Rishith Seelam

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EDUCATION

University of Michigan | College of Engineering — Ann Arbor, MI

B.S.E. Computer Science, Minor in Mathematics — *Aug 2022 - May 2026*

- GPA: 3.97/4.0
- Coursework: Data Structures & Algorithms, Operating Systems, Machine Learning, Computer Vision, Linear Algebra, Theory of Computation, Probability & Statistics, Computer Organization, Discrete Math, Calculus III, Networking, Combinatorics

EXPERIENCE

Student Researcher — Feb 2024 – Present

Interactive Sensing & Computing Lab, University of Michigan — *Ann Arbor, MI*

- Generated text embeddings with OpenAI's Ada models to analyze & categorize Computer Science research papers by domain
- Applied tSNE dimensionality reduction to project high-dimensional embeddings into 2D via openTSNE for enhanced data visualization
- Developed a Django application to serve customized, interactive plots with PlotlyJS & Bokeh, improved efficiency by 8x through caching

Teaching Assistant — Aug 2023 – Present

Data Structures & Algorithms, University of Michigan — *Ann Arbor, MI*

- Taught 40+ student lab sections, topics including asymptotic complexity, sorting, hashing, trees, & dynamic programming
- Provided individualized support & guidance through 80+ cumulative weekly office hours
- Worked directly with 3 professors to author exam questions, prepare practice material, update lecture content, & set learning goals

Research Intern — May 2024 – Aug 2024

Strategic Reasoning Group, University of Michigan — *Ann Arbor, MI*

- Implemented AI trading agents using Bayesian inference & technical analysis to recreate past publications in an exchange simulator
- Performed experiments to study the effects of various Double Auction & market parameters on market efficiency & equity
- Accepted into the Summer Undergraduate Research in Engineering (SURE) program, presented findings at poster session, lightning talk

Software Engineering Intern — May 2023 – Dec 2023

Advanced Driver Assistance Systems (ADAS) Team, Visteon — *Van Buren Twp, MI*

- Developed a visualization tool to create dynamic graphs from simulation & live drive data with C++ & Python
- Integrated visualization utility into regression simulation testing to generate client-facing reports, with tool being used by 30+ engineers
- Created a QT application to launch VTD simulations, model user-specified scenarios, & collect Robot Operating System (ROS2) data
- Automated generating 20,756 scenarios for CarMaker simulations to test lane-line detection, integrating into client-facing testing

LEADERSHIP EXPERIENCE

Quantitative Developer & VP Finance — Sep 2022 – Present

Michigan Investment Group (MIG) — *Ann Arbor, MI*

- Served as VP of Finance for 80+ member student organization focused on quantitative trading & traditional investing
- Oversaw project teams, education sessions, recruiting events, professional development resources, & trading conference
- Implemented trading algorithms leveraging pairs trading, mean reversion, momentum, & machine learning techniques

PROJECTS

Thread Library | **C++**

- Designed a library with Threads, Mutexes, & Conditional Variables, prioritizing efficient memory management & maximal concurrency
- Supported functions including lock, unlock, signal, broadcast, wait, thread yield, & thread join on multi-core processors
- Authored a comprehensive test suite to exhaustively test various interleaving & ensure correctness

Chess Engine | **Python**

- Built a playable chess game & chess engine in python, optimizing design for efficient computation
- Researched & evaluated a collection of heuristics to statistically measure chess game advantage
- Computed heuristic-maximizing move sets through the MiniMax algorithm
- Implemented pruning techniques, including Alpha-Beta Pruning, to reduce search space & improve efficiency by 20X

Image to LaTeX Conversion | **Python, PyTorch, Open-CV**

- Applied a FloodFill algorithm to locate & convert image connected components into character bounding boxes
- Trained a CNN model to classify individual characters. Employed data cleaning, data augmentation, & transfer learning techniques
- Devised & fine-tuned a LaTeX notation translation algorithm which recursively parsed classified character boxes & relative locations

TECHNICAL SKILLS & CERTIFICATIONS

Languages: C++, Python, Java, C, C#, JavaScript, Bash, HTML/CSS, SQL
Libraries: TensorFlow, PyTorch, OpenAI, Scikit-Learn, Numpy, Pandas, Flask, OpenCV, Seaborn, Bokeh, Matplotlib, Boost C++, LibHaru
Technologies: Django, Unity, Docker, ReactJS, Plotly, AWS, PostgreSQL, ROS2, Linux, Git, BootStrap, QT, Virtual Test Drive (VTD), CarMaker
Certifications: AWS Certified Cloud Practitioner
Honors: 2-time AIME Qualifier, USACO Gold Division, AP CS Exam Perfect Scorer, SIG Freshman Discovery Day