Ayush Rautwar

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Education

University of Michigan — Ann Arbor, MI
BSE in Computer Science; GPA: 4.0/4.0 — *Graduation Date: Dec. 2023*
- **Relevant Coursework:** Discrete Mathematics, Programming and Intro to Data Structures, Introduction to Probability & Statistics, Evolution in Silico

Thomas Jefferson High School for Science and Technology — Alexandria, VA
GPA: 4.4/4.0 — *Sept. 2017 - June 2021*

Experience

Capital One — June 2022 - Aug. 2022
Incoming Software Engineering Intern — *McLean, VA*

Surmount AI — August 2021 – Present
Chief Technology Officer — *Miami, FL*
- Oversee technical development for aggressively growing startup, including web development and trading infrastructure
- Create an AWS-based backend to create automated trading processes on-demand and execute trades real-time
- Use multiple backend technologies including Flask, Django, and NodeJS hosted on AWS EC2 and Elastic Beanstalk
- Raised $120k from Techstars Anywhere Startup Accelerator, looking to raise a pre-seed

Michigan Investment Group — Sept. 2021 – Present
C++ Orderbook Team Lead — *Ann Arbor, MI*
- Lead development of a low-latency C++ orderbook with multithreading, TCP connections, and optimal efficiency
- Implement, backtest, and forward test market-neutral, regression-based statistical arbitrage techniques in Python

Two Six Labs — June 2019 – Aug. 2019
Machine Learning Intern — *Arlington, VA*
- Developed an Android text detection and recognition app for the US military to identify threats in foreign labs
- Implemented efficient Keras-based optical character recognition and analyzed existing open-source solutions

TJREVERB — Sept. 2019 – June 2021
Project Manager — *Alexandria, VA*
- Managed development of TJREVERB, a NASA-granted 2U radio satellite mission scheduled for launch to the ISS
- Oversaw all aspects of satellite development, including in-house electronics system design, Python and C++ flight software, Fusion-based modeling and assembly, and complete system testing procedure

Jane Street — March 2022
FTTP Fellow — *New York City, New York*
- Selected for the first-year trading and technology event to learn about Jane Street's cutting edge trading technology
- Competed in mock-trading competitions while learning from current quantitative developers and traders

Projects

Trading Toolkit | *Python, Tensorflow, Javascript, C++, MongoDB* — June 2020 – Present
- Developed a closed-source, statistics-based stock trading toolkit featuring a genetic programming-based strategy creator, timeseries classification-based portfolio optimizer, and deep-q-network trading bot
- Created automated data cleaning and processing pipelines to gather sentiment, price action, global news, and more
- Used class-weighting, normalization, out-of-sample analysis, and forward-testing to minimize bias
- Trained models on diverse and uncorrelated data to produce results capable of extrapolation

Efficient RL-based Othello | *Python, Tensorflow, NumPy* — Aug. 2020 – June 2021
- Created an Othello environment along with baseline search agents like alphabet and Monte Carlo tree search
- Implemented a general-purpose algorithm with a tree search and policy/value networks trained through self-play
- Used multithreading and memory management to maximize concurrent resource usage and optimize training

CodingClash | *Python, Django, HTML, CSS, AWS S3, Heroku, SQL* — June 2020 – Sept. 2020
- Developed a virtual battle-based competition from scratch using Django, custom frontend, and sandboxed containers
- Secured sponsors and hosted a successful nationwide competition with over 60 participating collegiate teams

Technical Skills

Languages: Python, C++, Java, JavaScript, HTML/CSS, MATLAB, Rust, Golang
Frameworks/Libraries: Node.js, Flask, Django, Pandas, NumPy, Tensorflow, Scikit-learn, PyTorch
Tools: Git, Docker, AWS, GCP