London Lowmanstone

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Education

University of Minnesota - Twin Cities, Minneapolis, MN   *May 2027*
- *Completed Master of Science* in Computer Science *(May 2024)*
- *Current Ph.D. student* in Computer Science researching subjectivity in Natural Language Processing (NLP)
- Advisors: Serguei Pakhomov, Maria Gini

Harvard University, Cambridge, MA   GPA: 3.7/4.0   *May 2021*
- *Bachelor of Arts with Honors* in Computer Science / Philosophy

Awards and Fellowships

- University of Minnesota CSE Graduate Fellowship   *2021*
- Harvard Undergraduate Technology Innovation Fellow   *2019-2021*
- Honors in Senior Thesis   *Spring 2021*
- B.J. Whiting Award   *Spring 2021*
  - Senior Award from Harvard's Lowell House - "Adds wit and charm to the House, shows loyalty to the House, and makes it a desirable place for interaction"
- Semifinalist for the Harvard Undergraduate Capital Partners Innovation Fund   *Spring 2021*
- Member of the Google Computer Science Research Mentorship Program   *2019-2020*
- Harvard Undergraduate Technology Innovation Fellows Program Summer Fellowship   *Summer 2020*
- Lemann Program on Creativity and Entrepreneurship Seed Fund Recipient   *Fall 2020*
- MSBA's Student School Board Member Scholarship Recipient   *Spring 2017*

Publications

1. London Lowmanstone, Ruyuan Wan, Risako Owan, Jaehyung Kim, and Dongyeop Kang, "Annotation Imputation to Individualize Predictions: Initial Studies on Distribution Dynamics and Model Predictions," *2nd Workshop on Perspectivist Approaches to NLP*, 2023
2. John Harwell, London Lowmanstone, and Maria Gini, "Provably Manipulable 3D Structures using Graph Theory," *Proceedings Autonomous Agents and Multi-Agent Systems*, 2023
3. John Harwell, London Lowmanstone, and Maria Gini, "A Lattice Model of Manipulable Environments for Provable Manipulation," *ARMS workshop at Autonomous Agents and Multi-Agent Systems*, 2022
4. John Harwell, London Lowmanstone, Maria Gini, "SIERRA: A Modular Framework for Research Automation," *AAMAS '22: Proceedings of the 21st International Conference on Autonomous Agents and Multiagent Systems (Demonstration Track)*, 2022
5. John Harwell, London Lowmanstone, and Maria Gini, "Demystifying emergent intelligence and its effect on performance in large robot swarms," *AAMAS '20: Proceedings of the 19th International Conference on Autonomous Agents and Multiagent Systems*, 2020
6. Tianyi Zhang, London Lowmanstone, Xinyu Wang, Elena L. Glassman, "Interactive Program Synthesis by Augmented Examples," *Proceedings of the 33rd Annual ACM Symposium on User Interface Software and Technology*, 2020
7. Elizabeth Jensen, London Lowmanstone, and Maria Gini, "Communication-Restricted Exploration for Search Teams," *DARS 2016: Proceedings of International Symposium on Distributed Autonomous Robotic Systems*, 2016

Research and Work Experience

Mount Sinai Health System, New York City, NY
Emergency Medicine Research - Artificial Intelligence Intern   *Summer 2024*
- Used retrieval augmented generation (RAG) techniques to improve automatic detection of stigmatizing language in electronic health records

University of Minnesota, Minneapolis, MN
Research Assistant   *Summer 2022, Summer 2013-2015*
- Demonstrated that using Kialo (a debate website) data improves topic diversity and relational structure, which improves model performance on relation prediction (paper)
- Developed and optimized vision software to recognize and decode barcode-like structures from an image
- Programmed base architecture for robot movement for a robot exploration algorithm

Harvard University, Cambridge, MA   *January 2020 - August 2021*
Research Assistant

- Worked with Professor Elena Glassman on designing and implementing synthesized regular expression displays

Harvard Innovation Labs, Cambridge, MA *October 2019 - May 2020*
Virtual Reality Teaching Assistant
- Provided advice to entrepreneurs on use cases for virtual, augmented, and mixed reality
- Assisted students in building virtual reality applications in Unity

Harvard Art Museums, Cambridge, MA *November 2017 – May 2019*
Virtual Reality Researcher
- Designed and developed virtual reality applications for use by museum curators
- Programmed in C# to develop applications in Unity for HTC Vive virtual reality system
- Experience and familiarity with a wide range of 3-dimensional virtual reality user interfaces

DREU Program, Minneapolis, MN *Summer 2018-2019*
Artificial Intelligence and Swarm Robotics Researcher
- Wrote code that enabled running large-scale robot simulation experiments on supercomputing clusters
- Researched, built, and tested the effectiveness of the triplet loss function utilized by time-contrastive networks on the MNIST dataset
- https://jadiker.github.io/dreu-2018/final_DREU_report.pdf
- https://jadiker.github.io/dreu-2019/DREU_Report_2019.pdf

Skills

Natural Language Processing: Member of Minnesota NLP Group, extensive experience with large language models
Research: Published author on five papers (above), selected for the Google Computer Science Research Mentorship Program
Machine Learning: Research experience with neural networks, capsule networks, time contrastive networks, found bug in MuZero
Programming Languages: Python, C#, Java, JavaScript, Lua, C, C++
Entrepreneurship: Harvard Technology Innovation Fellow
Web Design: Flask, React, Javascript, HTML, CSS

Projects

Large Language Models and African-American English (AAE) *2022*
- Demonstrated a method of machine learning bias removal in language models by fine-tuning only on minority dialects (paper)
- Determined that Non-Multilingual BERT outperforms Multilingual BERT when making predictions on AAE text

Text-to-Tree *2022*
- Developing a natural language processing system to convert from monologue text to an argument map by augmenting essay datasets with arguments from online debate sites (poster) (paper)

AGI Safety Fundamentals Program *2021-2023*
- Facilitated program, leading discussions on key issues in aligning artificial general intelligence
- Chosen as lead facilitator due to my experience with leading AI Safety discussions and knowledge on the topics
- Developed prompts for large language models to help solve problems in AGI safety

MuZero *2020*
- Implemented a version of MuZero (the follow-up to AlphaZero and AlphaGo)
- Identified a bug in the initial MuZero paper which the authors then corrected

Senior Thesis *2020-2021*
- Worked on determining the extent to which neural networks can be used detect and process human emotions
- Designed, trained, and tested large-scale neural networks for natural language processing to detect emotionally sensitive topics from memoirs.
- Determined that small amounts of dropout increased accuracy, replicating previous results in the field
- Link to thesis: https://docs.google.com/document/d/1dkQJ9rA6LdhNq66UlLh43fSvxlohNTfiE7OLk3a3zq4/