

# Patrick Peng

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## EDUCATION

### Brown University, 4.0 GPA

Providence, RI | Expected Graduation May 2025

*Sc. M. Computer Science, Sc. B. Applied Mathematics-Computer Science*

**Relevant Courses** Graduate Operating Systems, Graduate Algorithmic Game Theory, Networks, ML, DL, OOP, Data Structures and Algorithms, Honors Linear Algebra, Honors Statistical Inference, Abstract Algebra

**Technical Skills:** Proficient: Python, Experienced: Deep Learning, C, Java, OOP, DSA, HTML/CSS/JS Basic: Rust, C#/.NET, C++

### Lakeside School, 3.9 GPA

Seattle, WA | Sep 2017 – Jun 2021

## WORK EXPERIENCE

### Citadel Securities, *Quantitative Trading Intern*

NYC, NY; Miami, FL | Jun – Aug 2024

- Built models for pricing ETF event volatility (first rotation) and balancing portfolio positions across different greeks (second rotation); completed mini-projects on analyzing ETF implied correlation/other features and modeling earnings realizations
- Utilized pandas, sklearn, and similar packages extensively to work with large amounts of structured/unstructured data
- Competed in mock trading and other activities involving game theory and statistics; leveraged Python/Excel to compute optimal strategies and model outcomes
- Completed learning series covering theory behind a variety of financial products as well as trading in practice

### Morgan Stanley, *Technical Summer Analyst (Digital Banking and Lending)*

NYC, NY | Jun – Aug 2023

- Decoupled a liquidity service from a mortgage service (C#/.NET), learned about SDLC, unit testing, Agile processes, CI/CD
- Managed migration and deployment of these services into Microsoft Azure on production and all other environments, created dashboards comparing performance metrics between cloud and on-prem instances
- Designed, implemented system for rapid error diagnosis across all Morgan Stanley Online services through Splunk searches
- Developed service to perform code review following Morgan Stanley standards in the Generative AI Hackathon

### Brown CS Dept, *TA (Fall '22, OOP, Prof. Van Dam; Fall '23, Intro Systems; Spring '24, OS)*

Providence, RI | May 2022 – May 2024

- Designed, created, and maintained the course website (React, HTML/CSS) used regularly by 400+ students (Fall '22)
- Led weekly lab/review section (20+ students, 2 hours) and TA hours (4/week), developed curriculum and edited assignments
- Contributed to the curriculum and development of assignments in C, Assembly, created website, holding hours (Fall '23)
- Held mentor meetings/hours, helped write/grade homeworks and OS components coded by students (Spring '23)

### Cledge, *Machine Learning Engineer*

Seattle, WA | Jul 2022 – Mar 2023

- Created natural language processing tools in Python for college app essay analysis and feedback using GPT3.5+
- Assisted in the development of a chatbot that incorporates GPT models to provide accurate advice to college applicants

### Microsoft, *Volunteer Intern, Club Lead*

Redmond, WA | Sep 2019 – Jan 2021

- Worked with global team on novel Minecraft Education program teaching Python and block-based coding through Minecraft
- Organized, taught program in first US trials. Strong praise from students, parents, teachers, and team; invited to teach again

## PROJECTS AND RESEARCH

### Machine Learning in Rust (on hold)

NYC, NY | June 2023 – Aug 2023

- Learning Rust: created a single-layer MNIST classifier with a basic library providing Rust bindings for Torch's C++ API
- Programmed an optimized implementation of Threes using bit manipulation to use with reinforcement learning agents

### Weenix Operating System

Providence, RI | Jan 2023 – May 2023

- Developed a large portion of an operating system kernel called "Weenix" for CSCI2670: Graduate Operating Systems
- Wrote 25000+ lines of code in C covering threads, processes, device drivers, the virtual file system interface, an underlying file system, and user address space management.

### EMG Research Project, *Researcher*

University of Washington, Tacoma, WA | June 2021 – Nov 2022

- Designed and tuned recurrent neural network models analyzing electromyographical signals to predict finger movements
- Worked with an Android app and hardware sensor to collect raw data, then investigated various algorithms for preprocessing

### Musx, *Creator/Researcher*

Seattle, WA | June 2020 – Sep 2021

- Researched machine learning techniques for processing music in various styles, designed data format for representing music
- Designed, implemented, and tuned a Transformer model in Python to compose new music in the styles of famous composers
- Created [a website](#) and a JavaScript implementation to host the model, which was open-sourced as well

## CLUBS/MISCELLANEOUS

### Hack@Brown, *Team Lead (Hardware)*

Providence, RI | Sep 2021 – Present

- Laser cut massive wood puzzle (4'x8') and space-themed mobile ('23), built cabin, log benches ('22), built greenhouse ('21)
- Organized the hackathon for 250+ participants in the first year and 400+ in the second/third, managed hardware distribution

### Teamfight Tactics, *Grandmaster Rank, Top 700 (0.005%) in North America*

Providence, RI | Feb – Apr 2023

- Competed in strategy game about balancing gold scaling, player health, and unit strength while fighting for shared resources

**Language:** Fluent in Mandarin Chinese, intermediate Spanish

**Interests:** Music production (especially electronic music), Skiing, Biking, Strategy games, Chess