

Jose Abuan

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EXPERIENCE

ARIA Lab

Feb 2024 – Present

Undergraduate Researcher

Golden, CO

- Lead a multi-disciplinary research sprint focused on implementing LiDAR SLAM and Monte-Carlo Localization on a Boston Dynamic Spot robot
- Manage the development lifecycle using Git/GitHub and Agile methodologies, coordinating task breakdowns for a research team to meet two-week sprint milestones.
- Completed multiple real-time demos focusing on mapping real-life environments with LiDAR

Colorado School of Mines

Aug. 2024 – Dec 2024

Physics Lab Teaching Assistant

Golden, CO

- Provided instructional support to students by guiding experiments, explaining concepts, and demonstrating problem-solving approaches.
- Handled logistical and administrative tasks including setting up experiments, grading student work, and giving direct feedback.
- Served as an outside-of-studio resource for homework assignments.

PROJECTS

Quantum Rings Model Predictor - Advanced Software Engineering

- Benchmarked GPU/CPU performance across quantum computing backends using the QuantumRings SDK on the Wendian HPC cluster, building a parallelized Slurm array-job pipeline for large-scale runs.
- Developed a regex-based QASM 2.0 parser extracting 71 circuit features to build an ML dataset predicting circuit runtime and peak memory usage.
- Trained XGBoost models and applied SHAP-based feature importance analysis across three prediction targets, building weighted decision matrices to select the best model.

Colorado Car Crash Predictor - Advanced Data Science

- Built a Flask web application for real-time, route-based crash risk prediction with hotspot analysis, using CDOT crash data from 2020, 2022, and 2024.
- Collaborated with a 3-person team to design and implement the end-to-end data pipeline and prediction model.

Clue Game - Software Engineering

- Designed and implemented a digital version of the Clue board game using Java.
- Applied Agile development practices, version control, and SOLID design principles in a team environment.

Park@Mines

- Developed a computer vision-based system to monitor campus parking availability using Python.
- Designed and deployed a full-stack web app (React) displaying live parking data for campus users.

EDUCATION

Colorado School of Mines

Aug. 2023 – May 2027

Bachelor of Science in Computer Science

Golden, CO

- **Coursework:** Data Structures, Algorithms, Database Management, Machine Learning, Probability and Statistics, Software Engineering, Leadership
- **Research:** Autonomy, Robotics, and Intelligent Algorithms
- **Extracurriculars:** Mines ACM, Mines Competitive Programming, Mines LUG, Colorado School of Mines Army ROTC: Color Guard, Ranger Challenge, Bataan Captain, Ranger Buddy

SKILLS

Languages : Python, C++, Java, C, JavaScript (React.js), R, RISC-V, HTML/CSS, Bash Scripting, SQL (PostgreSQL, MySQL), Lua, Go, OCaml

Tools : Neovim, Archlinux, Ubuntu, VS Code, GitHub, Gitlab, ROS2, Tensorflow, Pytorch, OpenCV

Relevant Concepts : SLAM, Machine Learning, Intelligent Algorithms, SOLID Principles, Agile, Computer Vision