

Detecting Deepfake Audio



Deployment | Week 13

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This project is published publicly on Github : <https://github.com/jashwanthKadem/DeepFake-Audio-Detection>

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Detecting Deepfake Audio

Overview

This project focuses on the detection of deepfake audio, a critical issue that poses significant challenges in various domains, including communication, media, and security. Through thorough exploration and analysis, we have developed robust and efficient methods for accurate detection of deepfake voices.

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Future Research Directions

1.

Enhancement of Model

Performance:

- **Fine-tuning Deep Learning Models:** Explore techniques to fine-tune the hyperparameters of deep learning models such as CNNs, GRUs, and LSTMs to further improve detection accuracy,

2.

Addressing Class Imbalance:

- **Data Augmentation:** Implement advanced data augmentation techniques to generate synthetic samples of deepfake voices, addressing the class imbalance issue.
- **Advanced Sampling Techniques:** Explore more sophisticated sampling methods tailored to the characteristics of the dataset to ensure balanced training.

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3.

Transfer Learning and

Generalization:

- **Transfer Learning:** Experiment with transfer learning techniques to leverage pre-trained models and adapt them to the task of deepfake audio detection, improving generalization to unseen data.

Future Research Directions

4.

- **Optimization for Real-time Processing:** Develop techniques to optimize the model for real-time detection of deepfake voices in streaming audio or video content.
- **Deployment Challenges:** Address practical challenges in deploying deepfake audio detection systems in real-world applications, including media authentication and fraud detection.

5..

Exploration of Novel Features and Methods:

- **Exploration of New Features:** Investigate the effectiveness of novel audio features beyond MFCCs for detecting deepfake voices, such as spectral contrast and temporal features.

6.

- **Advanced Signal Processing Techniques:** Explore advanced signal processing techniques, such as attention mechanisms and waveform modeling, to extract more discriminative features.

Thank You