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: 3.93/4.0 Global Wildcat Scholar ($35,000 yearly)

Technical Skills

Languages: Python, Java, C, SQL, JavaScript, Prolog
Frameworks/Tools: Swift, React.js, AWS, Node.js, MongoDB, PostGreSQL, Express, Flask, Jenkins, Git, Unix
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 - Present

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

- Currently researching under Dr. Chicheng Zhang on Active Learning using early stopping gradient descent. Developing an algorithm to optimize for training labels under Non-Convex Optimization. Analyze data in Matplotlib and NumPy and test/develop code on UA's High Performance Computing platform and perform literature reviews.

Undergraduate Research Assistant Novemeber 2023 – Present

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

- Implemented modular Neural Networks from scratch including various activation, loss and backpropagation for quick implementation of any NN. My position also involves 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.
- Built a web application using Flask, Python, GoogleSpeech API, HTML, JS to record entrainment data.

Projects

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, CUDA, Python***

- Engineered a novel computer vision solution with **TensorFlow** and **CUDA** 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 **95%** accuracy rate in PGN square conversion over **60K+** images.

IBM Watson-Inspired Q&A Program with Web Crawling | ***Java, Lucene, HuggingFace, Python***

- Constructed a Q&A program reminiscent of IBM Watson in **Java**, indexing over 1 million+ Wikipedia pages with **Apache Lucene** and **BERT** for high-accuracy answer prediction. Leveraged **TFIDF with unigrams** with additional textual features for optimization, achieving an **85%** accuracy rate, outperforming baseline BERT by **4%** .
- Implemented a **Python-based web crawler** using **BeautifulSoup4**.

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

Relevant Coursework

- Unix and System Programming
- Machine Learning
- Text Retrieval and Web Search
- 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