



Notice for the PhD Viva-Voce Examination

Mr Aniruddha Mohanty, Registration Number: 1970076, PhD Scholar at the Department of Computer Science and Engineering, School of Engineering and Technology, CHRIST (Deemed to be University), Bangalore will defend his PhD thesis at the public viva-voce examination on Saturday, 06 September 2025 at 09.30 am in the CDI Conference Room, III Floor, Block V, Bangalore Kengeri Campus, Bengaluru - 560074, Karnataka, India.

- Title of the Thesis** : **Ingenuity-Based Framework for Speaker-Specific Emotion and Content Analysis in Human Speech**
- Discipline** : **Computer Science and Engineering**
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The members of the Research Advisory Committee of the Scholar, the faculty members of the Department and the School, interested experts and research scholars of all the branches of research are cordially invited to attend this open viva-voce examination.

Place: Bengaluru
Date: 03 September 2025

Registrar (Academics)

ABSTRACT

Understanding emotions and content in human speech is essential for customer service, mental health, and human-computer interaction applications. This research introduces an AI-based framework for speaker-specific emotion and content analysis. Gender detection, crucial for voice assistants and telecommunication, is achieved using Shifted Delta Cepstral (SDC) features and pitch, combined with the eXtreme Gradient Boosting (XGBoost) model, achieving over 99% accuracy on RAVDESS and TIMIT datasets. Emotion recognition employs a Deep Convolutional Neural Network (DCNN) with spectral and prosodic features to classify emotions such as anger, happiness, and sadness, attaining 90.27% accuracy across datasets. Whispered speech, which lacks typical vocal vibrations, is analysed using a BiLSTM model for gender detection and a DCNN for emotion recognition, reaching 98.54% accuracy on the wTIMIT dataset. An ELECTRA model refines sentiment classification in financial text data, achieving over 92% accuracy. This framework enhances speech analysis by accurately identifying emotions and analysing speaker-specific content. It has broad applications in customer service, forensic investigations, online learning, and market sentiment analysis, offering more profound insights into human communication. This research improves speech-based AI systems by integrating advanced neural networks, making them more intuitive, adaptive, and context-aware across various domains.

Keywords: *Gender Recognition, Speech Samples, Whispered Speech, Sentiment Analysis (SA), Speech Features, Emotion Detection, Machine Learning (ML), and Deep Learning (DL) Models.*

Publications:

1. Mohanty, Aniruddha and Cherukuri, Ravindranath C and Prusty, Alok Ranjan, "Improvement of Speech Emotion Recognition by Deep Convolutional Neural Network and Speech Features," Congress on Intelligent Systems, pp. 117–129, 2022, CHRIST (Deemed to be University), Bengaluru, 05-06 September 2022, doi: <https://doi.org/10.1007/978-981-19-9225-4-10>.
2. Mohanty, Aniruddha and Cherukuri, Ravindranath C, "Improving Speaker GenderDetection by Combining Pitch and SDC," International Conference on Data Science and Applications, vol. 818, pp. 451–462, 2023, Springer, Singapore, doi: <https://doi.org/10.1007/978-981-99-7862-5-34>.
3. Mohanty, Aniruddha and Cherukuri, Ravindranath C, "Sentiment Analysis on Banking Feedback and News Data using Synonyms and Antonyms," In: International Journal of Advanced Computer Science and Applications; West Yorkshire. vol 14. Issue 12, 2023. doi: <https://doi.org/10.14569/IJACSA.2023.0141294>.
4. Mohanty, Aniruddha and Cherukuri, Ravindranath C, "Whispered Speech Emotion Recognition with Gender Detection using BiLSTM and DCNN," Journal of Information Systems and Telecommunication (JIST). vol 2. number 46, pp. 105, 2024, doi: 10.61186/jist.43703.12.46.152