A complete CV is available upon request.

Rebecca Saul (she/her/hers)

Work Experience

Booz Allen Hamilton Annapolis Junction, MD
Senior Consultant; Machine Learning Researcher Aug. 2022 - present

- Developed an efficient, scalable framework for triplet learning in JAX.
- Trained a binary function semantic similarity embedding model using binary function data and the triplet learning framework. Created a prototype demonstrating how such a model could be used to identify similar functions to an unknown query function.
- Conducted a literature review of the binary code similarity detection (BCSD) problem.
- Evaluated the performance of a state-of-the-art BCSD model trained on Linux data when assessed on Windows data. Documented the results of those experiments as part of a paper submitted to SaTML.
- Integrated a machine learning analytic for malware detection into a Java-based file analysis system.

Booz Allen Hamilton Annapolis Junction, MD
Machine Learning Research Intern (Remote) June 2021 – Aug. 2021

- Researched developments in continuous and differentiable associative memories
- Implemented a new Recurrent Neural Net architecture utilizing said associative memories in Python
- Drafted a paper detailing the project's conclusions which I presented at NeurIPS' 2022 I Can't Believe It's Not Better Empirical Falsification Workshop. The paper was subsequently published in a 2023 edition of *Proceedings of Machine Learning Research*

Harvard College Writing Center Cambridge, MA
Peer Tutor Sept. 2019 – May 2022

- Worked one-on-one with Harvard undergraduates on writing assignments in any discipline, teaching writing strategies with emphasis in the areas of academic argument, essay structure, and overall clarity
- Assisted with orientation and training of new tutors each semester
- Nominated to the position by expository writing professor

Education

Harvard University Cambridge, MA

- Bachelor of Arts with Highest Honors in Mathematics, *magna cum laude*, GPA: 3.945 May 2022
- Minor in Computer Science, Language Citation in Modern Standard Arabic
- Robert Fletcher Rogers Award for Best Undergraduate Math Talk (2022)
- **Relevant Coursework**: Algebra I, II, Commutative Algebra, Number Theory, Probability, Introduction to Theoretical CS, Data Structures and Algorithms, Spectral Graph Theory, Machine Learning

Publications & Selected Writings

- **Saul, R.,** Alam, M.M., Hurwitz, J., Raff, E., Oates, T., Holt, J.. (2023). Lempel-Ziv Networks . *Proceedings on "I Can't Believe It's Not Better! - Understanding Deep Learning Through Empirical Falsification" at NeurIPS 2022 Workshops*, in *Proceedings of Machine Learning Research* 187:1-11 https://proceedings.mlr.press/v187/saul23a.html.
- Saul, R. (2022). Efficient Factoring and the Number Field Sieve [Senior thesis]. Harvard College. https://live-hu-math.pantheonsite.io/wp-content/uploads/Rebecca_Saul_Thesis_2022.pdf

Skills & Interests

Technical: languages: Python [incl. PyTorch and JAX], C, LaTeX, SQL (proficient); Java, SAGE, Mathematica, SAT solvers, Docker, IDA Pro (familiar)
Language: Arabic, intermediate
Volunteer: A-OK Mentoring and Tutoring for elementary and middle schoolers in Howard County
Interests: Soccer, basketball, piano, board games, legos, constitutional law, politics and public policy