

Shaurya Kumar

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Education

University of Delaware

Newark, DE

Honors Bachelor of Science, Computer Science and Applied Mathematics, **GPA: 4.0**

Expected: May 2027

- Trustee Scholar, 2023-2024 Dean's List
- Relevant Coursework:** Discrete Maths I & II, Systems Programming, Computer Science II (Object Oriented Programming), Calculus III, Data Structures, Machine Organization & Assembly Language, Probability Theory & Simulation, Software Engineering I, Automata Theory, Linear Algebra
- Clubs/Activities:** Competitive Programming Club, Association of Computing Machinery, Gujarat Samaj, Honors Adventuring Club, Intramural Soccer

Experience

Undergraduate AI Researcher

May 2024 – August 2024

University of Delaware

Newark, DE

- Engineered a medical AI tool leveraging **Retrieval Augmented Generation (RAG)** to transform user input into accurate patient vignettes, effectively reducing bias in large language models and improving diagnostic accuracy by **25%**.
- Implemented advanced text summarization metrics (**BLEU**, **ROUGE**) to assess the correlation between patient context and generated vignettes.
- Optimized the LLM evaluation process by integrating effective metrics (**GPTScore**, **G-Eval**, **ARES**), resulting in a significant increase in assessment precision.
- Presented research findings at the UD Summer Research Symposium, demonstrating significant improvements in the accuracy and reliability of patient vignette generation through bias mitigation in LLMs.
- Utilized **Pandas**, **PyTorch**, **Python**, **NLTK**, and **BLEUScore** to develop and evaluate the project, enhancing data processing speed.

Research and Engineering Intern

June 2022 – August 2022

Delaware State University

Dover, DE

- Published and presented research at a symposium on the improved accessibility and accuracy of air monitors, demonstrating the prototype's performance with an accuracy rate of **82%** compared to commercial monitors.
- Developed a prototype of a low-cost, efficient, and portable air monitoring station that could display accurate real-time particulate matter, wind speed, temperature, and humidity profiles through a mapping mechanism.
- Utilized **Python** and a **Raspberry Pi** to configure an **OPC-N3** optical sensor to output particulate matter readings with user-editable features.
- Developed a temperature, wind speed, and humidity gauge in **C++** on an **Arduino Uno** using RevP and AM2315 sensors.
- Integrated visualized longitude and latitude data with **MATLAB** and an integrated GPS module.

Projects

Wall Of Support | HTML, CSS, JavaScript, Google Firebase, Google Natural Language & Perspective APIs

October 2024

- Developed a web platform promoting global positivity by enabling users to post and share supportive messages, fostering a community of encouragement.
- Implemented sentiment analysis and toxicity detection using **Google Natural Language API** and **Google Perspective API** to ensure content positivity and reduce harmful messages.
- Utilized **Google Firebase** for real-time database operations and user authentication, handling **500+ API requests** across multiple services with an average latency of **34 ms** and **low error rates**.
- Received and processed messages from users in **10+ countries**, promoting global engagement and community support. (Wall of Support)

SurgiScan | Python, OpenCV, YOLO, PyTorch, NumPy, RoboFlow, and YAML

September 2024

- Tackled the issue of **4,000+ surgical tools** left in patients yearly in the U.S., reducing health risks and litigation costs.
- Trained **YOLOv5 model** on a manually created dataset of over **300+ images** of over to detect and track surgical tools in real-time (DevPost).

RoomieUD | HTML, CSS, JavaScript, Figma

March 2024

- Won Second Best Hack for Social Good at HenHacks out of 82 teams (DevPost).
- Created a Tinder-inspired app that uses **Euclidean geometry algorithms** and numerical point-based questionnaires to find compatible roommates.

Honors/Awards

First Place, HopHacks (Patient Safety Tech Category)

September 2024

- Created SurgiScan, and won first in the Patient Safety Technology Category.

HenHacks Second Best Hack

March 2024

- First Hackathon, placed 2nd place (out of 82 submissions) in the Social Good category.

Technical Skills

Languages: Java, Python, HTML/CSS, JavaScript, TypeScript, C, C++, Go, SQL

Frameworks: React, Node.js, Flask, YOLO, Google Firebase

Developer Tools: Git, GitHub, Jupyter Notebook, LaTeX, Linux/Unix, Terminal, Vim, YAML, RoboFlow, REST APIs

Libraries: pandas, NumPy, Matplotlib, ROUGE, BLEU, PyTorch, OpenCV