

Matthew Brownrigg

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Education

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- Johns Hopkins University**, MSE Computer Science in Natural Language Processing Aug. 2026 – May 2027
Johns Hopkins University, BS Computer Science; BA Economics Aug. 2022 – May 2026
- **Coursework:** Deep Learning, Machine Learning, Artificial Intelligence, Natural Language Processing, Statistics, Algorithms, Quantitative Finance, Econometrics, Portfolio Management, Alternative Investments
 - ACM Member, HOP-AI Member, SWE Club Member, Fiberarts Vice-President

Experience

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- Graduate Researcher**, Intelligence Amplification Lab – Baltimore, MD Mar. 2026 – Present
- Designing Temporal LLMs for hypothesis generation and forecasting
 - Publishing work in ICML 2026

- Machine Learning Intern**, Taco Bell – San José, Costa Rica Jun. 2025 – Aug. 2025
- Deployed AWS Lambda Web App that employed H-mine database recommendation algorithm to increase user purchases by 15%
 - Designed and Deployed AWS EC2 instance that utilized a SOTA Knowledge Graph + GNN + LLM Recommendation pipeline that reduced churn rate by 10%.
 - Built scalable data pipelines using AWS Quicksight and AWS S3 to curate, filter, and mix data across 4 relational databases containing millions of orders.

- Head Teaching Assistant (Artificial Intelligence)**, Johns Hopkins University – Baltimore, MD Jan. 2025 – Present
- Held technical lectures, improving student overall course satisfaction feedback from 3.8 to 4.5 across semesters.
 - Developed 8+ Jupyter Notebook assignments leveraging PyTorch, Gymnasium, and HuggingFace API, enabling 120+ students to build proficiency in modern AI frameworks.
 - Developing a backend autograding system, optimizing evaluation pipelines, reducing turnaround time by 50%.

- Undergraduate Researcher**, Energy4Entropy (S4E) – Baltimore, MD May 2024 – May 2026
- Integrated active learning techniques into GNN boosting prediction accuracy for critical material properties.
 - Designed federated network of databases using SQLite and RESTAPI in C++, improving query computations from $O(n^2)$ to $O(n \log n)$.
 - Published paper on AFLUX-OPEN, first of its kind in discussing data providence and API integration in Mat Sci.
 - Designed MongoDB database with Applied Physics Laboratory and Oak Ridge Laboratory for computational to experimental materials data pipelining.

Skills

Languages: Python, C++, C, Java, SQL, JavaScript, CSS, HTML, BASH, x86 ASM, MATLAB, STATA

Frameworks: AWS Lambda, Docker, AWS S3, AWS EC2, Pandas, Plotly Dash, Pytorch, PyG, Scikit-learn, Numpy, Gymnasium Django, GitHub, Git, CLI, GDB, Linux, SLURM

Skills: Excel/Sheets, Word/Docs, PowerPoint/Slides, Communication, Leadership, Problem-solving

Interests: Hackathons, baking, traveling, reading, video games, drawing, microcomputers, sewing, cosplay

Languages: English (native), Spanish (native), French (limited)

Publications

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- A Descriptor Framework in a High-Entropy Oxide Database for Predictive Design** Nov. 2025
- Jiayue Hu, Shao-yu Tseng, *Matthew Brownrigg*, Tianhao Li, et. al