DeepFake Identifier

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Problem Statement

Build a new algorithm using generative AI to detect deep fake videos and fake news on social media.

Understanding the approach

Item 1

In this project, our focus revolves around Deepfakes, and we delve into their detection using a pre-trained model called MesoNet, specifically engineered for this purpose.

Item 2

The research paper on MesoNet, authored by Darius Afchar, Vincent Nozick, Junichi Yamagishi, and Isao Echizen, was published in September 2018.

Item 3

The paper introduces two models trained on separate datasets. In this project, we focus on the Meso4 model, which is trained on the Deepfake dataset developed and released by the MesoNet researchers.

Requirements:

Python 3.5

Numpy 1.14.2

Keras 2.1.5

Understanding the solution

Pipeline

- It is recommended to run the code in GPU runtime type.
- Import all the important libraries
- Define the image dimension and color channel
- Create a MesoNet class using the Classifier
- Load MesoNet model with pretrained weights (download the ‘Meso4_DF.hdf5' file from resources folder and paste the appropriate path)
- I used Google Colab so I uploaded all the resource to my google drive.
- Then connect my Google Drive to my colab and give the appropriate path for pretrained model as well as for Data.

Pipeline

- Import the Data and Rendering image X with label y for MesoNet and Evaluating prediction
- Then Creating separate lists for correctly classified and misclassified images and generating predictions on validation set, storing in separate lists

Future Perspective of this Model

- By using following librairies : Imageio, FFMPEG, face_recognition, we can detect deepfake even from videos.
- Detecting real-time deepfake is the demand of time and we can achieve that with this model as well.
- Due to constrain of time and resources I am restricting this model to only as image classifier.