

D. Estes McKnight

📍 Edmonton, AB ▪ 📞 +1 (314) 919-5252 ▪ ✉ d.e.mcknight95@gmail.com
🌐 demcknight.com ▪ [in linkedin.com/in/dem1995](https://www.linkedin.com/in/dem1995) ▪ github.com/dem1995 ▪ 🏠 D McKnight

Motivated software developer with 4 years of machine learning development and research experience.

Eager to leverage skills in Python, SWE, NLP, modelling, and more.

EMPLOYMENT

Physics Dept., University of Alberta Edmonton, Alberta

Research Machine Learning Developer Feb 2025–

- Prepared space weather libraries, datasets, and algorithms for downstream machine learning.
- Trained models to clean/label auroral image datasets. Used PyTorch, pandas, wandb, and scikit-learn.

Computing Science Dept., University of Alberta Edmonton, Alberta

NLP Researcher Jan 2023–Jan 2024

Graduate Research Assistant Apr 2020–Oct 2022

- ML, data science, & NLP research. Published & presented papers, incl. at the NLP-top-3-venue NAACL
- Designed/analyzed/trained hundreds of user models on multimillion-scale datasets with Python, PyTorch, pandas/Dask, scikit-learn, statsmodels, NLTK, and wandb. Indexed data with Elasticsearch.
- Communicated findings via reports, presentations, and papers with JASP (SPSS alt.), matplotlib, & LaTeX.
- Used Python, Flask, JavaScript, HTML, and CSS to design response-annotation webpages hosted on GCP

Graduate Teaching Assistant Aug 2019–Apr 2020

MiTék USA, Inc. St. Louis, Missouri

Backend Software Engineering Intern May–Aug 2018

- Refactored SQL CRUD tests with C# and mocked with NSubstitute to eliminate dependencies.

Frontend Software Engineering Intern May–Aug 2017

- Used C#, WPF, and Entity Framework to create an incident report-editing application that interfaced with the company's e-mail databases. Application part of manager's workflow a year later.

Iowa State University VR Applications Center. Ames, Iowa

Research Intern May–Aug 2016

CONTRACT WORK

Ballpark Housing Edmonton, Alberta

Backend/NLP Development May–Jul 2024

- Collaborated to design an LLM-based RAG system using Pinecone and OpenAI's GPT-4. Prepared a scraping server and PostgreSQL database on GCP using SQLAlchemy.

Alberta Machine Intelligence Institute. Edmonton, Alberta

ML Educational Material Development Jun–Aug 2023

EDUCATION

University of Alberta 2019–2022

M.Sc. Computer Science research-based, *GPA 4.0*

Research in NLP and machine learning with Prof. Alona Fyshe's [Representations Lab](#)

University of Oklahoma 2014–2019


B.S. Mathematics *magna cum laude*

B.S. Computer Engineering *GPA 3.7*, with **Minor in Computer Science**

LANGUAGES AND TECHNOLOGIES

Languages Proficient in Python, Java, C++, C#, & SQL. Familiar with R, MATLAB, JavaScript, & Bash

SWE Version Control (Git, TFS), Cloud (GCP), ORM (SQLAlchemy, Ent. Framework), CI/CD (GH Actions), REST (FastAPI), MVVM/MVC (WPF, Swing), Containerization (Docker)

ML/Data Sci. PyTorch, Pandas, Dagster, NumPy, SciPy, statsmodels,  transformers, Pinecone & wandb

SELECTED PROJECTS

- Developed a **Python** bitfield/serialization library for ROM-hacking with **CI/CD**, **PyTest**, and **Sphinx docs**
- Created a **GCP**-hosted self-updating website to track statistics for a multi-month 1500-vote **video-game music contest** using a **LASPy** (**Debian**, **Apache**, **SQLite**, and **Python**) stack and BeautifulSoup4
- Worked with a cross-Canada team to discover online depressive language trends during COVID-19 in various cities. Used **ElasticSearch**, **GloVe** and **VADER** on scraped geocoded tweets and Reddit posts. Wrote bash/Python scripts for others to collect additional data

LEADERSHIP

- **President** of **UAlberta's Computing Science Graduate Students' Association** (Sum. 2021–Sum. 2022)
- **President** of **UOklahoma's Math Club** (Fall 2016–Spring 2019), VP (Spring 2016), Treasurer (Fall 2015)
- **Captain** of **UOklahoma's ACM-ICPC Programming Competition Club** (Fall 2017–Spring 2019)

PUBLICATIONS

Forthcoming

- **McKnight** et al. "Adult age and object-similarity judgment: Differences between 25–35- and 50–60-year-olds concerning interpretable neural-embedding dimensions".
- **McKnight** & Fyshe "Taxonomic–thematic preference differences between adults and young children through sparse object-similarity embeddings".

Published

- **McKnight** & Fyshe. "Characterizing Human and Zero-Shot GPT-3.5 Object-Similarity Judgment". *Find. 2024 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL)*, 2024.
https://demcknight.com/served_files/919-characterizing-human-and-zero.pdf
- **McKnight**. "Age-Related Differences in Object-Similarity Judgment". Master's thesis, The University of Alberta, 2022.
<https://doi.org/10.7939/r3-mz1n-v607>
- Davis, **McKnight**, et al. "Quantifying Depression-Related Language on Social Media During the COVID-19 Pandemic". *International Journal of Population Data Science (IJPDS)*, 2020.
<https://doi.org/10.23889/ijpds.v5i4.1716>
- Stewart, Epstein, Troup, **McKnight**. "A Mathematician's Deliberation in Reaching the Formal World and Students' Views of the Eigentheory". *Proc. 11th Congress of the European Society for Research in Mathematics Education (CERME)*, 2019.
<https://hal.science/hal-02459875/>
- Stewart, Epstein, Troup, **McKnight**. "An Analysis of a Mathematician's Reflections on Teaching Eigenvalues and Eigenvectors: Moving between Embodied, Symbolic and Formal Worlds of Mathematical Thinking". *Proc. 22nd Annual Conference on Research in Undergraduate Mathematics Education (RUME)*, 2019.
<http://sigmaa.maa.org/rume/crume2019/Papers/147.pdf>