

Shashwat Sinha

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EDUCATION

University of Illinois Chicago **May 2026**
Master of Science in Electrical and Computer Engineering *GPA: 4.0/4.0*

University of Illinois Chicago **May 2024**
Bachelor of Science in Computer Engineering *Computer and Networked Systems Track*

Relevant Coursework: ECE466 Advanced Computer Architecture | ECE469 HDL | ECE415 Computer Vision | ECE407 Pattern Recognition | ECE568 Adv. Microprocessor Architecture and Design | ECE559 Neural Networks | ECE594 Hardware Software Co-Design for ML systems

EXPERIENCE

Apple - HVE Anomaly Detection System **Feb 2025 – Aug 2025**
Apple Park, Cupertino, CA

- Built a scalable anomaly-detection pipeline for Mac hardware validation, automating failure identification across 150,000+ test runs in collaboration with the AIML team.
- Engineered a feature-extraction system achieving 99.9% data compression, enabling efficient root-cause analysis of hardware test failures.
- Implemented detection models (distance-based, Isolation Forests, VAE) with explainable outputs to surface hardware defects for validation engineers.

Graduate Research Assistant **Jun 2024 - Present**
UIC, Chicago, IL

- Architected and prototyped wearable health-monitoring devices end-to-end — selecting biosensors (heart rate, temperature, respiration), designing circuits, writing firmware, and building companion software for real-time data acquisition.
- Coordinated a cross-departmental research effort across three labs (Dr. Vital – ECE, Dr. Hampton-Marcell – Marcell Lab, Dr. Walker – Walker Lab), driving hardware and software deliverables from concept through working prototypes; preparing two publications.

Fastenal Internship - AI Assistance System **May 2023 – Aug 2023**
Winona, MN

- Built and deployed an AI-powered voice assistant in Python, integrating speech-to-text and LLM inference for warehouse automation; stress-tested under real warehouse conditions, validating latency and reliability for production use.

Undergraduate Research Assistant **Jan 2024 - May 2024**
UIC, Chicago, IL

- Trained and evaluated classification models on wearable biosensor data (heart rate, SpO₂, temperature) for early health-anomaly detection under Dr. Dieff Vital.

Undergraduate TA – ECE 366 Computer Organization **Aug 2022 - Dec 2022**
UIC, Chicago, IL

- Led weekly office hours for ~50 students on MIPS ISA, pipelining, and cache design under Dr. Wenjing Rao.

PROJECT WORK

Low-Cost Portable VO₂ Max Mask | M.S. Thesis **Jun 2024 – Present**

- CAD-modeled and 3D-printed a modular enclosure with a custom Venturi tube; designed and hand-soldered the sensor circuit (ESP32, O₂, CO₂, differential pressure on I2C bus) — delivering a full prototype at ~\$222 BOM (<1% of commercial metabolic carts).
- Wrote embedded C++ firmware for real-time sensor polling and dual-rate BLE streaming; built a Python data pipeline for breath detection, airflow computation, and metabolic rate calculation.
- Created sensor verification and system validation test plans; executed controlled experiments to characterize accuracy; preparing two publications and an IRB-approved human subject study.

SymptoSeek Assistant | Research Project **Aug 2023 – May 2024**

- Assembled a Raspberry Pi-based diagnostic device — wired biosensor hardware, wrote data-acquisition scripts, and integrated LLM and deep learning models to deliver real-time symptom analysis.

TECHNICAL SKILLS

- **Programming Languages:** Python (proficient), C/C++ (extensive Arduino experience), Swift, Java, ARMv7, MIPS & RISC Assembly, HTML, CSS, SQL
- **Frameworks & Tools:** Pytorch, NumPy, Pandas, CUDA, Arduino IDE, Xcode, iOS SDK, Flask, Selenium, APIs/REST APIs, Git, Elasticsearch, Azure, Azure OpenAI, Linux