Benjamin Le

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EDUCATION

University of Pennsylvania, School of Engineering & Applied Science — Philadelphia, PA **May 2025**

BSE in Computer Science • Double major: Mathematics • GPA: 3.94/4.0

USAJMO • National Merit Scholar • Full scholarship to take university-level Math courses at Stanford ULO: three-year college calculus sequence, ordinary & partial differential equations, abstract algebra, real & complex analysis

- Programming Languages: Python, C++, Java, OCaml, C, JavaScript, TypeScript, HTML/CSS, Rust, SQL
- Cloud & Database Technologies: AWS (EC2, S3, ELB), boto3, DynamoDB, MongoDB, Docker, Kubernetes
- Other Technical Skills: Django, Node.js, React.js, Three.js, OpenAPI, YAML, pandas, Redis, PyTorch, Apache Spark, gUnicorn, NumPy, matplotlib

Relevant Experience

Photon Commerce SWE Intern | San Francisco, CA **January 2022 – August 2022**

- Planned, proposed, and implemented a clustering algorithm to automate the extraction of templates from a dataset of 100k+ invoices. Improve the speed, cost, organization, and robustness of the template extraction process; improve the final extraction accuracy.
- Drove the development of a REST wrapper around the Federal Reserve's new instant payments API to automate the payment of bills and integrated the wrapper with the company's current database of invoices & statements. Received commendation from lead algorithms developer and CEO on the level of detail & testing undertaken.

University of Pennsylvania TA & Grader | Philadelphia, PA **January 2022 — Present**

- CIS 2620 Automata, Computability & Complexity: hold recitations exploring concepts in theory of computation, cellular automata, computational hardness, and complexity.
- STAT 5100 Probability: grade papers for a calculus-based probability course at the Wharton school, including topics on point estimation, joint distribution, moments & moment-generating functions.

Penn Labs Team Lead | Full Stack Developer | Philadelphia, PA **September 2021 – Present**

- Lead the 10-person OHQ team, developing and maintaining web products used by 10k+ students and faculty.
- Developed a real-time file management system using AWS/boto3/S3 for students and TAs to live-share relevant files during working sessions using Django REST framework.
- Implemented an auto-docs system using Django and Redoc for generating an Open API specification and comprehensive documentation page for OHQ.
- Regularly consult with the technology coordinator of Penn's MCIT program to understand market needs and plan feature development.

Projects

My projects & experiences are described in more detail on my website.

Custom Language & Compiler | *C++, LLVM, Compiler Design* **June 2022 – August 2022**

- Assembled a miniature language & compiler using the LLVM framework with full support for mutable variables, PEMDAS arithmetics, control flow statements like If and For, and JIT compilation.
- Implemented recursive descent parsing and shift-reducing parsing algorithms, and learned fundamental concepts in compiler design like static single-assignment optimizations and how JIT compilation works.

Penn Mail Search | *Python, JS, MongoDB, EC2, Web Crawler* **January 2022 – March 2022**

- Created a web crawler to index Penn's student & faculty directory using Selenium, built a REST API with Flask, and deployed via gUnicorn on AWS EC2 with a NoSQL database hosted via MongoDB.
- Published a 5-star Chrome extension for Penn students to easily search for the email of colleagues from different sub-colleges.

3D Tic-Tac-Toe | *Python, JS, Flask, SocketIO, Docker, 3D Graphics* **March 2022 – April 2022**

- Created a cloud-based 3D extension of Tic Tac Toe using ThreeJS and NextJS; now deployed on a Docker image.
- Employed Socket.io - an industrial socket framework - to host and create rooms and provide real-time communication between players; gained a deep understanding of event-driven web applications.

Vim Racer | (Penn Apps XII Hackathon Challenge) | *C++, Ruby, Vim, Socket Programming* June 2022 – August 2022

- Developed and published a command-line game on Homebrew using Ruby, C++ in the style of VimGolf that allows users to practice Vim commands and race each other to complete randomly-generated challenges.