Aditya Raj

B.Tech
Electronics and Communication Engineering
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Education

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
ECE	National Institute of Technology, Patna	7.76	2022-2026
Senior Secondary	Shivam Convent/CBSE	93.2%	2020-2022
Secondary	Don Bosco Academy/ICSE	88.80%	2010-2020

CONFERENCE Paper(Rejected)

- **EEG Functional Connectivity Feature-Based Diagnosis of ADHD Using Deep Learning on Raspberry Pi** submitted to *International Conference on Signal Processing and Communications (SPCOM 2024) PaperID - 204.*
  •Conducted image classification using 19-channel adjacency matrix with multiple pretrained CNN architectures.
  •Achieved the maximum classification accuracy of 96.12% using GoogleNet.
  Authors: Rakesh Ranjan, Shiva Singh Bagri, **Aditya Raj**, Dr. Bikash Chandra Sahana^{PI}
  Affiliation: National Institute of Technology, Patna

Experience

- **IIT Jodhpur** *May 2024 - July 2024*
  Research Intern: SIP@SAIDE 2024 Remote
  Supervisors: Dr. Bikash Santra and Dr. Dipanjan Roy
  – Implemented image classification algorithms utilizing various architectural models, achieving a maximum accuracy of 53% on the test dataset.
  – Applied signal processing techniques and extracted features using CNN sliding window technique to build a multimodal model by fusing EEG and video data on the SEED V dataset.
- **IIT Guwahati** *May 2024 - July 2024*
  Intern: Dept. of CSE 2024 Remote
  Supervisor: Dr. Arijit Sur
  – Implemented a text-translation model from scratch using GRU and attention mechanisms with TorchText, achieving a Test Perplexity (PPL) of 19.258. Link
  – Developed an LSTM-based stock predictor, achieved an average accuracy of 93% on the test dataset (Test RMSE 0.07). Link
  – Created an RNN-based sentiment analysis model. Link

Projects

- **Image Based Audio Generation| Link** *June, 2024 - Present*
  Tools: Python, OpenCV, OpenAI CLIP, Hugging Face GPT-2M Reference Paper: ClipClap, AudioClip
  – Implemented an image captioning system using CLIP and a PyTorch-based GPT variant, increasing the number of contextually similar generated words by 30% through edge enhancement.
- **Portfolio Website| Link** *May, 2024 - July, 2024*
  Tools: Python, FastAPI ,NextJs, Hugging Face, GPT2, PyTorch(text, vision)
  – Developed a portfolio website using UI libraries like shadcn and accertenityUI, and integrated a functional form with emailjs.
  – Integrated the frontend under projects/llms with Hugging Face Spaces to interact with a custom GPT-2 model, enabling text generation (My other Major Ongoing Projects are Listed here, Visit under Projects).

Technical Skills

Languages: Python, C/C++, Java, JavaScript, TypeScript
Libraries and Packages: TensorFlow, scikit-learn, OpenCV, Numpy, Pandas, SciPy, Hugging Face, Matplotlib, Seaborn
Frameworks: PyTorch, Gradio, Keras, Next.js, framer-motion, Flask, Node.js
Web Development: HTML/CSS, JavaScript, React.js, Appwrite, Supabase, Tailwind CSS
Databases: MongoDB, Supabase

Positions of Responsibility

– **Team Coordinator AI/ML,** Google Developer Students Club , NITP *August 2023 - June 2024*
–Conducted and managed an open book pure mathematics test for first-year students to select trainees for the team.
–Designed the question paper for the TCF Technical Contest focusing on AI/ML.

ACHIEVEMENTS

– **Regional Mathematical Olympiad (HBCSE, Mumbai)**
Among top 1% of students from classes 8th-12th in India | Scored 44/102 in RMO 2019 (Class 10th) 2019
– **METER**
Got State Rank 7th, from Bihar Region in METER 2017 among 50K+ students. 2017

Open Source

– **JGEC Winter of Code(JWoC)**
Mentor ID: 6590212849948C6A Jan, 2024 - Feb, 2024

∗ **Guided students as a Mentor in JWOC, for the project 'eagleview' a self-developed Python library for visualizing image datasets.**