

SUNNY SHAH

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Education

University of Michigan

Bachelor of Science in Computer Science and Pure Mathematics

Expected: May 2027

Ann Arbor, MI

Relevant Coursework: Data Structures and Algorithms, Computer Science Theory, Discrete Math, Machine Learning, Computer Organization, Probability Theory, Object-Oriented Design, Operating Systems, Networking

Experience

Incoming Data & Artificial Intelligence Engineering Intern

May 2025

Protiviti

Chicago, IL

Software Engineer Intern - Research

November 2023 – August 2024

Wayne State University - College of Engineering

Detroit, MI

- Developed a drone design in CAD software, improving lift-induced drag and air resistance by conducting iterative tests and simulations, adjusting wing sizes in NVIDIA Omniverse to accurately model and evaluate real-world performance
- Utilized Power BI and Python scripts to visualize test data and create dynamic dashboards for model comparison
- Authored research proposal, outlining project goals, methodology, and expected outcomes, secured funding over \$1,000
- Organized and analyzed over 20 large datasets by implementing advanced NumPy techniques, including vectorized operations, multidimensional array manipulations, and statistical analyses, significantly reducing processing time

Code Coach

July 2022 – September 2022

theCoderSchool

Plymouth, MI

- Mentored and coached over 6 students weekly, delivering personalized instruction to improve coding skills through hands-on projects and tailored lessons that fostered problem-solving, creativity, and conceptual understanding
- Developed and implemented highly dynamic, adaptable curriculums for programming languages such as Python, JavaScript, and HTML/CSS, ensuring alignment with each student's unique learning goals and skill levels
- Fostered a highly collaborative and engaging learning environment, encouraging teamwork and innovation, which contributed to a measurable 30% improvement in students' academic performance and technical proficiency

Projects

Algorithmic Trading Competition – IMC Prosperity | *Python, Linear and Logistic Regression*

April 2025

- Designed a Python-based multi-strategy trading bot for a dynamic 15-day simulation, integrating momentum, mean reversion, and market making strategies across synthetic and physical asset classes to capitalize on market inefficiencies
- Engineered a robust volatility arbitrage solution with real-time implied volatility curve fitting, delta hedging, and adaptive position scaling to optimize risk-adjusted returns in volatile, rapidly evolving market conditions
- Performed exploratory data analysis and feature engineering on historical price movements, applying linear and logistic regression models to extract predictive trading signals and drive iterative strategy refinement
- Ranked in the top 5% of over 13,000+ competitors by fine-tuning synthetic basket arbitrage execution under liquidity constraints, position limits, and auction-based trade fulfillment capitalizing on bid-ask spreads

Image Classification Pipeline | *Python, PyTorch, Logistic Regression, Neural Networks, NumPy*

March 2025

- Built an end-to-end binary image classification model using PyTorch, implementing logistic regression and a fully connected neural network to distinguish between two visual classes in real-world datasets
- Preprocessed image data with normalization, reshaping, and batching; trained models with SGD and evaluated performance using accuracy, loss curves, and classification metrics across multiple training runs
- Analyzed overfitting by applying L2 regularization and dropout; explored the effects of model complexity on generalization through tuning of hidden layers, learning rates, and batch sizes

Business Website Development – My Hydro Depot | *React, AWS, SQL, SEO*

July 2020 – July 2022

- Built a business website using a React frontend, implementing targeted SEO to elevate its ranking by eight positions
- Improved website accessibility by hosting on AWS, boosting the PageSpeed Insights score by 23 points
- Implemented an SQL database for storing products, prices, and quantities optimizing data management resulting in a 20% increase in accuracy of storage and retrieval of product information, combined with distributed storage

Technical Skills

Languages: Python, C++, SQL, JavaScript, HTML/CSS, LaTeX

Frameworks: React, Bootstrap, jQuery, PyTorch, OpenCV, Agile, Jira

Developer Tools: Google Cloud Platform (GCP), Amazon Web Services (AWS), Git, VS Code, Jupyter Notebook, Linux

Libraries: pandas, NumPy, Matplotlib, PyTorch, SciPy, Scikit-learn

Concepts: Machine Learning, Volatility Arbitrage, Delta Hedging, Regression Analysis, Neural Networks, Optimization, Market Making, Synthetic Arbitrage, Cache Optimization