

# Ayush Rautwar

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## EDUCATION

### University of Michigan

*BSE in Computer Science; GPA: 4.0/4.0*

- **Relevant Coursework:** Discrete Mathematics, Data Structures, Probability & Statistics, Complex Systems

### Thomas Jefferson High School for Science and Technology

*GPA: 4.4/4.0*

Ann Arbor, MI

*Graduation Date: May 2024*

Alexandria, VA

*Sept. 2017 - June 2021*

## EXPERIENCE

### Amazon

*Incoming Software Engineering Intern*

Sept. 2022 - Dec. 2022

*Seattle, WA*

### Capital One

*Software Engineering Intern*

June 2022 - Aug. 2022

*McLean, VA*

- Build external developer APIs using Bottle framework as a part of the Developer Exchange team

### Surmount AI

*Chief Technology Officer*

August 2021 – Present

*Miami, FL*

- Manage AWS-based backend to create automated trading processes on-demand and execute trades real-time
- Use multiple technologies including Flask, Django, and NodeJS hosted on AWS EC2 and Lambda
- Raised \$500k+ in pre-seed funding

### Michigan Investment Group

*C++ Orderbook Team Lead*

Sept. 2021 – Present

*Ann Arbor, MI*

- Lead development of a low-latency, optimal-complexity C++ orderbook with multithreading, TCP, REST
- Implement, backtest, and forward test market-neutral, regression-based statistical arbitrage techniques in Python

### Two Six Labs

*Machine Learning Intern*

June 2019 – Aug. 2019

*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

*Project Manager*

Sept. 2019 – June 2021

*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

*FTTP Fellow*

March 2022

*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