Brent Arthur Monning

monningb@sou.edu • Request for more information if needed.

Education

B.S. Computer Science at Southern Oregon University **09/2024 - expected 2028**
Highlighted Coursework: Data Science, Algorithms and Data Structures, Discrete Math, and Theory of Computation.

Research Experience

LiDAR Topography Research **06/2024 - present**

- Processed over 156 square miles of Raster LiDAR data in the state of Oregon, with a resolution of 15,500 by 11,500 pixels per raster.
- Used this data for a written analysis of Crater Lake National Park using Python.
- Used geospatial analysis to detect canopy heights using a watershed transformation, and correlated those heights with the elevation of the terrain.
- Trained a random forest model to classify the geographic features of terrain into generated categories.

Email Communication Security Research **10/2025 - present**

- Designed a security model for email encryption that runs entirely from the client-side of the peers' systems and eliminates reliance on the trust of the email provider.
- Evaluating multiple non-centralized backend protocols, identity clients, and encryption algorithms, to investigate what best suits the model.
- Investigating the scalability of the resulting implementations in regards to implementing a client-side security system using pre-existing protocols.

Technical Projects

Secure Email Prototype **10/2025**

- Designed a working prototype of a client-side email layer under a 24-hour constraint.
- Implemented end-to-end encryption utilizing PGP and sending the author's message key to the recipient using a peer-to-peer ledger mechanism.
- Utilizing established proof-of-work systems as a byproduct to filter encrypted email threads, acting as an anti-spam layer.
- Earned 2nd place at the 2025 BSV Medford Hackathon.

Open Source Software Contributions **09/2021 - present**

- Have made 550+ contributions on GitHub, inclusive of my own projects as well as contributions to other open source projects.
- Added support for the ”xcodes” helper to the Topgrade update tool.
- Added screenshot functionality right from the media toolbar in IINA.
- Maintaining the package for the ”macmon” system monitor on Nixpkgs, and helping out with cross-platform flake configurations.

Leadership Experience

FRC Team 3024 Programming Lead **10/2022 - 06/2024**

- Joined the team as a programming member in late 2022, and implemented a Swerve drive prototype system for the robot in Java.
- Helped finalize the source overhaul from LabVIEW to Java during build season, which led to my promotion as Programming Lead the next year.
- Implemented all 5 CAN motor subsystems in 2024, and started the move to a dedicated Swerve drive library to focus on PID tuning.
- Later mentored the Programming team part time to finalize the Swerve drive and implement all vision pipelines, including object detection and AprilTag recognition.

Skills

- **Proficient Languages**: Python, Java, Rust, Swift, Dart, C/C++, JavaScript, Common Lisp.
  Familiar Languages: Clojure, Nim, Zig, Racket, Go.
- **Proficient Technologies**: Nix, Linux, Windows, macOS, Ansible, Flutter, NumPy, SwiftUI, Keras, CoreML, AWS, Ollama, Pandas, LaTeX.
  Familiar Technologies: React, Astro, Vite.

Interests

Highly drawn ito interdisciplinary research that involves computation, but general interests include software development, robotics and autonomous systems, applied machine learning, big data analysis, and accessibility research.