NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Computer Science and Engineering
College of Engineering

Deepfake Detection

Student: Wang Ying Supervisor: Chen Change Loy

Real

Fake

DFDC Dataset

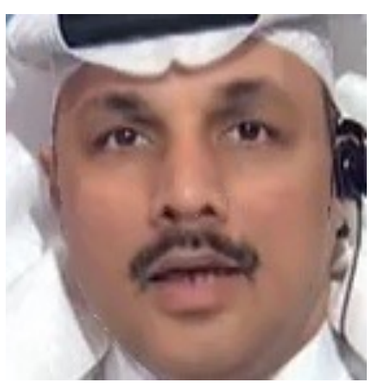
FF++ Dataset

Model Name	FF++ (12frames/video)	DFDC
Xception	0.7658	-
RECCE	0.9902	0.7944

Real

Mask

DeepFakes



Face2Face

FaceSwap

NeuralTextures

Background:

The term “Deepfake” comes from “fake” images or videos generated by “deep” learning algorithms. In December 2017, a user named “Deepfakes” posted a video of a fake face of Hollywood actress Gal Gadot on Reddit, the world’s fourth-most-visited Internet community. It caused a stir and marked the beginning of the rise of face-forging technology. “Deepfake” was also used as a synonym for this type of technology.

Project Objectives:

This project aims to reimplement the baseline Deepfake detection method (**Xception**) and an existing advanced forged face detection technology (REConstruction-Classification lEarning framework (**RECCE**)). Additionally, the goal also includes comparing and analyzing the strengths and limitations of different methods on different datasets.

- Datasets:
  - FaceForensics++ (FF++) Dataset
  - Deepfake Detection Challenge (DFDC) Dataset
- Evaluation Metrics:
  - Accuracy (ACC)
  - Area Under the Receiver Operating Characteristic Curve (AUC)
  - Equal Error Rate (EER)
- Overall Results: shown in the above Table

The architecture of the Xception Model