Ayaan Shaik

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EDUCATION:

Master of Science in Computer Science | Michigan State University — Aug 2023 – May 2025

- GPA: 3.916/4.0 | Graduate Teaching Assistantship
- Specialization: AI/ML, Computer Vision, AIoT, Optimizations and Real Analysis, Data Mining

Bachelor of Science in Computer Science | Michigan State University — Sep 2020 – May 2023

- GPA: 3.935/4.0 | Dean's list (All Semesters) | Graduated with Honors
- Double minor in Computational Math and Entrepreneurship and Innovation

SKILLS:

- **Programming Languages:** Python, C, C++, JavaScript, TypeScript, C#, Java, SQL, HTML/CSS, Shell
- **Technologies/Concepts:** Azure, Git, Node.js, Express, Angular, React, MongoDB, AWS (Lambda, S3, SageMaker), OpenCV, MySQL, TF, PyTorch, Domino, Oracle, Linux, Unity, Docker

WORK EXPERIENCE:

Machine Learning Intern | MultiPlan Corporation — Jun 2024 – Present

- Delivered a high-impact predictive model, by leveraging a custom loss function based on ordered probability, to improve appeal forecasting and negotiation, generating additional **12% savings** for the clients translating to **$8,780,000.**
- Developed a framework for feasible big data model training on neural networks and gradient boosting algorithms, optimizing GPU-based matrix computations, resulting in a **150X speedup** reducing training time from 50 mins to 2 secs.
- Automated API workflows, streamlining data collection and processing for **9,000,000 claims** saving the team **40 hours** of work per month by eliminating manual data retrieval tasks and enhancing training data for modelling.

Teaching Assistant | Michigan State University — Aug 2022 – May 2024

- **Courses:** Computer Vision, Computer Networks, Matrix Algebra with Computational Applications.
- Mentored **140+** students through 1:1 and group sessions, resulting in 20+ students improving their grades to 3.5+.

MSU Capstone Software Developer | Vectorform — Jan 2023 – May 2023

- Developed a **Unity-based VR application** that provides an innovative virtual training space for AI-enhanced training.
- Fine-tuned GPT-3 Davinci on 300 conversations and optimized token utilization for context-driven responses, **saving 1000 tokens** per conversation and a **4-second improvement** in response times.
- Engineered a web app using **Angular, Node.js, WebGL,** and **Azure SQL and blob storage** for a free-cam training replay system.

Software Development Intern | Roosevelt Innovations — May 2022 – Aug 2022

- Implemented an enterprise-level feature (using **MEAN stack REST, JSON, Kafka**, and **Docker**) that leverages client-specific information and quotes to accurately **recommend insurance packages.**
- Collaborated closely with underwriting and claims analysis experts to gain insights into claims handling processes.
- Utilized concepts of ML, AI, NLP, word embeddings, and Word2Vec to **generate 94%** of existing business insurance rules with **99% precision.**

PROJECTS:

LLM-based Program Synthesis with Formal Verification — Feb 2024 – May 2024

- Developed a neuro-symbolic approach combining large language models and formal verification, increasing the solve rate from **65%** to **83%** for accurate **program synthesis**.
- Implemented a mutation engine and **CeGIS** loop, enhancing the accuracy and efficiency of LLM-generated BlocksWorld programs.

AI Agent for Chrome Dino Game — Oct 2023 – Nov 2023

- Trained a **RL agent** using Deep Q-Network **(DQN)** with PyTorch and stable-baselines3 for the Chrome Dino game.
- Integrated OpenAI Gym, MSS, and Tesseract OCR for real-time input capture and processing, improving agent performance.

Robinhood Trading Bot — Jul 2023 – Aug 2023

- Modelled an ensemble with sentiment analysis and time series forecasting, achieving a **63% win rate** in stable markets.
- Enhanced performance with a custom paper trading environment and strategy integration, increasing win rates to **79%** when combined with the ensemble model's predictions.