

Joshua Aney

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EDUCATION

Montana State University

Bachelor of Science, Computer Science, GPA: 3.96

Bozeman, MT

Expected May 2026

SKILLS & COURSEWORK

Languages: Python, MATLAB, Java, C, SQL, C#

Frameworks: PyTorch, TensorFlow, .NET Core, SLURM, NumPy, Matplotlib

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

January 2026 - Current

HACR Lab (*Harnessing Automation in Cybersecurity Reasoning*), Montana State University

Bozeman, MT

- **Tools:** Pytorch, Ghidra, High Performance Computing, SLURM
- Build pipelines to produce control flow graphs from compiled binary packages for code embedding generation.
- Design Graph Neural Network architectures using PyTorch based on recent research publications.
- Run 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

- **Tools:** 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

2024-2025

- 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

2024

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

Hand Tracking / ASL Alphabet Detection | Python, TensorFlow, MediaPipe

2024

- 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