Daniel McNeela

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EDUCATION

- **University of Wisconsin, Madison** — Madison, WI
  Doctor of Philosophy - Computer Science — *May 2023 - May 2025*
  Selected Coursework: *Differential Geometry, Differential Topology, High Performance Computing, Computational Network Biology, Bioinformatics, Big Data Systems, Databases, Operating Systems, Weak Supervision in ML, Statistics*

- **University of Wisconsin, Madison** — Madison, WI
  Master of Science - Biomedical Data Science — *September 2021 - May 2023*
  Activities: *Morgridge Entrepreneurial Bootcamp, Wisconsin Track Club, Wisconsin Triathlon Team*

- **University of California, Berkeley** — Berkeley, CA
  Bachelor of Arts - Applied Mathematics — *August 2012 - May 2017*

PUBLICATIONS

- **Mixed-Curvature Representation Learning for Biological Pathway Graphs** — D McNeela, F Sala, A Gitter
  ICML 2023 Workshop on Computational Biology — *July 2023*

- **Almost Equivariance via Lie Algebra Convolutions** — D McNeela
  Under Review — *October 2023*

- **Almost Equivariance via Lie Algebra Convolutions – Extended Abstract** — D McNeela
  NeurIPS 2023 Workshop on Symmetry and Geometry in Neural Representations — *December 2023*

SKILLS SUMMARY

- **High-Level**:   Machine Learning, NLP, HPC, Graph ML, Computational Biology, Bioinformatics
- **Languages**:   Python, C, C++, CUDA, Javascript
- **Frameworks**:   PyTorch, JAX, HuggingFace, Weights and Biases, SpaCy, Django, React.js
- **Tools**:   Docker, Git, Bash
- **Platforms**:   Linux, AWS (S3, EC2, Sagemaker)
- **Soft Skills**:   Technical Writing, Content Writing

EXPERIENCE

- **University of Wisconsin, Madison** — Madison, WI
  Graduate Student Researcher — *June 2021 - Present*
  - **Machine Learning and Drug Discovery**: Performing research in computational drug discovery, graph representation learning, and graph neural networks under the guidance of Professors Anthony Gitter and Fred Sala.
  - **HPC**: Embedded tens of thousands of biological pathway graphs in parallel using the HTCondor high-throughput system.
  - **Modeling**: Worked on developing a self-supervised contrastive learning method for graphs in hyperbolic space. Coded neural networks in PyTorch.

- **OpenDrugDiscovery Project** — Remote
  Founding Team Member — *March 2023 - June 2023*
  - **C++ and HPC**: Wrote performant C++ code to process large chemical datasets with millions of molecules, such as ChEMBL and MCULE.

- **Eli Lilly** — San Diego, CA
  Software Engineer — *June 2020 - May 2021*
  - **Backend Architecture**: Served as backend engineering lead for drug discovery platform. Developed and maintained pipeline for in-silico drug discovery of monoclonal antibodies and immunotherapeutics using Cromwell, Python, R, and Django. Scaled pipeline to handle runs with thousands of jobs using cloud tools such as AWS and Docker. Handled testing using frameworks such as pytest and pytest-wdl.
  - **Frontend**: Contributed to frontend for drug discovery platform used by scientists across the company. Developed extensively in React.js.
  - **Machine Learning**: Engineered statistical and machine learning models for drug discovery in R and Python.

- **Human Longevity, Inc.** — San Diego, CA
  Machine Learning Researcher — *February 2019 - October 2019*
  - **Bioinformatics**: Built bioinformatics pipelines for variant calling incorporating GATK tools. Architected with Python and workflow management with Luigi.
  - **NLP**: Developed models for Biomedical Named Entity Recognition for internal company search engine.

- **machineVantage** — Berkeley, CA
  Machine Learning Researcher — *August 2017 - February 2019*
  - **Deep Learning and NLP**: Implemented deep learning models from current NLP research papers and performed novel research in machine learning. Focused on word and sentence embedding models such as word2vec, GloVe, and FastText.
  - **Frontend and Backend Engineering**: Built an in-house web app which allowed marketers to rapidly search through related cultural/brand concepts. Mined page links in Wikipedia, wrote code in C++ to collate links, generated embeddings, and served data using ElasticSearch. Built a microservice using Flask as a backend with Javascript frontend.

PROJECTS

- **C++ & CUDA Recommender System** — Madison, WI
  - : Wrote a recommender system in C++ and CUDA implementing classic matrix-factorization algorithms. Created efficient parallel implementation across many GPU cores.

- **Distributed Data and Model Parallel Transfer Learning System** — Madison, WI
  - : Helped develop a distributed system using PyTorch DDP that allows users to transfer learn many models simultaneously on multiple datasets.

ACADEMIC SERVICE

- **ICML Topology and Geometry in Machine Learning Workshop** — Honolulu, HI
  Reviewer — *July, 2023*

- **NeurIPS Symmetry and Geometry in Neural Representations Workshop** — New Orleans, LA
  Program Committee Member — *December, 2023*

TECHNICAL AND CONTENT WRITING

- **Scale.ai** — Remote
  Freelance Writer — *2021 - Present*
  - **Whitepaper**: Wrote copy for a lengthy whitepaper detailing the company's document processing technology and its benefits to customers.
  - **Blog Posts**: Wrote technical blog posts for the Scale Exchange website on topics such as Spotify's ML algorithms, document processing, MLOps, and synthetic data generation.

- **MosaicML** — Remote
  Freelance Writer — *2022 - Present*
  - **Documentation**: Proofread company's entire technical product documentation. Developed documentation for new ML methods and algorithms. Worked extensively in the Python Sphinx documentation system.
  - **Notebooks**: Proofread and created Jupyter notebooks to demo the company's technology.

- **Hyper-Space.io** — Remote
  Freelance Writer — *2022 - Present*
  - **Blog Posts**: Wrote blog post for the company's blog about ElasticSearch performance.

- **Divio** — Remote
  Freelance Writer — *2022 - Present*
  - **Blog Posts**: Wrote blog posts for the company's blog on cloud computing.

- **Neptune.ai** — Remote
  Freelance Writer — *2022 - Present*
  - **Blog Posts**: Wrote articles for the company's blog detailing deep learning and NLP models and algorithms.

- **MonaLabs** — Remote
  Freelance Writer — *2022 - Present*
  - **Blog Posts**: Wrote articles for the company's blog detailing their MLOps technology.

- **Kaskada** — Remote
  Freelance Writer — *2022 - Present*
  - **Blog Posts**: Wrote articles for the company's blog detailing their MLOps technology.

- **Cortical.io** — Remote
  Freelance Writer — *2021 - Present*
  - **Whitepaper**: Wrote a whitepaper detailing the company's document processing technology.

- **New Relic** Remote
  Freelance Writer *2021 - Present*
  - **Documentation**: Wrote documentation and descriptions of many of company's monitoring quickstarts.

- **iMerit** Remote
  Freelance Writer *2021 - Present*
  - **Blog Posts**: Wrote articles for the company's blog detailing their data labeling technology.

- **Rev.com & Rev.ai** Remote
  Freelance Writer *2020 - 2021*
  - **Blog Posts**: Wrote articles for the company's blog detailing their speech recognition technology. Developed technical guides for working within their platform.
  - **Whitepaper**: Wrote copy for a whitepaper used to pitch the company's core speech recognition technology to potential clients. Was used for essential marketing campaign.

- **Algorithmia** Remote
  Freelance Writer *2019 - 2021*
  - **Blog Posts**: Wrote articles for the company's blog detailing their MLOps technology. Ended with the company's acquisition by DataRobot.

- **Clarifai** Remote
  Freelance Writer *2019*
  - **Blog Posts**: Wrote articles for the company's blog detailing ML models.