Joshua Aney

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Education

Montana State University — Bozeman, MT
BS Computer Science, GPA: 3.96 — *Expected May 2026*

Skills & Coursework

Languages: Python, MATLAB, Java, C, SQL, C#
Frameworks & Tools: PyTorch, TensorFlow, .NET Core, SLURM, NumPy, Matplotlib
Software & Tools: Linux, Jetbrains Products, GitHub, VSCode, Adobe Illustrator, Overleaf, Claude Code
Coursework: Machine Learning, Linear Algebra, Artificial Intelligence, Greedy Algorithms, Flow Networks, Optimization, Technical Writing

Experience

Undergraduate Research Assistant — 2026
HACR Lab (Harnessing Automation in Cybersecurity Reasoning), Montana State University — *Bozeman, MT*

- Skills: Pytorch, Ghidra, High Performance Computing, SLURM
- Built pipelines to produce control flow graphs from compiled binary packages for code embedding generation.
- Designed Graph Neural Network architectures using PyTorch based on recent research publications.
- Ran machine learning workloads on Tempest, Montana State University's high performance computing system.

Undergraduate Research Intern — Summers 2024, 2025
CaMP Lab (Cybernetics and Motor Physiology), Mayo Clinic — *Rochester, MN*

- Skills: MATLAB, Signal Processing, Adobe Illustrator, Linear Algebra, Technical Writing
- Conducted algorithmic analysis on human SEEG data to study how the brain responds to auditory stimuli.
- Implemented signal processing pipelines including noise reduction, baseline correction, and artifact rejection.
- Applied and modified Canonical Response Parameterization to allow for better temporal feature extraction when applied to auditory evoked responses.
- Produced a First-author manuscript in preparation: **Aney J**, Jensen MA, Kerezoudis P, Baker MR, Miller KJ. *Parameterization of intracranial auditory evoked responses reveals cortical novelty and attention effects.* Mayo Clinic, 2025.

Technical Projects

Machine Learning Models from Scratch | *Python, NumPy, Linear Algebra, Latex* — 2024

- Implemented the following machine learning algorithms from scratch: Naïve Bayes, K-Nearest Neighbors, K-Means, and DBSCAN, Multi-Layer-Perceptron, Q-Learning, SARSA, and Value Iteration
- Implemented the following optimization algorithms from scratch: Backpropagation, Genetic Algorithm, Differential Evolution, Particle Swarm Optimization, and Simulated Annealing

Bozeman Bike Trails Application | *C#, Razor Pages, SQL Server, Mapbox* — 2023

- Developed a web application to track user-ridden bike trail GPS data

Hand Tracking / ASL Alphabet Detection | *Python, TensorFlow, MediaPipe* — 2023

- Created a pipeline to collect data, train a dense neural network, and provide real time predictions for video inputs.

Extracurricular Activities & Leadership

President — August 2023 – Present
Montana State University Tennis Club — *Bozeman, MT*

Section Leader — April 2025 – January 2026
Montana State University Drumline — *Bozeman, MT*