DEEPFAKE DETECTION OF AUDIO MANIPULATIONS

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Introduction

The word Deepfake is a combination of "Deep Learning" and "Fake." Deep Fakes are used to replace a person in an existing image or video with someone else's likeness by using artificial neural networks. Even sounds such as voices can be trained to sound like a particular person. For example, your phone rings, you pick up. It’s your spouse asking you for details about your savings account — they don’t have the account information on hand, but want to deposit money there this afternoon. Later, you realize a bunch of money has gone missing!

Methodologies

- **Proposed Methodology:**

1. Data Pre-Processing and Exploration
2. Feature Engineering
3. Training and Testing Model

Data Pre-processing and Exploration

1. DataSet Classification into Fake and Real.
2. 9000 Audio files
3. Extract Audios from Videos
4. Create Mel Spectrogram
5. Save in 2 different folders i.e Real and Fake.

State Diagram

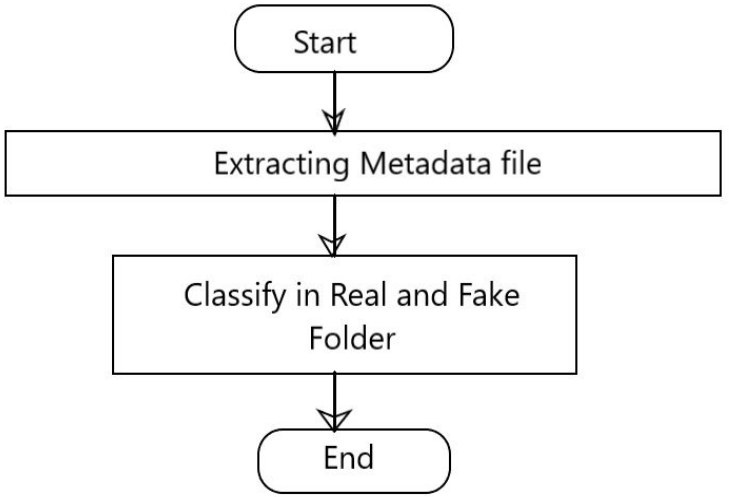


Fig: Flow chart of Separating real and fake files

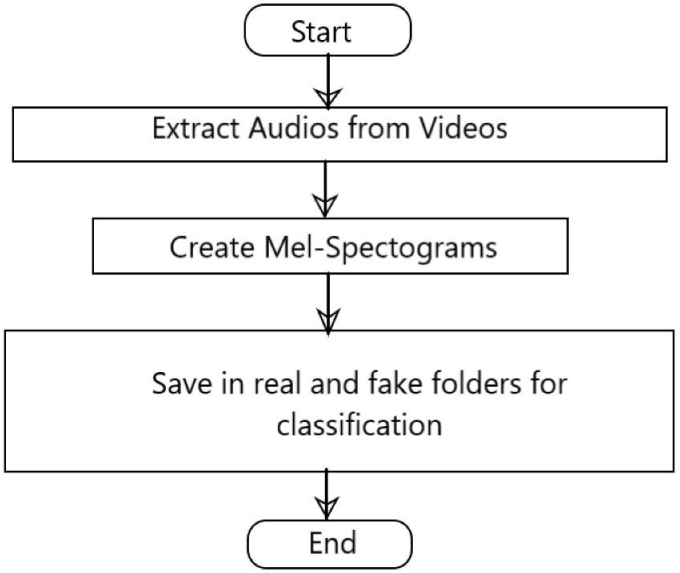
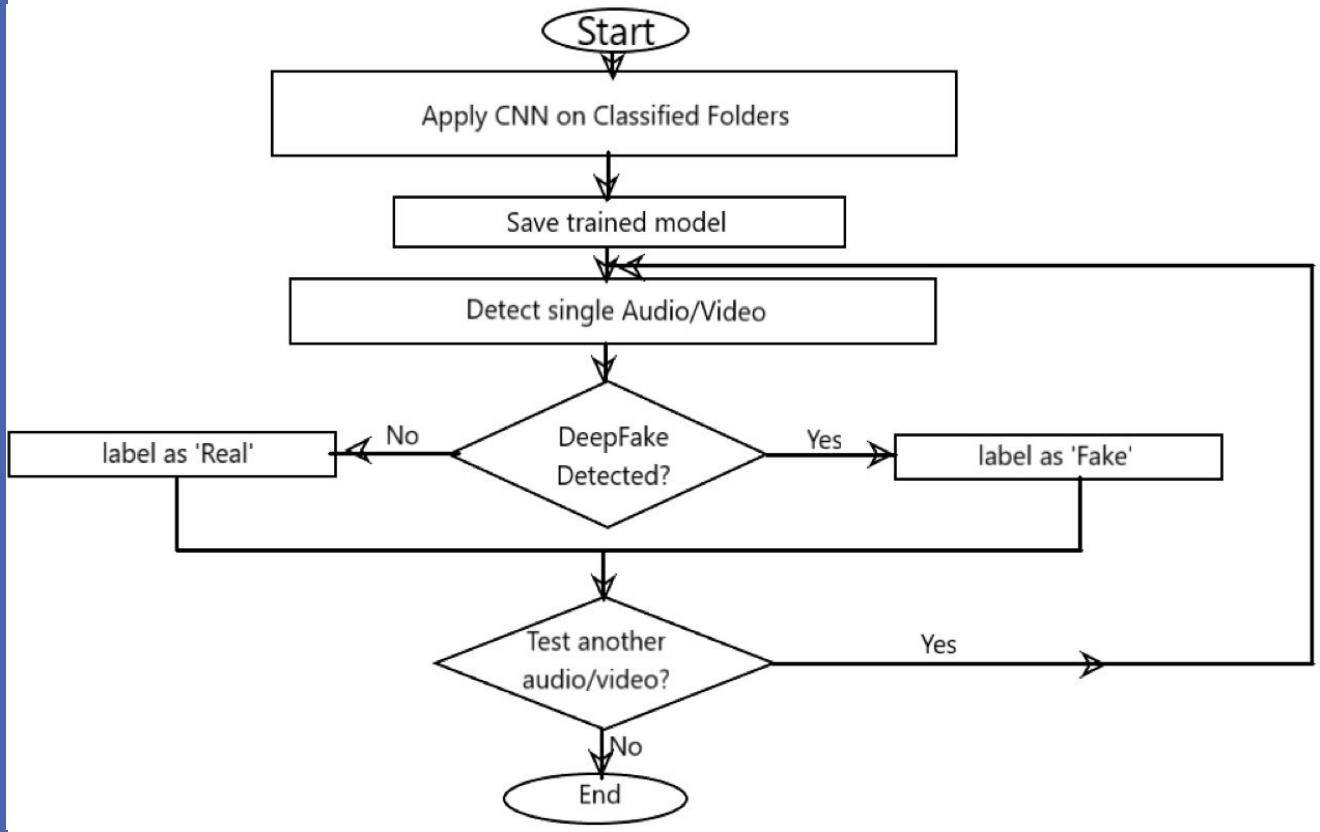


Fig. Flow Chart for Creating mel spectograms of video dataset

Training And Testing Model

- CNN



Improving the Model

1. Use more no of CNN lyer
2. Use of More sample Points or Data Augmentation
3. Fashion MNIST Dataset
4. Using more Features like Amplitude

Result

- **Result**

  Our trained CNN model giving accuracy of 69.81%.

Conclusion

From the study conducted it is found out that the majority of the audio files were differentiated between original and duplicate copies. The wave differences could be identified between the original and duplicate copies. The alterations were identified using spectrograph of the original files. WAV files are used in all the areas of audio, from portable players, and handheld recorders, to audio interfaces and more. The WAV files are a more accurate and lossless format. They are of simple format, so we feed this wav files to CNN and got a Model which gives a great accuracy to find the Fake audios

Future Scope

- Can be done on videos
- UI interface for the Detection
- A App for mobile to detect incoming calls are genuine or not
- Fake News on all Platforms like YouTube, Radio, etc.
- Can be used in voice-controlled Passwords and Locke

Questions?