BENJAMIN HARRIS

LinkedIn: https://www.linkedin.com/in/benjamin-harris-388151274
GitHub: https://github.com/harrisb002 ← Check out my other projects!
Course Careers Profile

Summary

Passionate and self-driven computer science professional, software connoisseur, and chess fanatic with several years of experience turning raw data into clear decisions using Python, MySQL, Tableau, and Excel. Seeking to apply my skills in a role that contributes to the company's technological and engineering success.

Experience

Sonoma State University, Instructional Student Assistant

Dec 2024 – Jan 2025

Report: BioSoundSCape NASA NCE Progress Report

- BioScape is an international initiative with thousands of scientists and engineers collaborating to understand the distribution, function, and importance of biodiversity in the Southern Region of Africa.
- Expanded and refined the Land Cover Classification Convolutional Neural Network to support the BioSoundSCape project under Professor Clark.
- Developed the highest achieving approach of the study with a 78% overall accuracy (Page 11, Remote Sensing – Land Cover)

Buddies, Office Fulfillment Associate

Dec 2021 – Sep 2022

- Generated all necessary documentation for the movement, purchase, and storage of company products, ensuring compliance with state regulations.
- Coordinated testing with 3rd party regulation laboratories, ensuring 100% compliance and timely product delivery.
- Achieved a 97% sell-through rate by managing inventory, coordinating testing, and updating online store listings.

Projects

Capstone project, Hyperspectral Image Classification

Report: Project Report
Video explanation: Project Overview
Code: https://github.com/harrisb002/Hyperspectral-Landcover-Classification

- Evaluated machine learning methods, such as Convolutional Neural Networks, Principal Component Analysis and Linear Discriminant Analysis, to classify hyperspectral (432 spectral bands) airborne imagery by ecosystem.
- Using the Google Maps API, cross-correlated the geo position of the collected samples with Google Earth satellite imagery to automate the process of collecting truth data for the purpose of training machine learning models.
- Performed extensive image preprocessing required to optimize machine learning performance, such as filtered image noise, resampling images to ensure a common ground mapped sample distance and used multispectral Mahalanobis distance to remove out of distribution features from the images.
- Developed a web application using the GoogleMaps API and DeckGL to quickly evaluate the performance of the machine learning models by 3D rendering classification accuracy plots overlaid on each sample's geo position.

CONTACT

Email: harrisbe002@gmail.com
Phone: (530) 515-2704

CERTIFICATIONS

- Solutions Architect Certificate
- Cloud Practitioner Certificate
- Software Developer Certificate
- Backend Developer Certificate
- Blockchain Engineer Certificate

Education

Sonoma State University
BS in Computer Science, 2024

SKILLS

Programming Languages:	
Python	C++
Go	JavaScript

Data Science:	
SQL	Tableau
NumPy	Scikit-Learn
Excel	TensorFlow

Database Design:	
PostgreSQL	MySQL
MongoDB	DynamoDB
AWS	Prisma

Software Applications:	
Jenkins	Node.js
Docker	Express.js
Postman	Koa.js
Git/GitHub/GitLab	

Software Engineering Principles:	
Agile	Scrum
DevOps	REST APIs

REFERENCES:

Professor Matthew Clark, Sonoma State University
Phone: (707) 664-2558
Email: matthew.clark@sonoma.edu
LinkedIn

Mariah Henderson,
HR Manager of Buddies
Phone: (530) 227-1632
LinkedIn

Senior design project, Grain detection and segmentation:
Report: Grain Boundary Detection
Code: https://github.com/harrisb002/GrainBoundaryDetection

- Developed an algorithm to segment and classify rock chemical composition regions from electron backscatter diffraction and electron dispersion spectroscopy using a version of the Felzenszwalb segmentation method.
- Achieved better performance than commercial software (AZtecOne) by utilizing both image dataset concurrently and filling regions of interest delineated from a high concentration on certain chemicals.

post management system:
Code: https://github.com/harrisb002/ChessChat
Site: https://landing-dcij.onrender.com

- Developed a secure and scalable web-based chat application to enable the Sonoma State University Chess team to have live in-depth chess discussions, strategy analysis, and club coordination.
- As the chess.com Ambassador for SSU and Captain of the Collegiate Chess League team, I developed this application to provide a dedicated space to discuss games, share insights, and connect. It features WebSockets for real-time messaging, LiveKit for live video calls, and Clerk for authentication.
- Designed a relational database schema using PostgreSQL and Prisma ORM to manage user interactions, including CRUD operations, likes, follows, and club memberships. Integrated TanStack Query for efficient state management.
- Implemented key engagement features such as message editing, attachments, and unique invite links to enable players to share analysis, organize events, and collaborate within structured club channels.

interpreter:
Code: https://github.com/SSUDevs/Interpreter
Site: https://interpreter-5za8.onrender.com

- Invented a fully functional interpretive C-like programming language, incorporating language parsing, interpreter design, and execution flow.
- Developed a web-based interactive development environment to enable users to write, test, and execute code directly in the browser with real-time syntax highlighting and execution.
- Designed the language with structured syntax validation and a stack-based execution model for efficient program flow, scope management, and real-time evaluation of expressions using Backus–Naur Form defined grammar.
- Implement extensive unit tests for all the supported features and syntax rules of the language to ensure the reliability of the interpreter's execution.

amazon web services:
Code: https://github.com/harrisb002/AWSProject

- Developed an AWS server emulator utilizing a SQL database to support comprehensive CRUD operations for tracking usernames, payment details, service costs, and client IDs.
- This application monitors client-created Git repositories and service purchases across Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) models.
- Created an Entity Relationship Diagram (ERD) and relational schemas to enhance understanding of database planning and design.

2023 Sonoma State University (SSU) Hackathon, Keeper App:
Code: https://github.com/ssudevteam/keeper
Video Demo: https://www.youtube.com/watch?v=IyVZktFsbaQ

- Developed a beekeeping mobile application in React Native over 48 hours with a randomly assigned development team during the 2023 SSU Hackathon.

- Presented to a panel of judges in front of a live audience and came in 2nd place.
- The application was designed for agricultural beehive management with map-based beehive tracking, automatically generated worker routes and schedules, and worker task scheduling.