Raunaq Jain

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EXPERIENCE

Researcher, University at Buffalo 06/2020 – 12/2020

- Artificial Intelligence in Ethnobotany (AIE): Developing and pioneering machine learning solutions over SSD, YOLO, and Detectron2 for plant species identification in images (**50K**) with applications in Ethnobotany.
- Secure Storage for TrustZone: Designed and ported secure file storage system from **C to Rust** for Trusted Execution Environment and provide proof of memory safety through software verification.

Intern, Nulenta Private Limited 12/2019 – 01/2020

- Matched user profiles to job requirements and scored them for automatic candidate selection.
- Built machine learning models in PyTorch to predict scores. Implemented application in Django (REST API).

Software Engineer Intern, Hypothizer Technologies Private Limited 07/2018 – 02/2019

- Developed a cloud-native document parsing platform to extract critical information from unstructured documents.
- Architected, developed, and deployed Resume Parser with average F1 score of **0.93** after training on 150 samples in PyTorch.
- Improved accuracy of the existing document parser by **10%** through feature engineering and customized models.

Software Developer Intern, All India Council for Technical Education 10/2017 – 03/2018

- Created a full-stack web-application in Django to set standards for **14k+** technical colleges throughout India.
- Developed the data pipeline and trained machine-learning models to predict the employment potential of universities using scikit-learn. Project sanctioned by the Government of India [Github].
- Curated, analyzed, and visualized **5 years of data** in Python and produced interactive plots through Plotly for user interface.
- Awarded **1st prize** ($3000) in Smart India Hackathon'17, Government of India, against **7400+ teams** for the prototype.

EDUCATION

- University at Buffalo**,** The State University of New York, Masters in Computer Science [GPA: 3.85/4] 08/2019 – 02/2021
- MAIT, Guru Gobind Singh Indraprastha University, B.Tech. in Computer Science [CPI: 71.98%] 08/2014 – 05/2018

TECHNICAL SKILLS

Languages: Python, Java, Rust, C++
Frameworks: Django, Flask, JavaScript, HTML, CSS
Databases: SQL, MongoDB, Postgres
Libraries: PyTorch, OpenCV, scikit-learn, SpaCy**,** Plotly, matplotlib, NumPy, Pandas
Others: Git, Docker, Android Studio, Apache Solr, AWS, Azure, Postman, JIRA, Agile

PROJECTS

DogDogGo, Search Engine Application [Demo]

- Implemented an end-to-end tweet search engine and built the application backend in Django (REST API).
- Features developed included tweet ranking, pseudo relevance feedback, more-like-this, filter-based search, query translation, and query keyword highlighting.
- Collected **900,000+** multi-lingual tweets. Preprocessed and indexed them on Apache Solr.
- Assessed impact of political rhetoric in traditional and social media, presented through interactive geospatial plots.

Simple Amazon DynamoDB

- Built a concurrent and available distributed multicast messaging system for 5 nodes with fault tolerance and node recovery using sockets in Java and Android.
- Programmed a distributed key-value storage and used Quorum algorithm for communication between multiple nodes.

Website Analyzer

- Developed a command-line interface in Rust to make multiple requests to a website and analyze their performance.
- Reduced the mean response time by **20%** through concurrency using async/await.
- Metrics included fastest time, slowest time, mean and median time, size of smallest and largest response, and error codes.

FEVER: Fact extraction and Claim verification

- Indexed **5 million +** Wikipedia articles on Apache Solr, thus reducing the document retrieval time by **99%** on average.
- Designed a component in PyTorch to evaluate the contextual similarity between two evidence sentences.
- Developed an application in Flask to verify credibility of an input claim sentence. Extracted evidence from Wikipedia articles.
- Verified credibility of input claims and achieved a FEVER score of **41%** (**27% baseline)** by training on **185K claim samples.**

Discussion Forum

- Created a discussion forum with user authentication in Django (REST API).
- Established Postgres database, Gunicorn server, and Nginx server to handle incoming requests and serve static content.