Marcus Hom

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Education

Stevens Institute of Technology Hoboken, NJ

Bachelors of Science in Computer Science | Minor in Mathematics — GPA : 3.54 *Expected May 2026*

Relevant Coursework: Differential Equations, Probability and Statistics, Data Structures, Algorithms, Computer Architecture, Systems Programming, Database Management Systems, Web Programming, Discrete Math, Linear Algebra, Machine Learning, Deep Learning, Data Mining

Skills

Languages: Python, Java, C, C++, SQL, R, HTML/CSS, JavaScript, Lua

Tools/Technology: Git, Gitlab, Streamlit, ROS, Pandas, Scikit-learn, PyTorch MongoDB, Next.js, Agile

Experience

Reinforcement Learning Researcher June 2025 – Aug 2025

Air Force Research Labs | Python, Lua *Rome, NY*

- Developed a reinforcement learning framework applied to complex strategic decision-making problems in a novel domain
- Designed custom environments and reward structures to enable realistic simulations under adversarial conditions.
- Contributed research that informed the allocation of $300,000 in external contractor funding
- Recognized with 2nd place out of 70+ interns at internal research symposium for project presentation and results

Financial Technology Researcher May 2024 – May 2025

Stevens Institute of Technology | C++, Python *Hoboken, NJ*

- Conduct research on Automated Market Makers (AMMs) in traditional financial markets using the Stevens High-Frequency Trading System (SHIFT), analyzing market dynamics of frequent batch auctions.
- Develop and enhance the SHIFT system using C++ and Python, optimizing codebase functionality and data logging for improved analysis.
- Perform statistical analyses on SHIFT simulations with Python, presenting findings to a team of professors, PhD candidates, and graduate students in weekly meetings.

Robotics Researcher June 2023 – Aug 2023

University of Liverpool | Python, PandaGym, Isaac Sim, Pybullet *Liverpool, UK*

- Trained a simulated robotic environment using reinforcement learning models to perform automated chemistry lab tasks such as vial scraping and vial insertion
- Optimized learning models through tensorboard graph analysis
- Implemented curriculum learning models, reducing task execution time by an average of 2 hours

Resident Assistant Aug 2024 – Present

Stevens Institute of Technology *Hoboken, NJ*

- Cultivated a safe and inclusive environment for 50+ residents, resolving conflicts and coordinating with campus departments to uphold university policies
- Demonstrated leadership and crisis management skills while serving as first point of contact for student concerns and emergencies

Projects

Pinterest Clone

Web(HTML/CSS/JavaScript, MongoDB)

- A fashion-focused social media application designed to help users discover fashions and styles that match their preferences
- Utilized MongoDB to store user information such as posts, comments, likes, reports, and followers
- Implemented cosine similarity algorithm to recommend relevant posts to users based on their activity

Ad-Hoc OLAP Query Engine

PostgreSQL, C++, SQL, Relational Algebra

- Designed and implemented a query engine to generate programs that evaluate complex ad-hoc OLAP queries using an extended SQL syntax
- Built an automated code generator to translate high-level query inputs into executable C++ programs that process multi-scan queries over a PostgreSQL sales dataset using in-memory data structures
- Enabled user input through both file-based and interactive interfaces; ensured efficient query evaluation without relying on PostgreSQL's built-in aggregation