NATHAN SAMSON

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EDUCATION

University of Maryland - Baltimore County **August 2023 - May 2027**
Bachelor's, Computer Science *GPA: 3.5*

PROFESSIONAL EXPERIENCE

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, supporting 100 queries per second.
- Enhanced server processing by 25% 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**
Full stack 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

Advanced Connect4 AI with Reinforcement Learning

- Developed Connect4 AI using advanced RL techniques (Distributional Dueling Networks, Noisy Nets) with PyTorch.
- Integrated AI into custom game environment and implemented real-time interface using Flask API, enabling seamless human-AI gameplay with low latency
- Implemented opponent modeling using Monte Carlo Tree Search (MCTS) with Bayesian Updates, enhancing AI adaptability and improving the win rate against diverse strategies

Real-Time Predictive Analytics Engine for Financial Markets

- Engineered a high-frequency, real-time market prediction engine using Apache Kafka, PYTORCH, and NVIDIA GPUs with CUDA for acceleration, integrating stock prices, trading volumes, and sentiment analysis from news and social media sources.
- Developed hybrid model combining LSTM for time series forecasting and BERT for sentiment analysis, achieving high prediction accuracy and improving trading decision confidence.
- Designed scalable system architecture capable of processing a large amount of data points per second and the ability to handle a lot of users, ensuring real-time performance in high-demand financial markets

Generative AI for Artistic Collaboration

- Developed AI application using GANs and style transfer to blend classical European portraits with modern digital art
- Implemented custom GANs, style transfer algorithms, and reinforcement learning techniques to seamlessly integrate diverse artistic styles
- Engineered using PyTorch for model development and Discord APIs, facilitating artistic collaboration for users

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 Black and Hispanic Tech Summit Participant
- Amazon`s Campus Summer Series Participant
- UMBC CSEE Research Day 2024 Best poster Award