NATHAN SAMSON

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EDUCATION

University of Maryland - Baltimore County   **August 2023 - May 2027**
Bachelor's, Computer Science   *GPA: 3.57*

PROFESSIONAL EXPERIENCE

Capital One   **Mclean, VA, USA**
Software Engineer Intern (TEIP)   *June 2025 - Present*
- Business Cards & Payments - Payment Infrastructure Engine Team

University of Maryland - Baltimore County   **Baltimore, MD, USA**
Undergrad researcher   *September 2023 - Present*
- Engineered a Smart Campus application using Lidar sensors and ML algorithms to predict and view current occupancy at campus food locations, improving student dining experiences.
- Created an intuitive UI for Smart Campus app, enabling students to efficiently monitor and predict food location occupancy in real-time.
- Optimized real-time data communication by integrating MQTT and RESTful APIs, reducing latency and improving system responsiveness.
- Architected and managed RDBMS and TSDBMS databases to efficiently store and process real-time data from lidar sensors.
- Enhanced server processing by using edge and cloud computing, enabling real-time analysis of data from IoT sensors.
- Collaborating with professor and PhD student on research paper exploring IoT, being a main contributor

OmniSyncAI   **Remote**
Software Engineer Intern   *May 2024 - July 2024*
- Engineered user-friendly CRM account setup using Node.js, React, and PostgreSQL, reducing onboarding time and increasing team invitations through AI-powered recommendations

PROJECTS & OUTSIDE EXPERIENCE

Conversational Finance Platform - *Link to project*
- A fine-tuned Gemini model translates chat into type-safe JSON. FastAPI with Pydantic validates the payload, maps it to domain commands, and shields the backend from prompt-injection.
- Architected a container-native microservice stack (FastAPI, PostgreSQL, React) that hot-swaps API versions without downtime and scales horizontally via Docker Compose.
- Crafted a bespoke lucide-react UI kit with accessibility-first hooks and dark-mode theming, delivering a modern, mobile-responsive experience for everyday banking tasks.

YouTube Sentiment Intelligence Pipeline - *Link to project*
- Built an asynchronous ingestion service that continuously streams and normalises comment data from the YouTube API, feeding a modular analysis backend.
- Engineered a hybrid sentiment engine that fuses BERT embeddings, scikit-learn ensembles, and prompt-refined reasoning via LLaMA Index to surface nuanced viewer reactions.
- Deployed an interactive creator dashboard that maps sentiment shifts to video chapters and release cadence, guiding data-driven decisions on thumbnails, titles, and content strategy.

Resume website
- Developed a responsive and visually appealing resume website using React and SCSS, hosted onvercel
- The project was bootstrapped with Create React App, ensuring a robust and scalable foundation
- Implemented advanced features such as code splitting and progressive web app capabilities to enhance performance and user experience

SKILLS

Skills: Data Science, Flask, HTML/CSS, Java, REST APIs, Tensorflow, Python, MATLAB, OpenCV, Data Analysis, SQL, Algorithms, AI, Machine learning, IoT, Data management, Prompt-engineering, Natural Language Processing (NLP), C/C++, JavaScript, Edge Computing, Linux, MQTT, Statistics, Docker, Kubernetes

ACHIEVEMENTS

- Nvidia Summer Bridge Program Participant
- Capital One Tech Summit Participant
- Amazon`s Campus Summer Series Participant
- UMBC CSEE Research Day 2024 Best poster Award