

# Jessica Grogan

📍 Buffalo    ✉ jrgrogan@buffalo.edu    🌐 jessgrogan.com

## Education

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<b>University at Buffalo</b> , PhD in Theoretical Computer Science	Aug 2021 – present
<ul style="list-style-type: none"> <li>GPA: 3.5/4.0</li> <li>Schomburg Fellowship</li> </ul>	
<b>University at Buffalo</b> , BS in Computer Science	Aug 2017 – May 2021
<ul style="list-style-type: none"> <li>GPA: 3.5/4.0</li> </ul>	

## Publications

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<b>Can Transformers Solve Least Squares to High Precision?</b>	2024
Jerry Weihong Liu, <i><b>Jessica Grogan</b></i> , Owen M Dugan, Simran Arora, Atri Rudra, Christopher Re International Conference on Machine Learning Workshop	
<b>Monarch Mixer: A Simple Sub-Quadratic GEMM Based Architecture</b>	2023
Dan Fu, Simran Aurora, <i><b>Jessica Grogan</b></i> , Isys Johnson, Atri Rudra, Tri Dao, Christopher Re Neural Information Processing Systems, <b>Oral presentation</b>	
<b>Monarch: Expressive Structured Matrices for Efficient and Accurate Training</b>	2022
Tri Dao, Beidi Chen, Nimit Sohoni, Arjun Desai, Michael Poli, <i><b>Jessica Grogan</b></i> , Alexander Liu, Aniruddh Rao, Atri Rudra, Christopher Re International Conference on Machine Learning, <b>Outstanding Paper Runner-up Award</b>	

## Experience

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<b>Research Assistant</b> , University at Buffalo – Buffalo, NY	June 2005 – Aug 2007
<ul style="list-style-type: none"> <li>Designed a sub-class of Monarch matrices that maintains causal properties throughout training a neural network by utilizing polynomial evaluations.</li> <li>Designed an expressive class of structured matrices (Monarch matrices) for IO efficient matrix multiplication.</li> <li>Gained research experience in theory driven machine learning utilizing structured linear algebra.</li> </ul>	
<b>Machine Learning Engineer Intern</b> , ACV Auctions – Buffalo, NY	May 2023 – Dec 2023
<ul style="list-style-type: none"> <li>Designed and implemented a classification model for engine vibration data using PyTorch.</li> <li>Collaborated on designing and implementing an audio-vibration model to accurately detect issues of a car engine.</li> </ul>	
<b>Teaching Assistant - Algorithms</b> , University at Buffalo – Buffalo, NY	Jan 2020 – May 2021
<ul style="list-style-type: none"> <li>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.</li> <li>Held weekly office hours, reviewed and graded students' exams, and written homework assignments.</li> </ul>	
<b>Teaching Assistant - Systems Programming</b> , University at Buffalo – Buffalo, NY	Aug 2019 – May 2021
<ul style="list-style-type: none"> <li>Taught students systems programming in C using Ubuntu virtual machines. Projects included memory allocation systems, synchronized memory usage, etc.</li> <li>Held weekly office hours, reviewed and graded students' exams, and programming assignments.</li> </ul>	
<b>Software Engineer Intern</b> , Salient Management company – Horseheads, NY	May 2018 – Aug 2018
<ul style="list-style-type: none"> <li>Worked with the Quality Assurance team to develop and test new business analytic products before deployment. Learned and utilized Java, Git, GitBucket and Jira.</li> </ul>	

## Technologies

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**Tools:** Python, PyTorch, C, C++, GitHub, Java