



DEEPCODE IMAGE DETECTION

Omdena Munich Chapter

Meet the team

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THE PROBLEM

Deepfake are manipulated media to create misleading or entirely fabricated content. It is becoming an urging problem that undermines the trustworthiness of media, threatens privacy and security, and can be used to spread disinformation, harass individuals and used for identity theft.

Therefore, it is crucial to have mechanisms that ensure the authenticity of the images/videos.



OBJECTIVE

Develop an ML model that is able to classify whether a facial image is real or deepfake with a high accuracy.

Project duration
7 weeks

How we did it?

TIMELINE OF TASKS



Data Collection

'Deepfake Detection and Reconstruction Challenge' dataset was chosen to be used in this project.



Data Preprocessing

Augmented images using 2 different libraries namely, Keras and Albumentations.



Model training and testing

Worked on 17 different models and took out the best five models and run them on the entire dataset.



Model Deployment

Finalize the project outcome and represent the findings in an interactive Web-App.

TECHNICAL LESSON 1

The trained ML models were overfitting and the accuracy on validation dataset was low. We added dropout layers and weight decay.

TECHNICAL LESSON 2

The available datasets were not very robust and generalized so we opted for the dataset from 'Deepfake Detection and Reconstruction Challenge'

PROJECT MANAGEMENT LESSON 1

We attempted to parallelize the tasks as much as possible. In every data project, planning, EDA and pre-processing steps should take the biggest portion on the designed timeline. At the end quality is the most important goal!

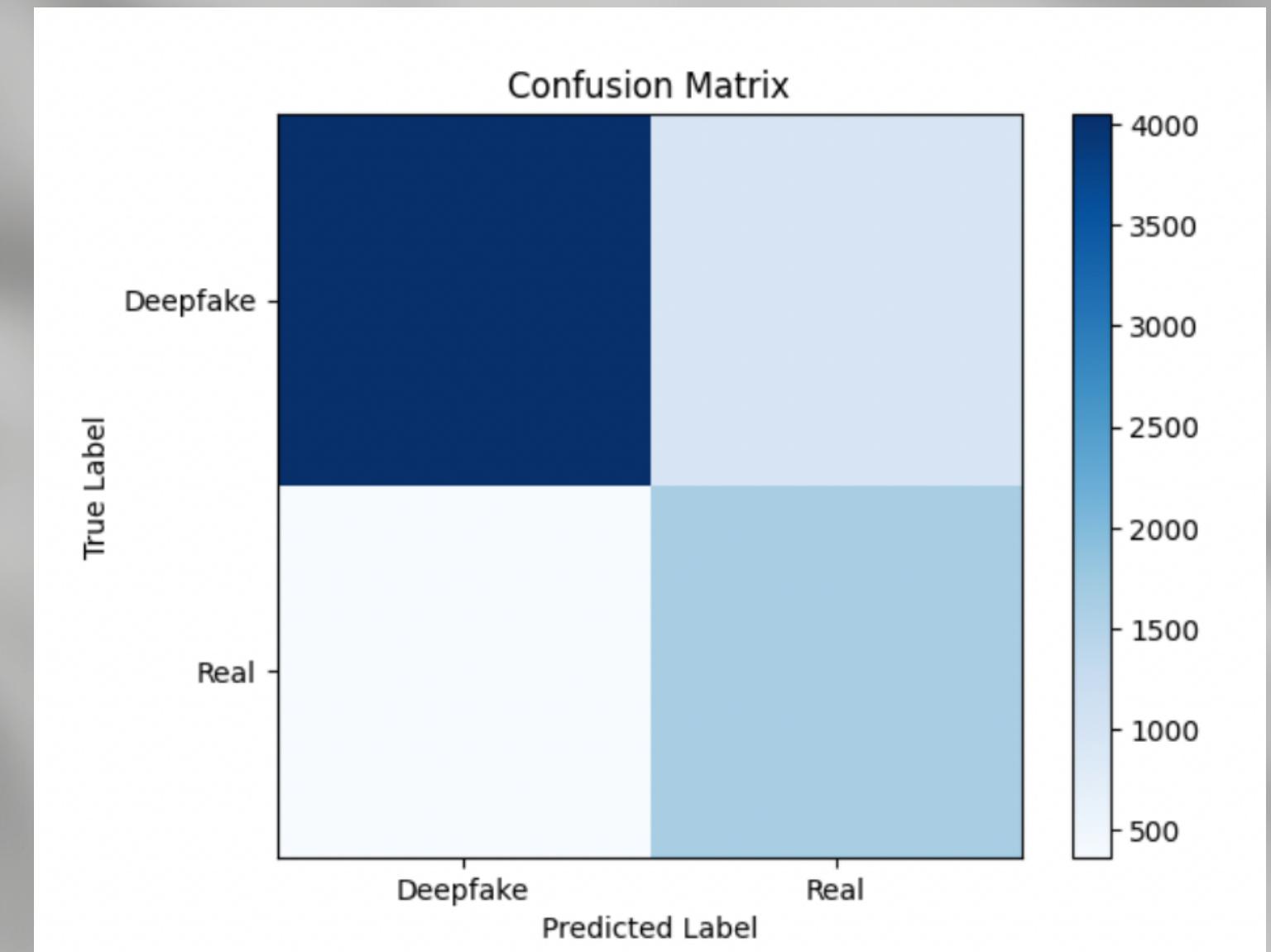
LESSON

Diversity of skills, ideas and visions makes a positive impact on the project outcomes.

RESULTS

Best performing model

	precision	recall	f1-score	support
0	0.92	0.81	0.86	5000
1	0.63	0.82	0.71	2000
accuracy			0.81	7000
macro avg	0.77	0.81	0.79	7000
weighted avg	0.84	0.81	0.82	7000



Project

Predict Image

Project Methodology

Upload a color image to detect if its fake or real



Drag and drop file here

Limit 200MB per file • JPG, PNG

Browse files

⚠ Note: Our model was specifically trained on individual human faces, hence group images, sketches, cartoons and other similar types of images might be misclassified. Also, the deepfake images chosen were generated by 5 specific GANs, namely, AttGan, GDWCT, StarGAN, StyleGAN and StyleGAN2. Deepfake generated by any other GAN might be misclassified too.

RESULTS

Interactive Web-App
on streamlit

[Link to the deployed model](#)



CHAPTER LEAD OF THE PROJECT

Imane El Maakoul

**Danke sehr und
bis zum
nächsten Mal**

TASK LEADS

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