

Shashwat Sinha

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EDUCATION

University of Illinois Chicago

Master of Science in Electrical and Computer Engineering

May 2026

GPA: 4.0/4.0

University of Illinois Chicago

Bachelor of Science in Computer Engineering

May 2024

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 Internship - Anomaly Detection System

Feb 2025 – Aug 2025

Apple Park, Cupertino, CA

- Built automated **feature-extraction pipeline** processing **150,000+ test runs** with **99.9% data compression** per cycle.
- Developed three **anomaly-detection** models: a **statistical distance model** (18 metrics including Mahalanobis, Euclidean, cosine), **Isolation Forests**, and **Variational Autoencoders**, surfacing the most anomalous test keys for engineers to investigate.
- Delivered end-to-end pipeline for Mac hardware validation: raw data in, ranked anomalies out, enabling automated root-cause analysis.

Graduate Research Assistant

Jun 2024 - Present

UIC, Chicago, IL

- Architected **2 wearable health-monitoring prototypes** end-to-end: biosensor selection, circuit design, firmware, and companion software streaming **5 sensor channels at 10 Hz**.
- Coordinated a cross-departmental research effort across **three labs** (Dr. Vital | ECE, Dr. Hampton-Marcell | Marcell Lab, Dr. Walker | Walker Lab), delivering prototypes now adopted for upcoming large-scale clinical studies; preparing **two publications**.

Low-Cost Portable VO₂ Max Mask | M.S. Thesis | Two Papers Targeting IEEE Sensors & EMBC

Jun 2024 – Present

UIC, Chicago, IL

- CAD-modeled enclosure with custom Venturi tube; designed and soldered sensor circuit (ESP32, O₂, CO₂, differential pressure via I2C), **~\$222 BOM** (<1% of commercial systems).
- 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 an **IRB-approved** human subject study.

Fastenal Internship - AI Assistance System

May 2023 – Aug 2023

Winona, MN

- Built and deployed **AI-powered voice assistant** in Python (speech-to-text, LLM inference) for warehouse automation; validated **latency and reliability** under real conditions for production use.

Undergraduate Research & Teaching Assistant

Aug 2022 - May 2024

UIC, Chicago, IL

- Trained and evaluated **Random Forest and SVM classifiers** (scikit-learn) on wearable biosensor data (heart rate, SpO₂, temperature) for early **health-anomaly detection** under Dr. Dieff Vital.
- Led weekly office hours for ~50 students on MIPS ISA, pipelining, and cache design under Dr. Wenjing Rao (ECE 366).

SymptoSeek Assistant | Research Project

Aug 2023 – May 2024

- Assembled a Raspberry Pi-based diagnostic device by wiring biosensor hardware, writing data-acquisition scripts, and integrating **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, scikit-learn, Arduino IDE, Flask, REST APIs, Git, ElasticSearch, Azure, Linux