

Ashwin Balaji

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Education

The University of Pennsylvania, Philadelphia, PA (*MSE in Computer Science*)

August 2024 – May 2025

The University of Pennsylvania, Philadelphia, PA (*BSE in Computer Science*)

August 2021 – May 2025

- *Dean's List 2021 – 2022* | SAT 1570/1600
- **Relevant Coursework:** Data Structures & Advanced Algorithms, Discrete Math, Cloud Computing, Advanced Probability and Statistics
- **Societies:** Penn Quant Trading and Research Club (Portfolio Manager), Penn Sargam (Percussionist), Penn Dhamaka (Dancer)

Technical Skills

Languages: Python, C++, Java, C, JavaScript, OCaml, HTML & CSS, SQL, MATLAB

Packages: AWS, Node.js, Linux, Git, Ansible, Pandas/Numpy, Cucumber, MongoDB

Professional Experience

MongoDB | New York City, New York

June 2024 - August 2024

Software Engineering Intern

- Incoming Software Engineering Intern for Summer 2024.

Chicago Mercantile Exchange (CME Group) | Chicago, IL

May 2023 – August 2023

Software Engineering Intern – Trade Execution Systems

- Developed Java-based option-spread pricing algorithm for Calendar spreads with legs in different price units.
- Built latency prediction model in Python to predict latency of orders across time-series data in options and futures markets.
- Detected 98% of latency spikes on real-time match engine orders across various 10-minute intervals in all markets.
- Placed 2nd at the CME Intern Trading Challenge out of 70+ interns.

Siemens Digital | Detroit, MI

May 2022 – August 2022

Software Engineering Intern – Global Partner Operations Sector

- Implemented a 'Partner Search' feature for the Integrated Country Planning Application using Mendix and PostgreSQL, allowing Siemens country managers to view and request available partners for collaboration.
- Automated partner onboarding process – 600+ new partners onboarded, saving 20+ hours of manual onboarding weekly.
- Debuted features in the FY2022 release of the application, used by 40+ Siemens country managers.

Michigan State University | East Lansing, MI

September 2020 – July 2021

Computer Science Research Assistant – Department of Computer Science and Mathematics

- Analyzed graph based semi-supervised machine learning algorithms against traditional methods in Python.
- Tested graph-based adaptation of Merriman-Bence-Osher Scheme in comparison with 4 supervised classification algorithms – yielded consistent 99 percent accuracy with 1/6th of required training data on MBO adaptation.
- First author of [research article](#) published in Scientific Peer-Reviewed Journal – JEI.

Projects

Facebook Clone (Group Project – 4 Members)

Jan 2022 – Feb 2022

Javascript, Node.js/Apache Spark, Apache Livy, HTML/CSS/Bootstrap, AWS DynamoDB/EC2, Socket.IO | [GitHub Repository](#)

- Created a Facebook clone, allowing users to log in, post status updates, view friends' homepages, and start chats.
- Designed a Spark-based adsorption algorithm to recommend news articles to users based off their current interests.
- Hosted application on an EC2 instance, with backend data storage in DynamoDB and a functioning chat page in Socket.IO.

TrekSavvy (Group Project – 4 Members)

March 2023 – April 2023

Javascript, Node.js/React.js, SQL, GoogleMaps.API | [GitHub Repository](#)

- Built an "Itinerary Planner" web application to give users itineraries for round-trip/multi-stop flights.
- Implemented personalized itinerary feature for multi-stop flights, with optimal layovers and custom attractions at each stop.
- Integrated an attraction finder with filters on distance and type of attraction – attractions displayed using Maps.API.

LC3 Assembler / Reverse Assembler

April 2023 – May 2023

C, LC3 Assembly

- Designed a compiler in C for the LC3 assembly language that generated executable binary files from assembly language.
- Updated a CPU machine struct in C by parsing binary files and modifying registers, cache, and all memory segments.
- Constructed a reverse assembler to generated assembly files from encoded binary files.