Alex Morehead

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Education

University of Missouri **Columbia, MO**

Ph.D. Computer Science | *Department of Electrical Engineering & Computer Science* *August 2020 – May 2025*

• Research Interests: **Machine Learning, Bioinformatics, & Computer Vision**

Missouri Western State University **Saint Joseph, MO**

B.S. Computer Science, Minor in Mathematics | *Department of Computer Science, Mathematics, & Physics* *August 2016 – May 2020*

• **Cumulative GPA: 4.0 / 4.0; Major GPA: 4.0 / 4.0; Summa Cum Laude;** General Studies Honors Program

• Relevant Coursework: Data Structures, Probability Theory, Mathematical Statistics, Linear Algebra, Multivariable Calculus

Professional Experience

University of Missouri **Columbia, MO**

Graduate Research Assistant | *Bioinformatics & Machine Learning (BML) Lab* *August 2020 – Present*

• Research machine learning and its applications in bioinformatics and computer vision.

Altec, Inc. **Saint Joseph, MO**

Software Development Intern | *Service Team* *August 2018 – Present*

• Reduce miscommunication between service centers globally by engineering new Angular web applications

• Maintain the testing environments of in-house applications by writing LINQ queries and tuning up test databases

• Build secure back end APIs with the Spring framework in an agile development setting

Indiana University–Purdue University Indianapolis **Indianapolis, IN**

Undergraduate Research Assistant | *Department of Computer & Information Science* *June 2019 – August 2019*

• Effectively contributed to a private repository for the department's NSF-funded 2019 Data Science REU

• Authored an SMS alert pipeline using TensorFlow Lite models on Raspberry Pi microcomputers

• Precisely recorded findings of the gunshot sound detection project in a LaTeX manuscript

Missouri Western State University **Saint Joseph, MO**

Undergraduate Research Assistant | *Department of Computer Science, Mathematics, & Physics* *May 2018 – August 2018*

• Successfully developed and maintained a GitHub repository of mathematical applications to synthetic biology

• Produced the open-source desktop application *Variant Sampler* for modeling the sample space of *in vitro* experiments

• Accurately documented all source code generated for the department's NSF-funded 2018 summer research project

Computer Science Content Tutor | *Center for Academic Support* *February 2017 – August 2018*

• Assisted students in furthering their understanding of object-oriented programming and data structures

• Trained students to individualize the learning process to achieve their academic goals

• Designed and initiated a customized learning plan for each student's success

Publications

• Owen Koucky, Jacob Wagner, Sofia Aguilera, Benjamin Bashaw, Queena Chen, Anthony Eckdahl, Elise Edman, Paul Gomez, Nick Hanlan, Nick Kempf, Devin Mattoon, Sam McKlin, Christopher Mazariegos , **Alex Morehead**, Shi Qing Ong, Andy Peterson, Maria Rojas, Kyla Roland, Kaitlyn Schildknecht, Haley Seligmann, Kaden Slater, Ali Tauchen, Raechel Tittor, Tatianna Travieso, Dannie Urban, Caroline Willis, John Zhou, Nicole L. Snyder, Laurie J. Heyer, Jeffrey L. Poet, Todd T. Eckdahlb, A. Malcolm Campbell. *Synthetic Biology Bicistronic Designs Support Gene Expression Equally Well in vitro and in vivo*. In press at the American Journal of Undergraduate Research (AJUR).

• **Alex Morehead**, Lauren Ogden, Gabe Magee, Ryan Hosler, Bruce White, and George Mohler. *Low Cost Gunshot Detection using Deep Learning on the Raspberry Pi.* Published with the 2019 IEEE International Conference on Big Data.

Presentations

• [Paper Presentation] **Alex Morehead**, Lauren Ogden, Gabe Magee, Ryan Hosler, Bruce White, and George Mohler. *Low Cost Gunshot Detection using Deep Learning on the Raspberry Pi*. 2019 IEEE International Conference on Big Data. Los Angeles, CA. December, 2019.

• [Poster Presentation] **Alex Morehead**, Lauren Ogden, Gabe Magee, Ryan Hosler, Bruce White, and George Mohler. *Low Cost Gunshot Detection using Deep Learning on the Raspberry Pi*. IUPUI Student Summer Poster Symposium. Indianapolis, IN. July, 2019.

• [Poster Presentation] **Alex Morehead**, Elise Edman, Laurie Heyer, and Jeff Poet. *Variant Sampling in vitro with a Scheduling Twist.* 2019 Alpha Chi National Convention. Cleveland, OH. April, 2019.

• [Poster Presentation] **Alex Morehead**, Elise Edman, Laurie Heyer, and Jeff Poet. *Variant Sampling in vitro with a Scheduling Twist.* 2018 MWSU PORTAL Summer Research Showcase. Saint Joseph, MO. September, 2018.

• [Poster Presentation] Spencer Frazier, **Alex Morehead**, Steven Prine, Emil Petersson, and Joseph Kendall-Morwick. *Predicting Game Genres by Analyzing Code Structure*. 2018 CSCC Central Plains Conference. Maryville, MO. April, 2018.

• [Poster Presentation] Spencer Frazier, **Alex Morehead**, Steven Prine, Emil Petersson, and Joseph Kendall-Morwick. *Predicting Game Genres by Analyzing Code Structure*. 2018 MWSU Multidisciplinary Research Day. Saint Joseph, MO. April, 2018.

Community Service

• Second Harvest Food Bank – Package food for local families in need *September 2013 – Present*

• Word of Life Church - Mentor middle school and high school students *August 2012 - Present*

• Casas Por Christo – Spent first three college spring breaks building new homes for families in Mexico *March 2017 – March 2019*

• Habitat for Humanity – Volunteered to help in the construction and development of several area homes *September 2015*

Awards & Honors

• **Outstanding Graduating Student** – 1st ranked undergraduate computer science student at Missouri Western *May 2020*

• **President's Honor Roll** – Awarded certificate for maintaining a 4.0 cumulative GPA *May 2019*

• **Floyd Tesmer/Strayer University Prize in Computer Science and Engineering** – 1st place undergraduate poster *April 2019*

• **Alpha Chi Region IV Scholarship** – Received $500 for demonstrating thoughtful computer science scholarship *April 2019*

• **Grand Midwest Asynchronous Programming Contest** – Won 3rd place with the university's programming team *April 2017*

• **East Side Lions Club Scholarship** – Awarded $500 for demonstrating exemplary preparation for higher education *May 2016*

Grants/Fellowships

• Dean's Engineering Excellence Fellowship (University of Missouri). ($30000). *August 2020 – May 2021*

• James W. and Joan M. O'Neill Graduate Fellowship in Engineering (University of Missouri). ($10000). *August 2020 – May 2021*

• NSF REU-1659488. Low Cost Gunshot Detection using Deep Learning on the Raspberry Pi. ($5000). *June 2019 – August 2019*

• NSF MCB-1613281. Collaborative Research: Variant Sampling *in vitro* with a Scheduling Twist. ($2900). *May 2018 – August 2018*

Professional Affiliations

• *Institute of Electrical and Electronics Engineers (IEEE)* *August 2019 – Present*

• *Alpha Chi (AX)* *March 2018 – May 2020*

• *Kappa Mu Epsilon (KME) – 2019/20 President of the Missouri Lambda Chapter* *March 2018 – May 2020*

Selected Independent Projects

Machine Learning Fundamentals *May 2018 – July 2018*

• Assembled a self-educational series of open-source Python scripts which led to a revised understanding of machine learning

• Researched and solved classic and contemporary optimization problems in artificial intelligence

• Promoted peers and teachers' awareness of data science's ability to impact everyday living

Cense *September 2016 – April 2018*

• Devised an open-source application for facilitating sensical personal finance habits

• Implemented JavaFX to create a simple and intuitive graphical user interface

• Programmed an alternative Swing version as well as a debugger for feature testing and error troubleshooting

Eagle Scout Project *January 2015 – June 2015*

• Led a community service project for advancement to the rank of Eagle Scout in the Boy Scouts of America

• Upgraded local church's youth ministry lounge with a new media station as well as new furniture and artwork

• Utilized two Raspberry Pi Model B's running XBMC and Raspbian to power the new media station for the youth lounge

Skills & Interests

• Languages/technologies: Proficient in Java, Python, C; familiar with R, C#, C++, SQL, HTML, CSS. Previously used Angular, Django, NumPy, & Jupyter. Experienced with Git, Unix/Linux, Spring, Unit Testing, Web Services, Design Patterns, Deployment, & Security.

• Finished both the full & half marathons in Kansas City.

• Proficient in written and spoken Chinese and Japanese.