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*
- Architected a Lambda-bound synthetic monitor into a Fargate microservice with EventBridge scheduling and REST triggers, enabling on-demand, end-to-end Black Pearl health checks.
- Implemented API controller, event handler, and Behave test core that logs run status to DynamoDB and streams metrics to New Relic for real-time visibility.
- Extended the platform with optional PagerDuty alerts, S3 HTML reports, and a lightweight results UI to speed incident triage and historical analysis.

University of Maryland - Baltimore County   **Baltimore, MD, USA**
Undergrad researcher   *September 2023 - Present*
- Co-designed and implemented a broker-agnostic privacy framework, authoring ~3 K LOC in C to weave it into an MQTT brokers 60 K-line core.
- Introduced purpose-aware publish filters and metadata ops that make any MQTT broker sensitive-data compliant.
- Architected a Smart Campus system that fuses Lidar streams with ML to anticipate dining-hall congestion and optimize crowd flow.
- Optimized edge-cloud pipelines and SQL/TSDB storage so high-velocity sensor data stays instantly queryable.
- Crafted a React dashboard driven by MQTT push feeds, giving students sub-second occupancy insights.
- Co-authoring a conference paper with faculty on IoT occupancy analytics and broker-level privacy enforcement.

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
- UMBC CSEE Research Day 2024 Best poster Award