Abhay

📞 +91 7876755273 | ✉ Email | 💼 LinkedIn | GitHub | Google Scholar | 🏠 Homepage

Education

Indian Institute of Technology Ropar   Ropar, India
Bachelor of Technology in Electrical Engineering   *Nov 2020 – May 2024*
- CGPA: 8.09
- Courses: Machine Learning, Deep Learning for Computer Vision, Data Science, Artificial Intelligence, Linear Algebra

Research Work

Instigating Hate - CSS Group, University of Tartu   Jan 2023 – May 2024
Guide: Prof. Rajesh Sharma | Tools Used: Snscrape, NLTK, Perspective API   *Tartu, Estonia*
- Curated *ProvocationProbe*, a dataset of 20k tweets to analyze instigating hate speech.
- Identified distinguishing features between hate speech and instigating hate speech along with targeted groups.

Audio Deepfake Detection - CVPR Lab, IIT Ropar   Sep 2023 – May 2024
Guide: Prof. Santosh Kumar Vipparthi | Tools Used: PyTorch, TTS   *Ropar, India*
- Developed *IndieFake*, a dataset for detecting audio deepfakes in Indian contexts.
- Evaluated deepfake detection models using IndieFake against benchmark datasets like ASVspoof21 and ITW.

Publications

Abhay Kumar, Kunal Verma, Armaan Garg, and Shashi Shekhar Jha. *Attentive A* for Visual Cue based Path Planning in Complex Environments*. **Accepted** at ECAI 2024 Workshop on Agents and Robots for Reliable Engineered Autonomy. [Link]

Abhay Kumar, Kunal Verma, and Omkar More. *IndieFake Dataset: A Benchmark Dataset for Audio Deepfake Detection*. Under Review at IEEE ICASSP 2025.

Abhay Kumar, Vigneshwaran Shankaran, Rajesh Sharma. *ProvocationProbe: Instigating Hate Speech Dataset from Twitter*. Submitting to AAAI ICWSM 2025. [Link]

Work Experience

Accenture | Java Developer   Jun 2024 – Present
Technologies worked on: Java, Spring, Python, Typescript, AWS   *Bangalore, India*
- Refactoring client's Java code by using Spring framework.
- Created AWS Lambdas using Python.

Samsung R&D Institute | SDE Intern in Network Modem Team   Jun 2023 – Aug 2023
Memory Optimization of Header Files | Technologies used: C/C++, Python   *Bangalore, India*
- Got to know about data padding in compilers and how it results in the allocation of additional memory.
- Optimized memory utilization of header files containing C structures using Python.

Key Projects

MultiPurposeLLM | Code | *Tools Used: Python, Streamlit, Hugging Face*   Sep 2024
- Created an app that routes user prompts to task-specific LLMs.

PlantDoc | Code | Tools Used: Tensorflow, GCP, FastAPI | *Guide: Prof. Subrahmanyam Murala*   Jan 2023 – May 2023
- Constructed a deep learning model using **MobileNetV1** architecture for disease detection in potato & corn crops.

Recolorization of GrayScale Images | Code | *Tools Used: Tensorflow, scikit-learn, Matplotlib*   April 2023
- Developed a GAN model for colorizing grayscale images with a **U-Net** based generator.

Placement Cell Manager | Code | *Tools Used: Django, HTML, CSS, MySQL*   June 2022 – July 2022
- Co-developed a Django website with Institute ID authentication, multi-level user roles, and advanced filtering.

Technical Skills

Languages: C/C++, Python, Java, MySQL, TypeScript, HTML/CSS, MATLAB
Frameworks/Developer Tools: Spring, Django, FastAPI, Node.js, Express.js, AWS, GCP, VS Code, Eclipse, IntelliJ
Libraries: PyTorch, Tensorflow, Keras, OpenCV, Mediapipe, Streamlit

Miscellaneous

- Among the top 10,000 candidates out of 1.5 lakhs candidates in JEE Advanced 2020.
- Founded and led the AI club, IOTA Cluster, at IIT Ropar.
- Actively contributed to NSS events on community service, education, and sustainability.