

# NATHAN SAMSON

nsamson4@umbc.edu | Baltimore, MD, USA | linkedin.com/in/nathan-samson-bostesa

## EDUCATION

**University of Maryland - Baltimore County**  
*Bachelor's, Computer Science*

**August 2023 - May 2027**  
*GPA: 3.5*

## PROFESSIONAL EXPERIENCE

**University of Maryland - Baltimore County**  
*Undergrad researcher*

**Baltimore, MD, USA**  
*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**

*Full stack Software Engineer intern*

**Remote**

*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

**Radical AI**

*Artificial intelligence engineer*

**Remote**

*March 2024 - May 2024*

- As an Artificial Intelligence Engineer at Radical AI, I leveraged technologies such as OpenAI and Google Gemini to develop ReX, an AI coach who serves as a steadfast career companion for learners, offering personalized coaching, mentorship, and support throughout the various phases of their career lifecycle.

## 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, generating up to 15,000 unique artworks
- Implemented custom GANs, style transfer algorithms, and reinforcement learning techniques to seamlessly integrate diverse artistic styles, achieving 85% style coherence score
- 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

- Amazon's Campus Summer Series Participant
- Nvidia Summer Bridge Program Participant
- UMBC CSEE Research Day 2024 Best poster Award