dashboards using PowerBI.
- **University of Arkansas, Mathematical Sciences** Fayetteville, AR
  Grading Assistant *August 2023-May 2024*
  - Graded homeworks, quizzes, and exams for MATH 1203 (College Algebra) and MATH 2584 (Elementary Differential Equations). Interacted with course instructors to create rubrics and a fair grading scale.

Selected Leadership and Service

- **UARK IEEE Chapter**
  President *January 2024 – Present*
  - Organize student events for Electrical Engineering and Computer Science students to promote inclusion and give students networking opportunities
  - Founder and director of UARK's first student-led, student-organized research conference made for the students, by the students
- **REC Foundation/VIQC Robotics**
  Head Referee *October 2022-Present*
  - Refereed at local middle school robotics competitions and managed hundreds of matches, assigned scores, and made difficult decisions.