Victor Li

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Education

Northeastern University, Boston MA   Expected - May 2028

- *Undergraduate*: Major in Data Science, Minor in Physics, Minor in Math; **GPA: 4.00/4.00**
- *Related Courses:* Advanced Programming with Data, Foundations of Data Science, Algorithms and Data, Databases, Programming in C++, Electronics, Math and Computational Methods for Physics,
- *Honors*: Dean's List, MCAM X FYW Oakland Art & Writing Contest

Technical Skills

- *Programming Languages*: Python, SQL, C++, R, JavaScript
- *Web Technologies:* React, HTML, CSS, APIs, Flask, Web Scraping (Beautiful Soup)
- *Data Science:* , Machine Learning, Feature Engineering, Pandas, NumPy, Matplotlib, TensorFlow, PyTorch, scikit-learn, NLP
- *Databases:* MySQL, Apache Derby, and PostgreSQL
- *Tools:* Git/GitHub, VS Code, Jupyter Notebook, PyCharm, Docker, Anaconda/Conda, Render, PROS

Work Experience

Wilmington Pharmatech   Christana, DE
IT Intern   June 2022 - September 2022

- Company IT infrastructure required ongoing maintenance, improved security, and clearer documentation
- Assisted the IT Manager in upgrading computers, networks, and security systems; provided employee technical support; improved secure communication and cross-platform data sharing; and authored concise system manuals.
- Increased system reliability and security, reduced support issues, and streamlined onboarding for future employees.

Summer Learning Collaborative   Wilmington, DE
Reading Coach   June 2024 - August 2024

- Delivered differentiated reading and literacy instruction tailored to individual learning needs and assessed progress throughout a 5-week program.
- Assessment data showed measurable improvements in student reading performance across participating students.

Research Experience

Oak Ridge National Laboratory   Remote
Undergraduate Research Assistant   September 2024 - January 2025

- Collaborated with Prof. Miguel Fuentes-Cabrera and a small team to develop machine learning models for interpreting neutron reflectivity spectra of thin-film polymers, materials critical to next-generation energy storage.
- Built and tested diffusion-based models, applying techniques such as PCA, multilayer perceptrons, and autoencoders to analyze experimental data generated at the Spallation Neutron Source.

Harker ISE Lab University of Delaware   Newark, DE
Research Assistant   June 2023 - August 2024

- First author on a peer-reviewed publication in Acta Crystallographica Section E; results were presented at the Spring 2024 American Chemical Society National Meeting [link]
- Conducted crystallography research under the direction of Prof. Chaoying Ni growing single crystals of a novel oxazolidinone compound, 5-(3-Acetyl-5-chloro-2-ethoxy-6-fluorophenyl)-2-oxazolidinone.
- Performed SEM and XRPD to monitor crystal formation and resolved the compound's single-crystal structure and stereochemistry for further development of a potential anticancer agent.

Stability AI   **Remote**

LLM Security Researcher   July 2023 - September 2023

- Contributed to a White House-backed AI cybersecurity program at a prestigious open-source AI startup, with results shared at DEF CON.
- Conducted red-teaming of large language models, identifying critical flaws and designing mitigations adopted by the security team.
- Worked closely with the Head of Security, Product Manager, and Project Lead at Carper AI, a branch of Stability AI, to strengthen model robustness against adversarial attacks.

Projects

Debt Tracker - [GitHub]   July 2025 - August 2025

Flask, PostgreSQL, Python, HTML/CSS/JavaScript, Pandas, Matplotlib

- Designed and built a full-stack web application to track shared expenses, simplify debt networks, and reduce transaction fees by minimizing unnecessary peer-to-peer payments.
- Implemented authentication, friend-based debt constraints, expense splitting, and optimized payment computation using a Flask backend and PostgreSQL database.
- Utilized Pandas and Matplotlib to visualize and analyze data collected from real-world testing in a sample group of four: 30 payments were reduced to 3, and $17.57 in PayPal fees were avoided, compounding to $913.64 a year;

Battery Prognostics Modeling - [GitHub]   November 2025 - December 2025

Python, Pandas, NumPy, Scikit-learn, XGBoost, Matplotlib

- Built predictive models to estimate lithium-ion battery capacity fade and remaining useful life (RUL) using real NASA battery aging datasets, addressing challenges in time-series correlation and data leakage.
- Engineered physics-based features from voltage, current, temperature, and impedance data (e.g., voltage drop, internal resistance, impedance phase) to capture nonlinear degradation behavior without high-frequency signal processing.
- Evaluated multiple regression models (Linear Regression, KNN, Random Forest, XGBoost) with battery-level data splits; achieved $R^2 \approx 0.94$ for capacity prediction (XGBoost) and $R^2 \approx 0.97$ for RUL prediction (KNN), demonstrating strong predictive performance and model robustness.

Hexa-Quad-Tri Lock - [GitHub]   October 2025 - December 2025

Circuit Design, Digital Logic ICs, Flip-Flops, Timers

- Designed and implemented a hexadecimal combination lock supporting four-digit, four-bit inputs (~65,000 combinations) with a three-attempt lockout mechanism
- Built comparison logic using XNOR and AND gates, integrated a three-bit Johnson counter with D flip-flops to track failed attempts, and implemented Schmitt trigger and 555 timer circuitry to mitigate button debounce issues.
- Stress-tested the system across a wide range of passwords to validate correct counting, clearing, and status signaling; currently preparing the project for publication and presentation at the ASEE Northeast Section Conference.

Other Experience

NURobotics   September 2024 - Present

- Programmer for the VexU Robotics team. Worked with teammates to design an autonomous path planning UI system that the robot would follow. Designed the pure pursuit algorithm that the robot would use to follow a given path in C++ while interacting with the onboard optometry system.
- Currently teaching the club's internal Intro to Robotics course, guiding new members through the full hardware-software design process using CAD, 3D printing, and Arduino programming.