

Yashas Bhat

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EDUCATION

University of Maryland

Bachelor of Science in Computer Science, Minor in Mathematics

GPA: 3.57/4.0

Coursework: Algorithms, Computer Systems, Functional Programming, Object-Oriented Programming, Data Science

College Park, MD

Aug. 2023 – May 2027

TECHNICAL SKILLS

Languages: Python, Java, TypeScript, JavaScript, Rust, OCaml, C/C++, SQL (Postgres)

Web & Backend (Full-stack): React, Node.js, Next.js, FastAPI, Flask, Tokio, Tailwind CSS, JUnit, HTML/CSS

Developer Tools & Systems: Git, Docker, Linux/UNIX, Amazon Web Services (AWS), Embedded Systems (Raspberry Pi, Arduino, IoT)

EXPERIENCE

Children's National Hospital

Student Developer

August 2024 – May 2025

College Park, MD

- Architected an end-to-end IoT platform, **TrachSense**, to provide real-time airway alerts for tracheostomy patients.
- Designed a real-time data pipeline that ingested raw CO₂ readings from Arduino sensors, processed anomalies on a Raspberry Pi (**TrachHub**), and streamed alerts to a mobile app, addressing a leading cause of hospital readmissions.
- Achieved a **< 1 second** patient monitoring latency by implementing a WebSocket streaming layer between the Raspberry Pi and mobile app.
- Built a **breathing-pattern analysis engine** with hysteresis and statistical thresholds (standard deviation, RMS, flatline ratio) to accurately classify breathing states, reducing false alerts by **10%**.

Bharat Petroleum Corporation Limited

Software Engineering Intern

Dec. 2024 – Jan 2025

Mumbai, India

- Built an anomaly detection framework combining DBSCAN clustering and Isolation Forest, **identifying 950+** potentially fraudulent distributors from **320K+ digital customer verification** transactions and improving fraud detection accuracy over rule-based checks.
- Designed a feature extraction pipeline with **6** behavioral features, applying PCA visualization to surface irregular distributor behavior and weekday fraud trends for auditors.

Amazon Project Kuiper

Student Developer

Jan. 2024 – May 2024

College Park, MD

- Engineered a suite of **3** core APIs for **Amazon's Project Kuiper**, enabling critical functionalities, including Collision Data Message consensus, operator registration, and dynamic trust score management, culminating in a successful product launch in an accelerated timeline.
- Developed the FastAPI/PostgreSQL backend for a blockchain-integrated **Space Safety Visualizer** equipping **10+** satellite operators with real-time collision prediction as a key member of a **13-engineer** team.
- Implemented a blockchain-secured data synchronization system powering the **European Space Agency's (ESA)** satellite collision-avoidance rules, ensuring real-time sharing of critical metrics (collision probability, velocity vectors, time-of-closest approach) across FastAPI/PostgreSQL and Hyperledger World State.

PROJECTS & OPEN SOURCE

Know - Local Semantic Search CLI | Python, Llama Index

January 2026

- Built a local hybrid search CLI that indexes personal files into chunk embeddings (persistent Chroma store) and ranks results using dense semantic search, BM25 lexical search, and RRF fusion.
- Engineered incremental indexing with a file-change cache and chunk deduplication, cutting re-index time **67% (5.7s to 1.9s)** and avoiding redundant embedding work.

Canvas MCP | MCP, TypeScript

July 2025

- Built a Canvas (ELMS) MCP server exposing **12+** endpoints for assignment-aware Q&A with supported tools like ChatGPT and Claude.