

David McLain  
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## EDUCATION

**University of Arizona**

Tucson, Arizona

**Bachelor of Science, Computer Science**

2019 – Present

*Minor in Mathematics*

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## TECHNICAL SKILLS

Programming Languages: Java; Python; C#; C; MIPS; SQL; Bash; JavaScript; HTML; CSS

Operating Systems: Linux; Unix; Windows

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## RELEVANT EXPERIENCE

**Department of Aerospace and Mechanical Engineering, University of Arizona –**

June 2023 – Present

*Undergraduate Research Assistant*

- Designing and implementing wrapper classes to automate simulation tasks while seamlessly integrating machine learning algorithms for advanced data analysis.
- Translating complex MATLAB codebase to Python libraries, incorporating machine learning frameworks such as TensorFlow and scikit-learn for data-driven decision-making.
- Operating within an agile development framework, participating in weekly sprint planning, stand-up, and retrospective meetings to track progress, address challenges, and ensure timely delivery of projects and milestones.

**University of Arizona, Department of Computer Science –**

December 2022 – Present

*Undergraduate Course Coordinator*

- Serving as an undergraduate Course Coordinator in Computer Architecture, providing academic support to students by hosting weekly office hours to provide students with additional opportunities to practice course concepts, and receive personalized feedback.
- Collaborating with the course instructor and other teaching assistants to ensure consistency in teaching style, grading policies, and course content.

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## PROJECTS

**Operating System –**

In Progress

- Collaborating with a partner to design and develop a custom operating system from scratch in C, which implements critical foundational components of the operating system, including bootloading, process table management, and process lifecycle control.
- Designed and implemented a robust process dispatcher that efficiently schedules and manages system tasks and user processes, incorporating a round-robin scheduling algorithm with an 80 ms quantum time slice, ensuring fair and predictable task execution.
- Enabled user-mode processes to interact with the operating system by implementing a secure system call (syscall) interface, allowing access to essential OS services while maintaining security and stability.

**Mini Watson –**

Spring 2023

- Led a 5-member team in creating a Java-based software application emulating IBM's Watson Question Answering system, integrating OpenNLP and Lucene for Wikipedia document searching using bag-of-words and probabilistic search models
- Coordinated with team members to design and implement an algorithm for indexing pertinent Wikipedia documents and extracting information through natural language processing techniques.

**Chess Game –**

Fall 2022

- Led a 4-member developer team in creating a Java-based chess application with GUI features using Swing and AWT libraries, encompassing online gameplay, game saving/loading, and competitive mode.
- Employed agile methodologies for efficient project management, incorporating regular team meetings, task prioritization, and continuous integration. Additionally, applied the Model-View-Controller (MVC) pattern for an intuitive user interface.

**Sorting Algorithm Visualizer –**

Winter 2022

- Orchestrated the development and deployment of a Sorting Algorithm Visualization tool employing JavaScript, HTML, and CSS, with a primary objective of elucidating the operational dynamics of merge sort, quicksort, and heapsort algorithms.
- Leveraged HTML and CSS expertise to craft an interactive, user-centric interface that presented numerical arrays while effectively elucidating the pivotal stages of the sorting procedure.
- Manifested a demonstrated aptitude in software engineering, algorithmic design, and web development, substantiated by the successful completion of a high-caliber project that garnered positive accolades from a discerning user base.