Atharva Anand Joshi

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Education

Birla Institute of Technology and Science, Pilani — Rajasthan, India
B.E. 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
- Explored a template-based journey that allows users to seamlessly create and deploy their machine learning pipelines.
- Developed a framework that facilitates deployment of end-to-end Continual Learning pipelines for Sequence Deep Learning models as a part of this journey.

Birla Institute of Technology and Science, Pilani — Rajasthan, India
Undergraduate Research and Development Project — August 2021 - December 2021

- Mentor: Prof. Dr. Ananthakrishna Chintanpalli, Electrical and Electronics Engineering Department
- 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.

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

- Mentors: Dr. Atanu R Sinha, Principal Scientist, Bangalore and Dr. Sunav Choudhary, Research Scientist, Bangalore
- 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 — May 2020 - July 2020

- Mentors: Dr. Sanjay Singh, Principal Scientist and Group Head, Cognitive Computing Group
- Developed a CNN model which can efficiently distinguish between normal, COVID-19 affected and pneumonia affected 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.

Mentorship and Teaching

- **Teaching Assistant** at Birla Insitute of Technology and Science, Pilani — August 2021 - December 2021
  Neural Networks and Fuzzy Logic (BITS F312)
  Designing assignments and projects for students as evaluative components. Also conducting 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

Key Projects

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.

Terahertz wireless transmissions with MRC receiver over FTR fading
Provided a statistical characterization of the maximal ratio combining (MRC) receiver over inid channel conditions modelling the combined effect of zero-bore pointing errors and fluctuating two-ray fading model.
Validated our derived analytical expressions with Monte-Carlo simulations.

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 5 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.