Sungkar Bolat

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Education

University of Wisconsin-Madison May 2026
B.S. Computer Sciences & Mathematics *Current GPA: 4.0*

Coursework

Courses: OOP, Machine Organization and Programming, Matrix Methods in Machine Learning, Operating Systems, Algorithms, Artificial Intelligence, Theory of Computation, Programming Languages and Compilers
Awards: Dean's Honor List Spring 2023, Fall 2023, Spring 2024, Fall 2024

Skills

Languages: C/C++, C#, Python, Java, JavaScript, R
Tools: Git/GitHub, Unix Shell, VS Code, IntelliJ CLion/PyCharm/IDEA
Frameworks: React, Node.js, Svelte, .NET, PyTorch, TensorFlow
Libraries: pandas, NumPy, Matplotlib, scikit-learn, geopandas, selenium

Projects

RAID FS Dec. 2024
- Designed the code for the file system implementation using FUSE (Filesystem in Userspace) software for an operating systems course.
- Developed support for essential file operations, including read, write, create, and delete, while integrating RAID 0, RAID 1, and RAID 1V modes to ensure data redundancy and fault tolerance.
- Gained in-depth understanding of file system architectures and the importance of implementing robust safety measures to prevent data loss in failure scenarios.

WSH Nov. 2024
- Developed a custom Unix-like shell from the ground up as part of an operating systems course.
- Implemented command parsing with support for built-in and external commands, input/output redirection, command pipelining, and process control using system calls such as fork, exec, and wait.
- Strengthened understanding of Unix process management and low-level systems programming concepts.

Generative Models for Materials Science June 2024 - Present
- Trained a Crystal Diffusion Variational Autoencoder (CDVAE) on the Alexandria dataset to generate novel crystalline materials.
- Collaborated with the Informatics Skunkworks research group to resolve data quality and formatting issues for custom material datasets.
- Configured Docker environments to streamline deployment and experimentation on the Center for High Throughput Computing (CHTC) infrastructure.

Teaching Experience

Computer Sciences Department | *Peer Mentor* Jan. 2025 – Present
- Serving as an undergraduate teaching assistant for the Introduction to Operating Systems course at UW–Madison. Provide support to students on coding-intensive project assignments by assisting with debugging and troubleshooting. Address questions related to key operating systems concepts, including threading, file systems, and virtual memory management (paging).

Computer Sciences Learning Center | *Volunteer* Sept. 2024 – December 2024
- Provided help with debugging and code review for introductory object-oriented programming courses at UW-Madison.

Leadership & Involvement

Wisconsin Robotics | *Project Lead* Sept. 2024 - Present
- Leading an autonomous systems sub team within the Wisconsin Robotics Club, overseeing the development of navigation and perception algorithms for a Mars rover.
- Designed and implemented long-range path planning algorithms that account for terrain elevation to optimize route selection.
- Developed computer vision models for real-time obstacle detection and avoidance.
- Wrote and maintained ROS 2 nodes for interfacing with motor drivers, enabling accurate straight-line traversal and motion control.