Atharva Anand Joshi

Email: atharvaa@andrew.cmu.edu
Phone: +91 7875227790
LinkedIn: atharva-joshi-329684179
GitHub: github.com/atharva253

Education

Birla Institute of Technology and Science, Pilani — Rajasthan, India
Bachelor of Engineering in Electrical and Electronics Engineering — 2018–2022
GPA: 9.49/10.00, GRE: 331/340 (AWA: 4/6), TOEFL: 109/120

Experience

American Express, Artificial Intelligence Labs — Gurgaon, India
Analyst, AiDa Deploy Team (Intern and Full-time) — January 2022 - Current

- Mentors: Mr Ankush Jain, Director, AI Labs and Mr. Prashant Nair, Senior Manager, AI Labs
- Currently exploring the application of Graph Neural Networks for **Credit Default Prediction**.
- Developed a framework that allows users to seamlessly create and deploy their end-to-end **Self Learning** pipelines for Sequence Models as a part of a template-based journey.

Adobe Research, India — Bangalore, India
Research Intern, Big Data Experience Lab — May 2021 - August 2021

- Mentors: Dr. Atanu R Sinha, Principal Scientist and Dr. Sunav Choudhary, Research Scientist
- Created rich **user representations** that can serve as **concise user profiles**.
- These representations can be projected onto **edge servers**, powering faster marketing services.
- Performed various experiments around the extent of **compression** and **updatability** of the representation.
- Employed Deep Learning, including **Multi-task Learning** as a part of our pipeline.

CSIR - Central Electronics Engineering Research Institute — Rajasthan, India
Student Summer Intern, Intelligent Systems Group — May 2020 - July 2020

- Mentors: Dr. Sanjay Singh, Principal Scientist
- Developed a **CNN model** which can efficiently detect COVID-19 and pneumonia in patients based on **chest x-rays**.
- Used **glass-box** techniques to interpret the results.

Publications

[1] A. A. Joshi, P. Bhardwaj, and S. M. Zafaruddin, "Terahertz wireless transmissions with maximal ratio combining over fluctuating two-ray fading", in *2022 IEEE Wireless Communications and Networking Conference (WCNC)*, 2022, pp. 1575–1580.

[2] A. A. Joshi, H. Settibhaktini, and A. Chintanpalli, "Modeling concurrent vowel scores using the time delay neural network and multitask learning", *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 30, pp. 2452–2459, 2022.

Patent

S. Chakraborty, S. Choudhary, A. Sinha, S. Nair, M. Ghuhan, Y. Gagneja, A. Joshi, A. Tyagi, S. Gupta, "Generating Concise and Common User Representations for Edge Systems from Event Sequence Data Stored on Hub Systems", US 17/849,320, Filed Jun 24, 2022.

Mentorship and Teaching

- **Teaching Assistant** at BITS Pilani - *Neural Networks and Fuzzy Logic (BITS F312)* — August 2021 - December 2021
  Designed assignments and projects for students as evaluative components. Also conducted tutorial sessions to familiarise students with Deep Learning Frameworks: Tensorflow, Keras

Technical Skills

- **Programming:** Python3, Java, C/C++
- **Deep Learning:** TensorFlow, Keras
- **Big Data:** PySpark, Hive, SQL
- **Tools/Frameworks:** LaTeX, Git

Projects

Proactive Servicing: Guess What? (Amex Internal ML Challenge)
Combined event sequences and demographic data to predict customer intent at the start of Ask Amex chat session.
The approach involved jointly training Sequence Models with Feedforward Networks.
Developed some useful business insights from the and customer behavioural embeddings generated by the model.
Our solution made it to the **Top 10** leaderboard and was selected for internal presentation.

Concurrent Vowel Identification using Time Delay Neural Networks
Predicted the effect of fundamental frequency (F0) difference on the identification scores in a concurrent vowel identification experiment using a combination of a physiologically realistic Auditory Nerve Model and Deep Learning.
From the neuron responses generated by the Auditory Nerve Model, a temporal network architecture was used to model short-term and long-term dependencies.

Biomedical Image Segmentation using Convolutional Neural Networks
Implemented the research paper U-Net: Convolutional Networks for Biomedical Image Segmentation
We trained the model on the the ISBI challenge dataset: 30 images and their corresponding segmentation masks.
The implementation relies on strong data augmentation including Normal Augmentation, Overlap Tile Strategy and Random Elastic Transformations.

Real Time Object Detection in Aerial Images for Drones and UAV
Developed a light-weight CNN algorithm to detect objects belonging to 15 categories including ground features, structures and vehicles. The model was trained on the DOTA-v1.0 dataset and deployed to the Nvidia Jetson Nano.

Relevant Coursework

- **Electrical and Electronics Engineering:** Digital Signal Processing, Digital Image Processing, Communication Systems, Internet of Things, Microprocessors Programming and Interfacing, Digital Design, Microelectronic Circuits.
- **Computer Science/Mathematics:** Computer Programming (C), Object Oriented Programming, Operating Systems, Neural Networks and Fuzzy Logic, Artificial Intelligence, Probability and Statistics, Linear Algebra, Differential Equations, Calculus.
- **Massive Open Online Courses:** Machine Learning by Stanford University (Coursera), Deep Learning Specialization by deeplearning.ai (Coursera) (5 courses)

Scholarships and Awards

- OP Jindal Engineering and Management Scholarship 2020 — November 2020
  Nominated based on academic performance and shortlisted through a stringent process involving business idea proposal, online tests and an interview. Proposal: AI based solution to automate traffic safety management for two wheelers.
- Institute Merit-Based Scholarship, Birla Institute of Technology and Science, Pilani — 2019 - 2022
  Awarded to the top 2% of the batch comprising of 1050 students. Recipient of this scholarship for 6 consecutive semesters.
- Regional Runner-up at TCS IT Wiz, a nationwide inter-school quiz competition — September 2015

Extracurricular Activities

- Joint Coordinator at Ragamalika, the Classical Music and Dance Club of BITS Pilani — 2020 - 2021
  Actively involved in composing music for semester productions and managing professional concerts.
  Avid practitioner and performer of Hindustani Classical Vocal Music for the past twelve years.