

Shilpa Chandra

Mtech by research scholar in Intelligent Systems

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Research Interests

Deep Learning, Generative AI, Audio Signal Processing, Computer Vision, Explainable AI

Education

Indian Institute of Technology Mandi (IIT Mandi)

Aug 2022 - Feb 2025 (expected)

Mtech by Research in Intelligent Systems

Advisor: Dr. Padmanabhan Rajan 

Thesis: Spoofed speech detection

Courses: Pattern Recognition, Matrix Theory, Deep Learning and Applications, Digital Image Processing

CGPA: 8.53/10

A. P. Institute of Technology

Aug 2016 - Oct 2020

B.E. in Computer Engineering

Top Courses: Machine Learning, Natural Language Processing, Digital Signal and Image Processing

CGPA: 7.8/10

Research Experience

Project Associate-I

Oct 2024 - Current

Indian Institute of Technology Mandi (IIT Mandi)

- Creating diverse speech deepfakes and testing it on existing deepfake detectors to check the generalization and then improving the same.

Research Assistant in Spoofed speech detection

Feb 2023 - Current

Indian Institute of Technology Mandi (IIT Mandi)

- Developed a speech anti-spoofing model using graph attention networks that leverages speaker information. The model captures artifacts by applying spectral and temporal attention and combines these into a unified graph for enhanced detection across both domains.
- Developing two attack-agnostic models—an encoder-decoder framework and a subspace-based method—that learns attack-invariant representations. These lightweight models enhance generalization to new fake speech types and integrate efficiently into existing detection systems.

Team Project in EE608 (Digital Image Processing)

Feb 2023 - June 2023

Indian Institute of Technology Mandi (IIT Mandi)

- Developed a blind spot dilation network architecture that eliminates the necessity for sequential inference and independent directional processing.

Publications

- [1] **S. Chandra** and P. Rajan, "Is That Me? Using Speaker Identity to Detect Fake Speech," 2024 IEEE 34th International Workshop on Machine Learning for Signal Processing (MLSP), London, United Kingdom, 2024.
- [2] **S. Chandra**, S. Bhilare, M. Asgekar and R. B. Ramya, "Crop Water Requirement Prediction in Automated Drip Irrigation System using ML and IoT," 2021 4th Biennial International Conference on Nascent Technologies Engineering (ICNTE), NaviMumbai, India, 2021.

Under Review

- [1] **S. Chandra**, A. Tyagi and P. Rajan. Enhancing Audio Deepfake Detection with Attack-Agnostic Methods.

Other Work Experience

Capgemini Technology Services India Limited
Software Engineer

April 2021 - Jan 2022

- Created VBScripts via Unified Functional Testing(UFT) for automating the testing part of applications.
- Managed the sprint timeline and steps of testing using Azure Devops.

Center for Artificial Intelligence and Robotics (DRDO)
Research Intern

June 2020 - Sept 2020

- Used Satellite Image Classification to identify the progress of human development.
- Classified dataset using LabelImg upon which it was trained on Darknet neural network.

Talks

Talks
Fake speech detection using LP residual | CVSSP Lab, University of Surrey, UK

Sept 2024

Conference Presentations
Is That Me? Using Speaker Identity to Detect Fake Speech | MLSP, London, UK

Sept 2024

Awards and Honors

Travel Grant | Indian Speech Communication Association

Sept 2024

Half-time Teaching/Research Assistantship (HTRA) scholarship | IIT Mandi

Aug 2022 - Sept 2024

Teaching Assistantships

DS413 - Introduction to Statistical Learning

Fall 2024, IIT Mandi

DS302 - Computing systems for data processing

Spring 2024, IIT Mandi

DS403 - Introduction to Statistical Learning

Fall 2023, IIT Mandi

CS308 - Large Application Practicum

Fall 2022, IIT Mandi

Skills

Programming Languages

Python, C,C++, Java

Operating Systems

Linux, Windows

Auto-differentiation Frameworks

PyTorch, TensorFlow, Keras



Version Control



Git

Languages

English (C1), Hindi, Bengali

References

Dr. Padmanabhan Rajan  : Associate Professor, IIT Mandi

Dr. Parimala Kancharla  : Assistant Professor, IIT Mandi