Aditya Jadhav

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EDUCATION

University of Arizona	Tucson, Arizona
BS Computer Science (Minor: Data Science and Stats)	*January 2021 - December 2024*
GPA: 3.87/4.0	Global Wildcat Scholar ($35,000 yearly)

TECHNICAL SKILLS

Languages: Python, Java, C, Swift, SQL, JavaScript
Frameworks/Tools: React.js, AWS, Node.js, MongoDB, Postgres, Express.js, Flask, Git
Libraries: TensorFlow, Apache Spark, Scikit-learn, Pandas, Matplotlib, NumPy

EXPERIENCE

Software Engineering Intern   October 2023 - Present

*Astrocomm Technologies | **Swift, C, Python, ElasticSearch, wxPython***

- Develop Graphical User Interface dashboards in Python, wxPython to gather real time metrics using a USB interface from an ADC. Implemented Elasticsearch for efficient real-time data ingestion and analysis.
- Currently working on a iOS application in Swift and Objective-C that connects to ESP8266 IoT Modules and enables users to access and control them through wifi-lan.

Undergraduate Research Assistant   Feb 2023 - Feb 2024

*University of Arizona | **Python, Scikit-learn, NumPy, Bash***

- Worked under Dr. Chicheng Zhang on Active Learning using early stopping gradient descent. Worked on developing an algorithm to optimize for training labels under Non-Convex Optimization. Implemented algorithms from various literature sources in **Python** on UA High Performance Computing Platform, analyzing the results with **Matplotlib** and **NumPy**.

Undergraduate Research Assistant   Novemeber 2023 – Present

*Visual and Autonomous Exploration Lab, UA | **Python, TensorFlow***

- Implemented Neural Networks from scratch including activation, loss functions and backpropagation for quick implementation of any NN config. Also involved in theorizing research for combating bias and making AI interpretable.

Undergraduate Research Programmer   May 2021 – Jan 2023

*University of Arizona - ToMCAT Project | **Python, Unix, Git, JS, Flask, C++***

- Developed a visualisation dashboard to display captured sensor data using wxWidgets, MQTT and C++. Achieves monitoring of data and various parameters in 50+ tests, with 2 devices updating data every few ms. Also developed a web application in Flask and JS to collecte experimental data.

PROJECTS

Semantic Search in PDF Documents | *Swift, CoreML, C++*

- Developed a semantic search application in **Swift**, using **CoreML** for embedding creation and **BERT tokenization**. Converted a **PyTorch model** to **CoreML** for efficient on-device processing and PDFKit for Annotation.
- Indexed text segments within PDFs, utilizing **cosine similarity** for calculating embedding similarity. Engineered a custom nearest neighbor algorithm optimized for high-dimensional data, improving query matching performance by **60%**.

Chess Website | *React, NodeJS, Express, PostgreSQL, AWS, Git*

- Led the development of an online chess platform, supporting over **1,000** simultaneous players, incorporating puzzles and engine analysis using **Express**, **NodeJS** with the StockFish engine, and **React**.
- Integrated **Socket.IO** for seamless real-time multiplayer gaming experience; managed user and puzzle data using **AWS RDS/SQL**. Automated database management with **Python** for populating chess puzzle data in **PostgreSQL**.

Chess Video to PGN Converter | *TensorFlow, OpenCV, Python*

- Engineered a computer vision solution to convert video recordings of chess games into Portable Game Notation (PGN), offering an affordable alternative to $1,000 DGT boards.
- Utilized **OpenCV** for precise chessboard and piece recognition; trained various CNNs (**AlexNet, ResNet**) with TensorFlow to achieve a **90%** accuracy rate in PGN square conversion over **50+** images.

Open Source Contributions to Lichess.org | *TypeScript, Scala, Git*

RELEVANT COURSEWORK

- Unix and System Programming
- Machine Learning
- Information Retrieval and NLP
- Database Design
- Computer Networking
- Web Development
- Data Structures and Algorithms
- Computer Organisation
- Software Development and OOP
- Compilers
- Cloud Computing
- Computer Vision
- Parallel and distributed computing