Deepfake video detection

Deepfake creation

Why Deepfake Detection ?

Objective: Our project aims at detecting the realistic human synthesizedvideos popularly known as deepfakes.

- FakeNews
- Malicious hoaxes
- Financial fraud
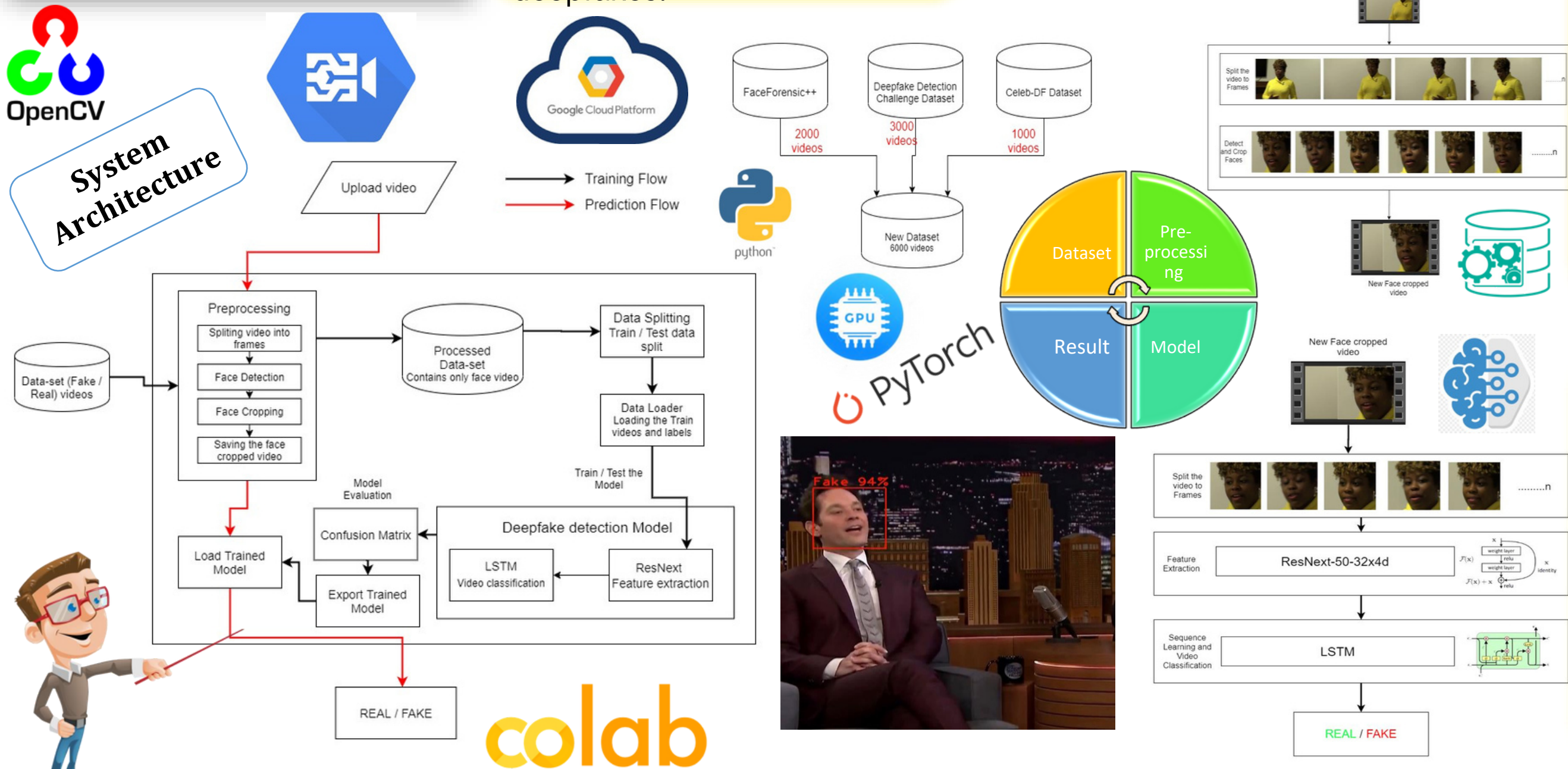- Revenge porn
- Politician videos

Creation tools.
Faceswap

Application :

Our web based application will help identify whether the video is Real or Fake

System Architecture

Upload video

Training Flow
Prediction Flow

FaceForensic++   Deepfake Detection Challenge Dataset   Celeb-DF Dataset
2000 videos   3000 videos   1000 videos

New Dataset 6000 videos

Dataset / Pre-processing / Result / Model

Split the video to Frames

Detect and Crop Faces

New Face cropped video

Data-set (Fake / Real) videos

Preprocessing
- Spliting video into frames
- Face Detection
- Face Cropping
- Saving the face cropped video

Processed Data-set Contains only face video

Data Splitting Train / Test data split

Data Loader Loading the Train videos and labels

Train / Test the Model

Model Evaluation

Confusion Matrix

Deepfake detection Model

LSTM Video classification   ResNext Feature extraction

Load Trained Model

Export Trained Model

REAL / FAKE

Fake 94%

New Face cropped video

Split the video to Frames

Feature Extraction   ResNext-50-32x4d

Sequence Learning and Video Classification   LSTM

REAL / FAKE

Conclusion:

We presented a LSTM based approach to detect the video as deep fake or real, by processing 1 sec of video with good accuracy.

colab

OpenCV

Google Cloud Platform

python

GPU

PyTorch