SARTHAK JAIN

📞 +91-9310136343 ✉ sarthakjainssjj@gmail.com 🔗 [-creatersarthakjain](#) ⌗ [SarthakJaindebugger](#) 🌐 [Portfolio](#)

Education

Guru Gobind Singh Indraprastha University, New Delhi, India	2021-2025
Bachelors of Technology in Computer Science Engineering	*CGPA: 8.64/10*

Publications

[1] **Sarthak Jain**[*], Orchid Chetia Phukan[*], Arun Balaji Buduru, Rajesh Sharma, *The Reasonable Effectiveness of Speaker Embeddings for Violence Detection.* Interspeech 2024.
https://www.isca-archive.org/interspeech_2024/jain24b_interspeech.html

[2] Orchid Chetia Phukan[*], **Sarthak Jain**[*], Shubham Singh[*], Muskaan Singh, Arun Balaji Buduru, Rajesh Sharma, *ComFeAT: Combination of Neural and Spectral Features for Improved Depression Detection.* Interspeech 2024.
https://www.isca-archive.org/interspeech_2024/phukan24c_interspeech.html

[3] Devyani Koshal[*], Orchid Chetia Phukan[*], **Sarthak Jain**[*], Arun Balaji Buduru, Rajesh Sharma, *PERSONA: An Application for Emotion Recognition, Gender Recognition and Age Estimation.* Interspeech 2024.
https://www.isca-archive.org/interspeech_2024/koshal24_interspeech.html

[4] Radhika Raina, **Sarthak Jain**, Suman Kumar, *BLE-based Power Efficient Design using Accelerometer for Cow Health Monitoring System.* Submitted to IEEE Sensors Journal.

[5] Orchid Chetia Phukan[*], **Sarthak Jain**[*], Swarup Ranjan Behera, Arun Balaji Buduru, Rajesh Sharma, S.R Mahadeva Prasanna, *Are Music Foundation Models Better at Singing Voice Deepfake Detection? Far-Better Fuse them with Speech Foundation Models.* Submitted to ICASSP 2025.

[6] **Sarthak Jain**[*], Orchid Chetia Phukan[*], Swarup Ranjan Behera[*], Arun Balaji Buduru, Rajesh Sharma, *SeQuiFi: Mitigating Catastrophic Forgetting in Speech Emotion Recognition with Sequential Class-Finetuning.* To be submitted to NAACL 2025.

[7] Gautam Siddharth Kashyap, Harsh Joshi, Manaswi Kulahara, Rajkumar Dhakar, Atul Sajjanhar, Jiechao Gao, **Sarthak Jain**, Shahab Saquib Sohail, *Can AI See What We Can't? Leveraging Deep Learning and Multi-Temporal Satellite Data to Revolutionize Crop Type Mapping and Yield Prediction.* Submitted to ICASSP 2025.

Research Experience

- **Sony** — July 2024 (Ongoing)

  Research Internship | Advisor: [Dr. Kumud Tripathi](#)
  - Addressing challenges in Multilingual Voice Activity Detection (VAD) and speaker overlap detection using state-of-the-art (SOTA) foundation models, speech-to-speech translation models, Pyannote architecture, and tools like Audacity.

- **University of South Carolina AIISC, USA** — Mar 2024 (Ongoing)

  Junior Research Associate | Advisor: [Dr. Amitava Das](#)

  - Led the development of HalluVis, the first-ever dataset focused on visual hallucinations, tailored for text-to-video (T2V) diffusion models.
    Worked on mitigating hallucinations in SOTA Large Language Models (LLMs) within a Retrieval-Augmented Generation (RAG) pipeline.

- **Indraprastha Institute of Information Technology, Delhi** — Nov 2023 -Sep 2024

  Undergraduate Researcher | Advisor: [Dr. Arun Balaji Buduru](#)

  - Addressed challenges in multilingual Automatic Speech Recognition (ASR), Speech Emotion Recognition (SER), and Audio Deepfake detection. Achieving SOTA results in violence detection with 99.14% accuracy and 98.40 F1 score; In *PERSONA* with 65.61% & 98.52% acc. for Emotion and Gender prediction resp. 8.6623% RMSE for Age prediction; In ComFeAT with 4.05% MAE and 5.28& RMSE. Discovered a novel algorithm *SeQuiFi* to prevent catastrophic forgetting in multilingual SER, outperforming existing Continual Learning methods (EWC, Model Soups, Replay of Memory) and vanilla fine-tuning. Applied a novel loss function i.e CKA(Central Kernal Alignment) along with fusion technique in-order to reduce the EER score for Audio Deepfake detection thus breaking the existing SOTA. Worked on various classification and regression models using various Pretrained Models (PTMs) such as x-vectors, ECAPA-TDNN, MFCC, LFCC, Unispeech-SAT, XLSR, Wav2Vec2, while applying MLOps practices with Flask as the backend and React as the frontend.

- **Indian Institute of Technology (IIT) Ropar, Punjab** — Sep 2023 - Nov 2023

  Research Assistant | Advisor: [Dr. Suman Kumar](#)

- Developed a 'BLE-based Power-Efficient Design for a Cow Health Monitoring System' utilizing accelerometer sensors (LIS3DH). The system stands out for its lightweight and power-efficient design. Leveraged IoT and Embedded Systems, with MATLAB and Python for hardware and software development, graphical analysis, and statistical processing. Investigated data packet transmission over a network, with data fetched via API. Integrated various components including a Gateway, custom PCB Node, GSM and Bluetooth modules, Zephyr RTOS, MQTT test client, AWS Lambda, and Flutter for the frontend.

Work Experience

- **Indian Institute of Technology, Ropar(iHub-AWaDH)** June'23 - Mar'24
  Software Development Engineering Internship
  - Developed a robust Cow Health monitoring system for Mooofarm and a Weather Application for Agvisi. Technologies used: machine learning (random forest algo), AWS console (for managing tables, DB, Lambda function, Amplify), contributing to CI/CD pipeline, Android Studio, Flutter, React, Unix epoch timestamps, Git/GitHub ,light, temperature & humidity sensors. Worked on several modules & libraries and approximately 50k lines of code in all.
- **The Hello World, Banglore** June 2023 - Aug 2023
  Software Development Internship
  - Contributed to full-stack web development, utilizing technologies such as ReactJs for the frontend, Node.js for the backend, and MySQL for database management. Integrated APIs for enhanced functionality and implemented a robust CI/CD pipeline for seamless development, testing, and deployment. Collaborated on project management and issue tracking using JIRA, ensuring efficient coordination and workflow transparency. Version control was facilitated through GitHub.
- **Saint Louis University, USA** May 2023 - June 2023
  Data Visualization Internship
  - Applied data analytical skills to analyse & make inferences on large researched dataset created by our team. Plotted various bar graphs, pie chart, histograms etc. for visual representation. Timely delivered group assignments and presentations.
- **Saint Louis University, USA** May 2023 - June 2023
  Project Management Internship
  - Served as a Team Leader, engaged myself in allocating tasks, taking timely updates and quereis from everyone & deliver group presentations. For some, language and showing up on camera become an obstacle being from unprivileged countries, but still manged and convinced them.

Student Community & Social Work

- **ISCA SAC Speech Pitch** July 2024(ongoing)
  Podcast team, sound editing & mixing
- **She Can Foundation** Jan 2024 - Feb 2024
  Fundraising internship
- **NbliK** Sept 2022 - Dec
  2022 Community Manager Internship
- **Hamari Pahachan NGO (HPNGO), New Delhi** Nov 2022 - Dec 2022
  Digital Marketing Intern

Technical Skills

C/C++, Python, Java, Dart, Matlab, HTML, CSS, Bootstrap, NodeJS, React, Flutter, Wordpress, MySQL, AWS, OpenCV, TensorFlow, OCR, NLP (Natural Language Processing), PyTorch, GitHub, Git, Arduino, Raspberry Pi.

Conferences & International Events Attended

1. ISCA Interspeech Conference 2024 at Kos Island, Greece
2. Attended by invitation to Meta Networking Mixer at Interspeech 2024 in KOIA All-Suite Wellbeing Resort
3. International Conference on AI in Cyber Security
4. UC San Diego International Event at Taj Palace, Delhi
5. Webinar on Computer Vision by Massachusetts Institute of Technology
6. Webinar on Human-Robot Interaction by Stanford University

Additional Courses Taken/ Courses Outside Curriculum

- **Duke University:** DevOps, DataOps, MLOps.
- **University of Colorado Boulder:** Researcher Management and Leadership Training.
- **University of California Davis:** Big Data, Artificial Intelligence and Ethics.
- **University of Michigan:** Applied Machine Learning in Python.

Activities, Awards and Participations

CodeChef competitive programming: Max 3 stars (Highest rating 1543). **IEEE WebDev Hackathon:** Among top 8 teams to reach the final round. **IRC Robotics Competition:** 2nd Rank Holder at district level. **Google AI— Explore ML:** Attended the intermediate track. **World Wide Fund for Nature:** Attended webinar on 'Snow leopard conservation'. **Inter DPS Lawn Tennis Competition:** 1st Rank Holder.