EMMA ZOU

301-679-9586 | emma_zou@brown.edu | www.linkedin.com/in/emma-zou-8b1487247 | https://github.com/EmmaZou24

Motivated Applied Math–CS student at Brown University. Experienced in SWE, geospatial statistics, data science, and AI/ML for both research and industry. Eager to create innovative technology impacting the environment, equity, human interaction, and more.

EDUCATION

Brown University
***Sc.B.** in Applied Mathematics-Computer Science, **A.B.** in Music*   *Class of 2028*
- **Relevant Courses:** Data Structures & Algorithms, Software Engineering, Foundations of AI, Fundamentals of Computer Systems, Applied Ordinary/Partial Differential Equations, Linear Algebra, Statistical Inference

Poolesville High School
***High School Diploma** in the Global Ecology Program*   *Class of 2024*
- **GPA:** 4.91 | **SAT:** 1600

PROFESSIONAL EXPERIENCE

Software Engineering Intern — *Integral by Derivative LLC*   *July – October 2025*
- End-to-end engineered core UI/UX components and backend services, and performed data analytics on user data, for the education platform Integral serving 50,000+ active students using JavaScript and Dart/Flutter.

Undergraduate Researcher — *Brown Data Science Institute*   *May – October 2025*
- Employed advanced geospatial statistics to uncover spatially varying relationships between social vulnerability and flood risk.
- Created scalable open-source code to statistically analyze 3D spatio-temporal hotspots, supporting 10+ configurable statistical and modeling parameters for flexible exploratory analysis.

Student Researcher — *George Washington University Department of Statistics*   *May – June 2025*
- Applied statistics, ML, and NLP to projects examining health equity and environmental resilience through data science.
- Selected to present findings at a Public Interest Technology University Network (PIT-UN) research symposium.

PROJECTS

C@Bnet
Typescript/HTML/CSS, React, Chrome Extensions   *October 2025 – Present*
- Developing a Chrome extension to add integrated course ratings/warnings, a complex recommendation system, and degree pathway visualization to the current Courses@Brown website used by Brown students for course registration.
- Wrote and deployed complex scripts for parsing user data, intercepting web API calls, and altering client/server interactions.

Go Agent
Python, PyTorch, Tensorflow   *November – December 2025*
- Built a hybrid Go Agent that achieved #2 in performance in the class using Monte-Carlo tree sampling, iterative alpha-beta pruning, and combined heuristics.

Narrative Intelligence and Impact Signatures of Flash Flood Events in D.C., Maryland, and Virginia (Link)
Python (NLTK, GeoPandas, etc.), R, ArcGIS Pro   *May – June 2025*
- Developed a ML algorithm to extract impact tags and Flood Impact Scores from 5k+ unstructured narrative datapoints.
- Visualized and interpreted spatio-temporal data distributions in a written report to improve understanding of flood impacts.

EXTRACURRICULARS

Full Stack at Brown
Full-Stack Web Developer   *September 2025 – Present*
- Develops full-stack pro-bono websites from scratch for non-profits, student organizations, and research groups.

BUO Board Website Team
Website Master   *September 2025 – Present*
- Deploys page and information updates for the orchestra website and conducts maintenance, using JavaScript and React.

Brown University Orchestra (BUO)
Co-Principal Violist   *September 2024 – Present*
- Leads the viola section in twice-a-week rehearsals, and coordinates with other orchestral leaders to plan events and concerts.

Brown University Mathematics DRP
Undergraduate Mentee   *September 2024 – Present*
- Works with a PhD student mentor to research graph theory and present its applications, from Sudoku to street networks.

AWARDS & CERTIFICATES

Brown University Undergraduate Teaching and Research Award *(2025)*
Awarded funding to research applications of geospatial machine learning techniques to relate social vulnerability and flood risk.

Stanford/DeepLearning.AI Certificate in Machine Learning *(2025)*

Best Poster Award at the Brown Mathematics Directed Reading Program (DRP) Poster Session *(2024)*
Awarded for the poster "Counting Sudoku Solutions"

SKILLS & INTERESTS

- **Languages/Tools:** Python, Java, R, HTML/CSS/JavaScript, Node.js, React, PyTorch, Tensorflow, Git/GitHub, Firebase
- **Methods:** Version control, CI/CD, full stack development, AI-assisted workflows, code review & debugging, technical writing
- **Soft Skills:** Creative problem-solving, organization, rapid learning adaptability, flexibility, effective teamwork
- **Interests:** Classical music, viola, puzzles, hiking, light pollution awareness, photography, journaling