Jessica Grogan

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Education

Ph.D. Computer Science — *University at Buffalo*
GPA: 3.5/4.0 — *August 2021- Present*
Schomburg Fellowship

Experience

Research Assistant - Algorithms and Theory — *August 2021 - Present*
University at Buffalo. Advisor: Atri Rudra — *Buffalo, New York*

- Currently working on defining a sub-class of Monarch matrices that maintain causal properties throughout training a neural network by utilizing polynomial evaluations.
- Designed an expressive class of structured matrices (Monarch matrices) for IO efficient matrix multiplication.
- Gained research experience in theoretical machine learning including structured linear algebra and IO complexity.

Teaching Assistant - Algorithms and Complexity — *January 2020 - May 2021*
University at Buffalo — *Buffalo, New York*

- Taught students common algorithms in the field of computer science and how to analyze time and space complexity. Algorithms included BFS, DFS, stable matching problem, etc.
- Held weekly office hours, reviewed and graded students' exams, and written homework assignments.

Teaching Assistant - Systems Programming — *August 2019 - May 2021*
University at Buffalo — *Buffalo, New York*

- Taught students systems programming in C using Ubuntu virtual machines. Projects included memory allocation system, synchronized memory usage, etc.
- Held weekly office hours, reviewed and graded students' exams, and programming assignments.

Software Engineering Internship — *May 2018 - August 2018*
Salient Management Co. — *Horseheads, New York*

- Learned and utilized Java, Git, GitBucket, and Jira to automate tests and eliminate bugs.
- Worked with the Quality Assurance team to develop and test new business analytics products before deployment.

Publications

"Monarch Mixer: A Simple Sub-Quadratic GEMM Based Architecture"
Dan Fu, Simran Arora, **Jessica Grogan**, Isys Johnson, Atri Rudra, Tri Dao, Christopher Ré. NeurIPS 2023. **Oral Presentation**.

"Monarch: Expressive structured matrices for efficient and accurate training"
Tri Dao, Beidi Chen, Nimit S. Sohoni, Arjun Desai, Michael Poli, **Jessica Grogan**, Alexander Liu, Aniruddh Rao, Atri Rudra, and Christopher Ré. In International Conference on Machine Learning, pp. 4690-4721. ICML, 2022. **Outstanding Paper award** (runner up)

Technical skills

Programming Languages/Tools Python, C, C++, Git, LaTeX