# Atharva Anand Joshi

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

## Education

**Carnegie Mellon University** — Pittsburgh, PA
Master of Science in Electrical and Computer Engineering — 2023–2024
Specialization: AI/ML Systems (Incoming)

**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 Deep Learning 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.

## 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 — August 2021 - December 2021
  *Neural Networks and Fuzzy Logic (BITS F312)*
  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 **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** 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 **six** 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.*