

JAMES MOONEY

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Education

University of Minnesota - Twin Cities <i>B.S. Computer Science (Math Minor), Magna Cum Laude with High Distinction</i>	Sep 2015 - Dec 2019 Minneapolis, MN
University of Minnesota - Twin Cities <i>M.S. Computer Science</i>	Jan 2020 - Dec 2022 Minneapolis, MN
University of Minnesota - Twin Cities <i>Ph.D. Computer Science</i>	Jan 2023 - Present Minneapolis, MN

Awards/Honors

Maroon and Gold Leadership Award <i>University of Minnesota - Twin Cities</i>	Sep 2015 Minneapolis, MN
John T. Riedl Memorial Graduate TA Award <i>University of Minnesota - Twin Cities</i>	Apr 2021 Minneapolis, MN

Experience

Co-Founder & CTO <i>SpectateVR</i> <ul style="list-style-type: none">Lead development of shared browser for VRSet up backend networking, server monitoring and metrics for application	Dec 2022 - Nov 2023 San Francisco, CA
Lecturer <i>University of Minnesota - Twin Cities</i> <ul style="list-style-type: none">Lecturer for CSCI 5512 - Artificial Intelligence IIDevelop curriculum around probabilistic graphical models (PGMs), reinforcement learning (RL), and machine learning (ML)Construct homeworks and tests (and their solutions) for problems involving ML, RL, and PGMsTeach concepts in AI and Machine Learning to ~ 70 undergraduate and graduate students	Jan 2023 - May 2023 Minneapolis, MN
Graduate Research Assistant <i>University of Minnesota - Twin Cities</i> <ul style="list-style-type: none">Extract laws from the Federal Register using OCR techniquesUse deep topic modelling methods to determine how topics of laws change between administrations and agencies of the federal government	Jun 2022 - Aug 2022 Minneapolis, MN
Graduate Teaching Assistant <i>University of Minnesota - Twin Cities</i> <ul style="list-style-type: none">Teaching Assistant for CSCI 5451 - Introduction to Parallel Computing: Architectures, Algorithms, ProgrammingAnswered student questions surrounding parallel programming languages/paradigms, parallel programming metrics/evaluation, and parallel architecturesCreated solutions and tests for programming problems involving CUDA, OpenMP, OpenMPICreated grading rubrics for evaluation of homeworks, quizzes, and labs	Jan 2021 - Present Minneapolis, MN
Engineering Development Intern <i>Mathworks</i> <ul style="list-style-type: none">Developed a company-wide internal testing and development toolIntegrated development tool into internal company development ecosystemResponded to client bugs and issues in working with Matlab and Simulink	May 2019 - Aug 2019 Boston, MA

Publications

Classification with Mixture of Experts Models

Sep 2022 - Dec 2022

with Prof Dongyeop Kang

UMN - Twin Cities

- Replace classification head of deep models with a mixture of experts (MoE) classification head
- Demonstrate qualitative and quantitative differences among experts and see how this relates to the structure of the output classes

Research Projects

Applying Sequence Learning Methods to Multi-Modal Fusion

Jun 2019 - Dec 2019

with Prof Catherine Zhao

UMN - Twin Cities

- Used sequence-to-sequence deep learning methods
- Compared various architectures and fusion methods for performance on a simulated dataset
- Presented findings for undergraduate honors thesis

HCAL Depth Segmentation in LHC

Dec 2015 - Apr 2017

with Prof Jeremiah Mans

UMN - Twin Cities

- Conducted simulations for the Large Hadron Collider using ROOT (a C++ library) on Unix
- Minimized radiation damage to the CMS detector (for tracking particle collisions)
- Presented findings to staff in the UMN physics department and to the CMS group at CERN

Additional Research Projects

May 2019 - Present

UMN - Twin Cities

- Improving the Interpretability of Convolutional Networks on Recognition Tasks
- Inferring Semantic Class Relationships in Image Recognition Tasks
- Searching for Output Labels in Neural Networks

Personal Projects

Founder

Apr 2018 - Dec 2018

Banter

Minneapolis, MN

- Created a real-time sports chat application on iOS for people to talk about games as they happen.
- Developed Model-View-Controllers in Swift for the iOS version of the application
- Developed cron-jobs using Firebase and Google Cloud to poll for updates to scores of games and messages between groups

Skills

Languages: Python, C/C++, JavaScript, Matlab, Swift

Developer Tools/Libraries: Jupyter Notebooks, Git, Google Cloud/Firebase, sklearn, numpy, pytorch, pandas, openMP, OpenMPI, CUDA, node.js, Docker