Dawn E. McKnight

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EDUCATION

University of Alberta 2019-

MSc Computer Science, research-based. Ongoing. *GPA 4.0*

Graduate research focus in NLP and machine learning under Dr. Alona Fyshe

University of Oklahoma 2014-2019

B. S. Mathematics *magna cum laude*

B. S. Computer Engineering *magna cum laude*, with **Minor in Computer Science**

Undergraduate research in linear algebra pedagogy under Dr. Sepideh Stewart

EMPLOYMENT

University of Alberta **Edmonton, Alberta**
Graduate Student- RA Fellowship & TA Fall 2019-

- TA for CMPUT 566 Machine Learning; 272 Discrete Mathematics; 355 Games, Puzzles, Algorithms
- Machine learning and natural language processing research

MiTek USA, Inc. **St. Louis, Missouri**
Software Engineer Summers 2017, 2018

- Developed an incident report viewing/editing application using C#, WPF, and Entity Framework
- Refactored (C#) unit tests and mocked with NSubsititute to eliminate external dependencies and reliance on database

Iowa State University VRAC **Ames, Iowa**
Research Intern Summer 2016

- Created a military simulation for the U.S. Army in Unity with C# as part of an Intelligent Team Tutoring project. Designed 3D models with Blender and AutoCAD.

LANGUAGES AND TECHNOLOGIES

- Proficient in *Java*, *C++*, *C#*, and *Python*. Familiar with *MATLAB*, *LaTeX*, *Mathematica*, and *JavaScript*
- Uses paradigms and tools such as *WPF*, *Entity Framework*, *CUDA*, *Git*, *TFS*, *JavaDoc*, *Doxygen*, and *UML*

SELECTED PROJECTS

- Developed a program in **C++** to construct 3D-printable triangular mesh approximations from continuous real bivariate functions. Sped up processing via parallelization with **CUDA**
- Created a **Java** chess application that supports user-created skin libraries, then ported it to **Android**
- Animated a winter night sky scene using fractals (IFS, Koch, and n-flake) and **OpenGL**/**JOGL**
- Designed an nth-order Butterworth filter generator in **Mathematica** and deployed to **Wolfram Cloud**
- Implemented an unapplied method for classifying butterflies with **neural nets** & **topological data analysis**

EXPERIENCE AND AWARDS

- **President of UAlberta's Computing Science Graduate Students' Association** (Fall 2021-)
- **President of OU's Math Club** (Fall 2016-Spring 2019), Vice President (Spring 2016), Treasurer (Fall 2015)
- **Captain of OU's ACM-ICPC Programming Competition Club** (Fall 2017-Spring 2019)
- OU Presidential Honor Roll (Fall 2015, Spring 2017, Spring 2018, Spring 2019), OU Dean's Honor Roll (all semesters but Fall 2018)
- FLL team mentor (mentees took first in Robot Performance at the Brittany Woods Middle School competition)

PUBLICATIONS

- "Quantifying Depression-Related Language on Social Media During the COVID-19 Pandemic". *IJPDS*, 2022. <link forthcoming>
- "The Development of Interactive Applications to Assist with a Linear Algebraic Curriculum". Undergraduate Honors Thesis, UOklahoma Math Department, 2019.
  https://dem1995.github.io/files/McKnightHC-LAApps.pdf?raw=true
- "An Analysis of a Mathematician's Reflections on Teaching Eigenvalues and Eigenvectors: Moving Between Embodied, Symbolic and Formal Worlds of Mathematical Thinking". *Proceedings of the SIGMA-RUME Conference, 2019*
  http://sigmaa.maa.org/rume/crume2019/Papers/147.pdf