UNIVERSITY OF ROEHAMPTON LONDON

DEEPFAKE DETECTIVE

FROM MODEL DEVELOPMENT TO WEB APPLICATION INTEGRATION

MAY 15, 2023

WHAT ARE DEEPFAKES?

EXPLAINATION

Deepfakes are artificially generated media that replace the likeness of a person in an existing image or video of another person.

CREATION

They employ sophisticated AI techniques to manipulate or synthesize audiovisual content, capable of causing significant deception.

MISUSES

They can be utilized for nefarious purposes, including creating non-consensual deepfake pornography, manipulating political agendas, and committing financial fraud.

DETECTION

There are efforts being made to detect and distinguish them from authentic media using advanced machine learning algorithms and models.

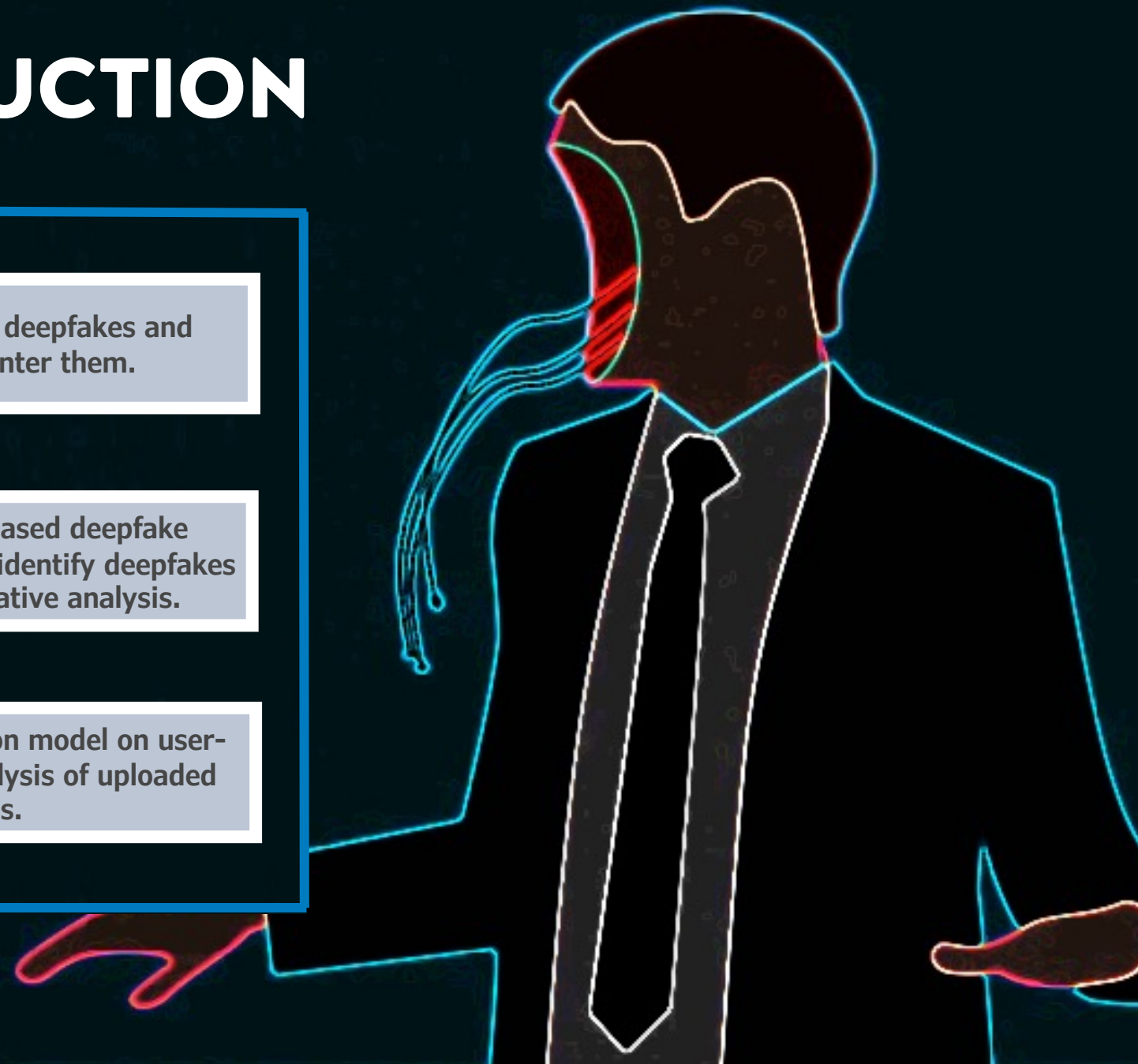
PROJECT INTRODUCTION

AIMS

AIM 1 Provide a complete overview of deepfakes and investigate solutions to counter them.

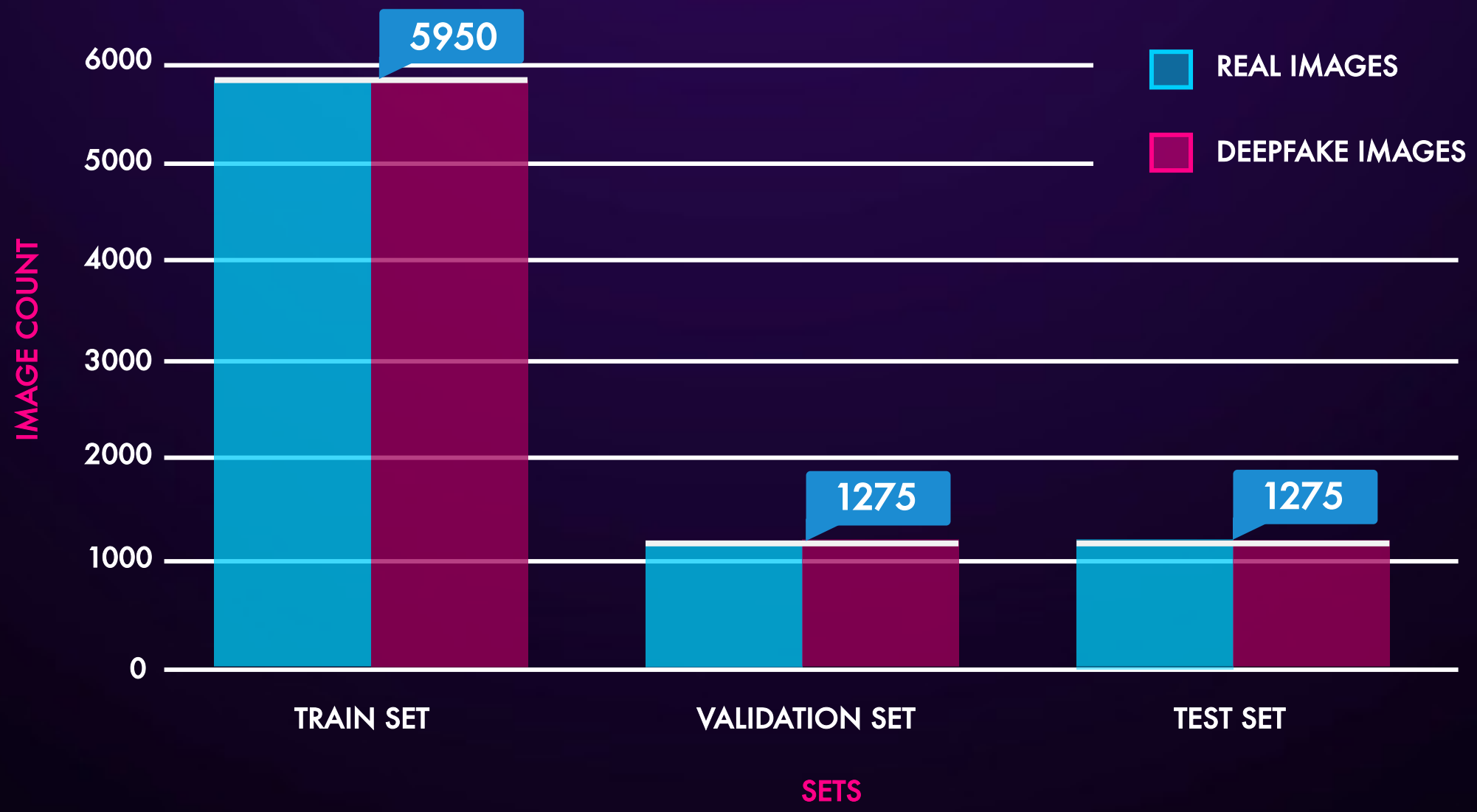
AIM 2 Develop machine learning-based deepfake detection models to accurately identify deepfakes in visual media via comparative analysis.

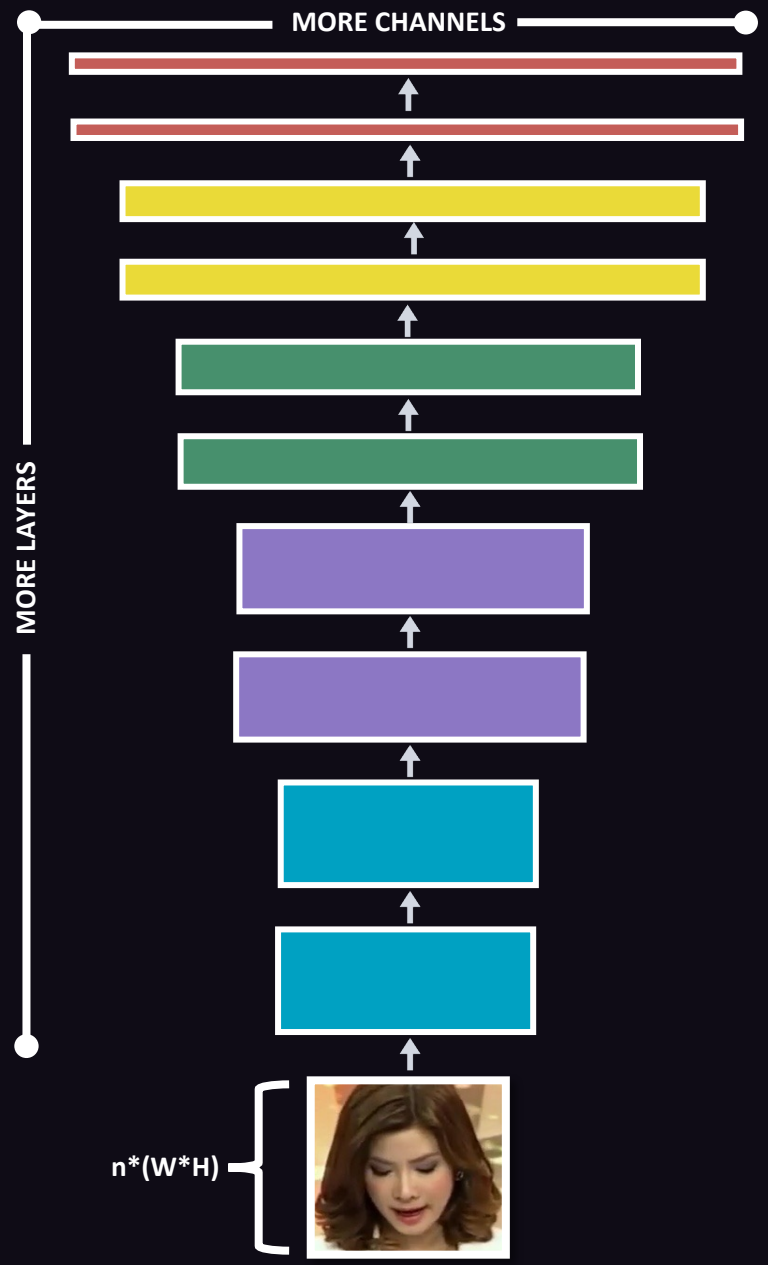
AIM 3 Deploy optimal deepfake detection model on user-friendly web app for instant analysis of uploaded videos and images.



FaceForensics++:
Deepfake Dataset
for accurate detection

SET IMAGE COUNT





EFFICIENTNET-B0

scales

DEPTH

WIDTH

RESOLUTION

COMPARATIVE ANALYSIS

EFFICIENTNET-B0

01 Utilized a novel scaling method that balanced model depth, width, and resolution.

02 Achieved state-of-the-art performance on various computer vision benchmarks.

03 Possessed high computational efficiency due to its compound scaling method.

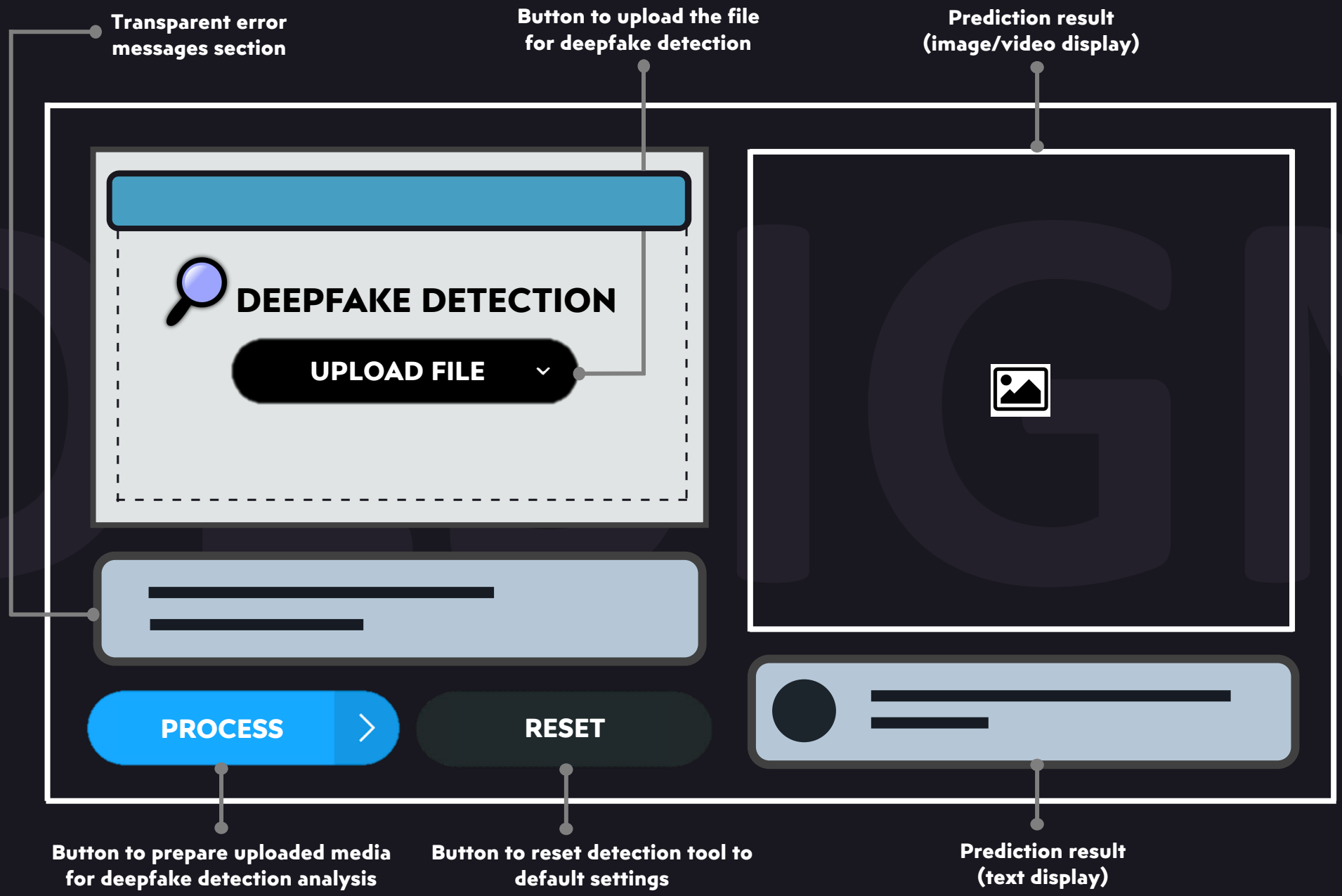
V/S

CUSTOM BASELINE CNN

Implemented a simple architecture with several convolutional and pooling layers. 01

Provided a reasonable baseline performance for deepfake detection. 02

Possessed a lower computational cost compared to the EfficientNet-B0 model. 03


Transparent error messages section
Button to upload the file for deepfake detection
Prediction result (image/video display)
DEEPFAKE DETECTION
UPLOAD FILE
PROCESS
RESET
Button to prepare uploaded media for deepfake detection analysis
Button to reset detection tool to default settings
Prediction result (text display)

DEPLOYING WEB APP WITH DOCKER

01 Allowed for the creation of a consistent isolated environment that can be deployed across multiple workstations.

02 Induced faster deployments and increased cost-effectiveness.

03 Simplified the process of managing dependencies and configurations, resulting in improved scalability and reliability.

THANK YOU FOR LISTENING!