



RAJASTHAN POLICE HACKATHON 1.0

PROBLEM STATEMENT 8

DEEPCODEX DETECTION

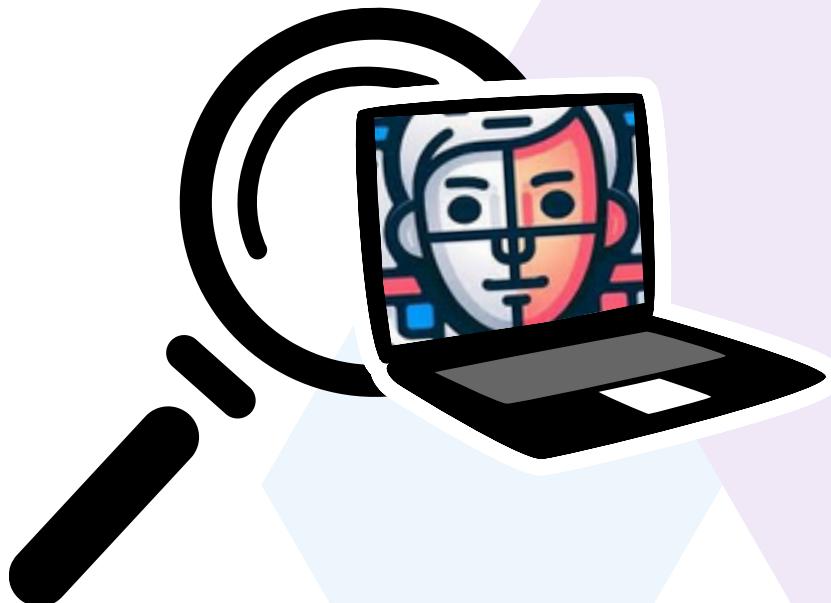
BY CYBERCIPHER

Team Lead - Harshita Batra

2nd member - Ankit Kumar Rai

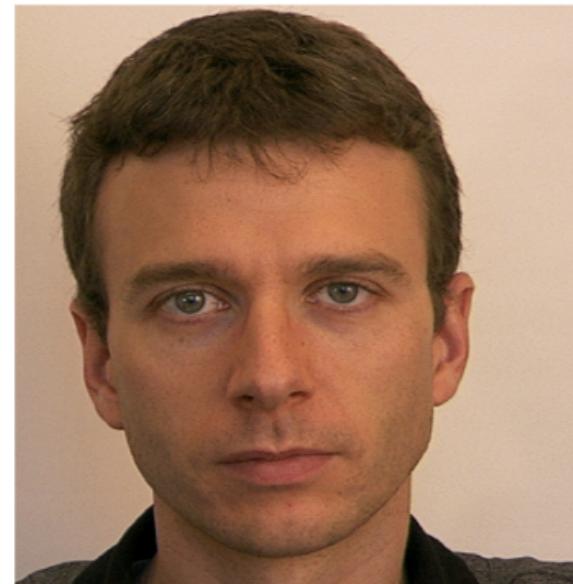
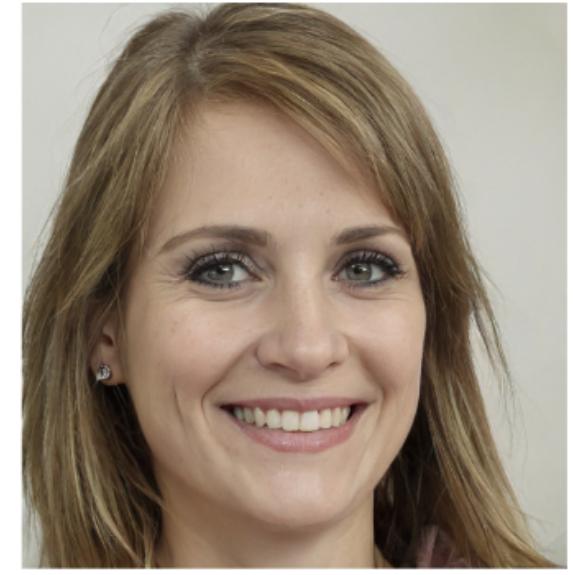
3rd member - Chetan Kandpal

4th member - Vanshika Garg

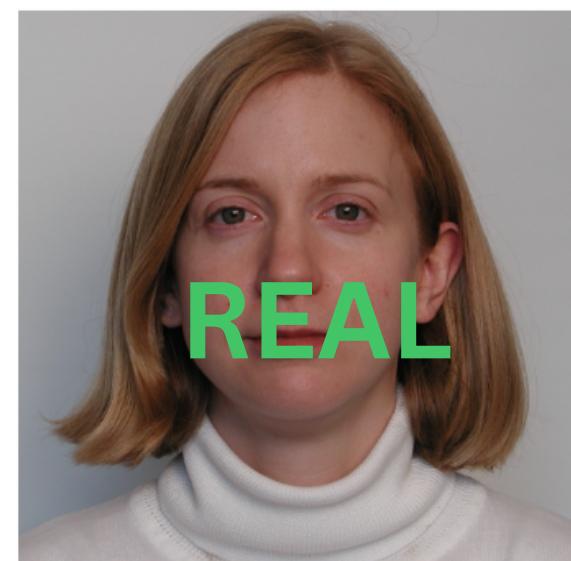




Can you identify the fake ones?



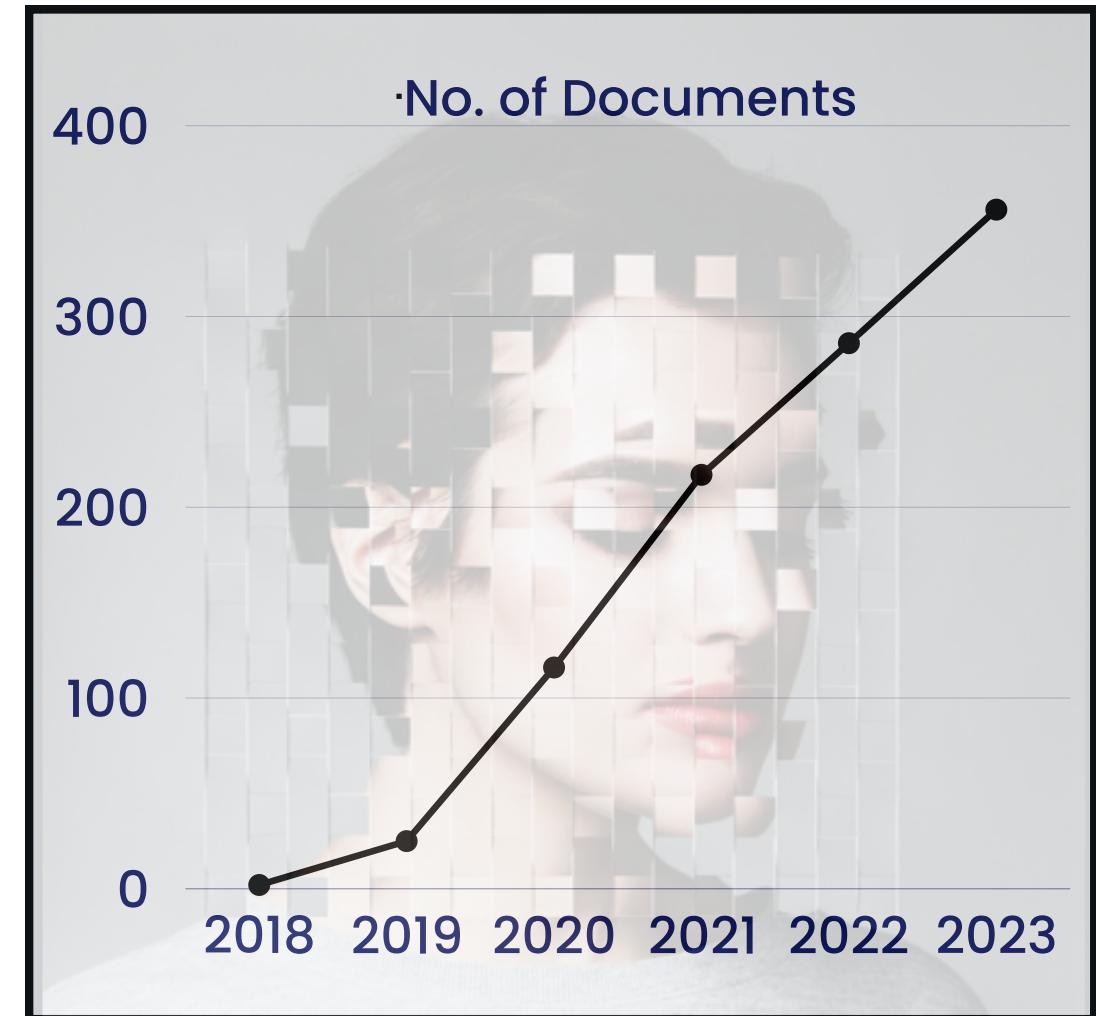
Can you identify the fake ones?



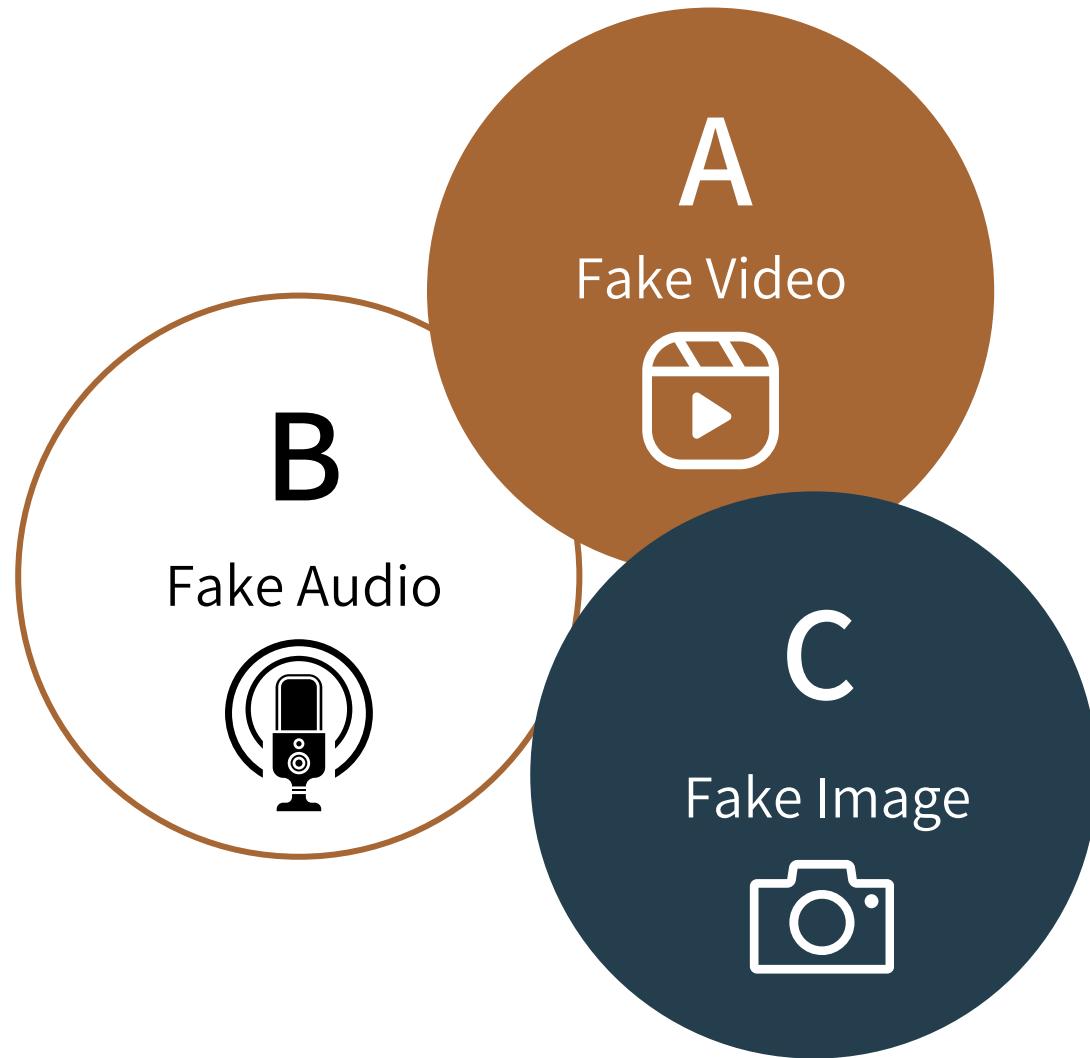
Problem Statement



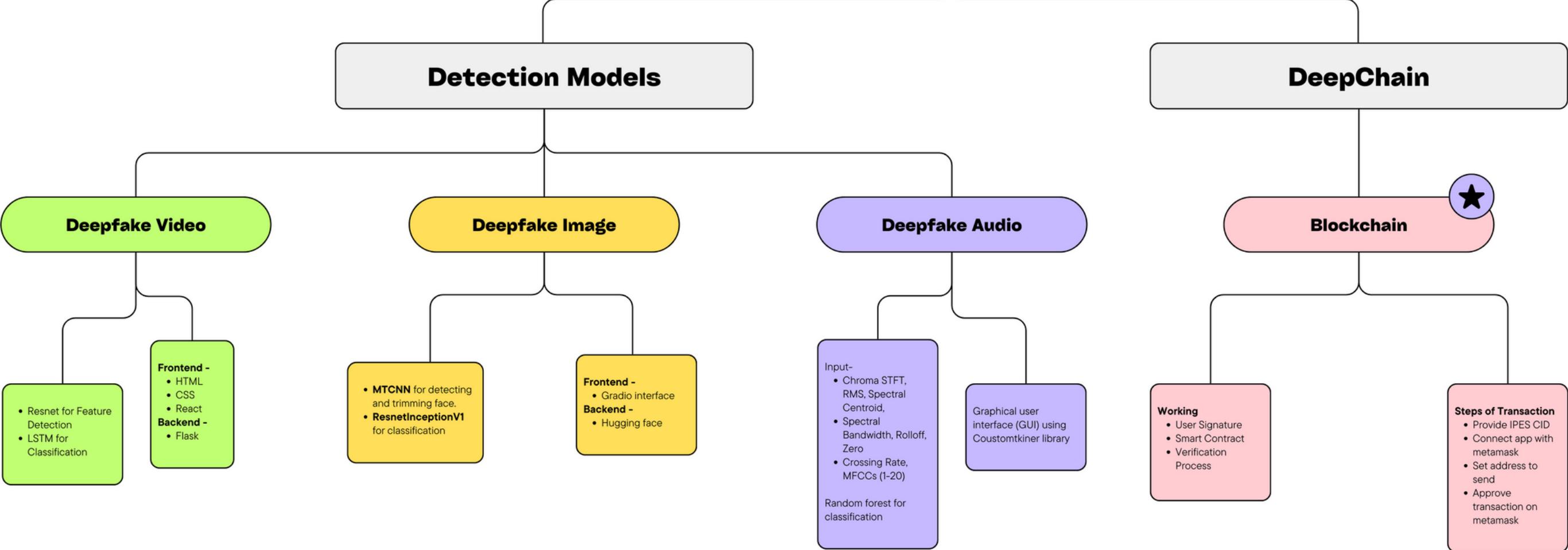
Developing a comprehensive deep fake detection system capable of identifying various types of fake content, including images, videos, and audio, created through different techniques like Faceswap, DeepfaceLab, StyleRig, Neural Voice Puppetry, etc.

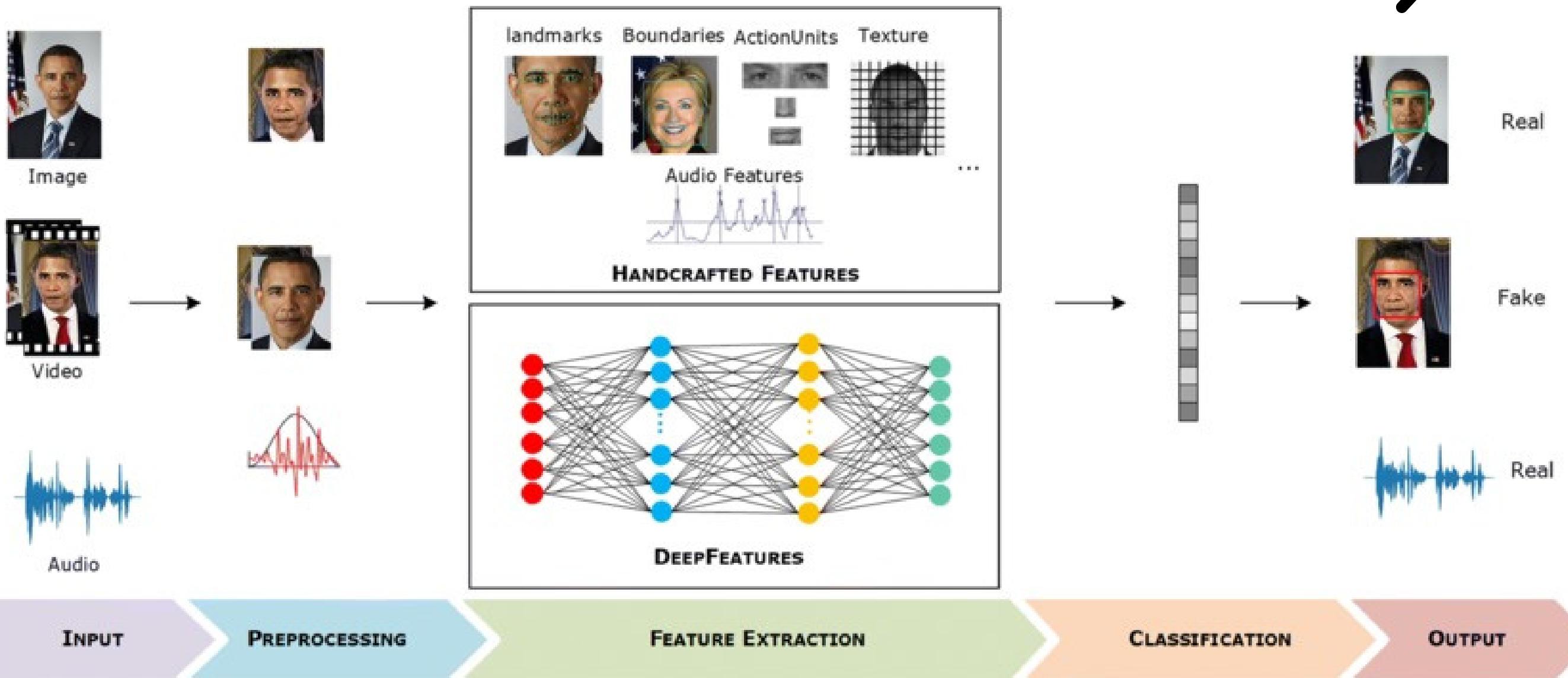


SOLUTION



- 1** Real-time Analysis
- 2** Multimodal Detection
- 3** Emphasis on false positives.
- 4** User-friendly Interface





Data Sets



S.No .	Dataset Name	Image / Video	Ratio (Real : Fake)	Total Videos/Images	Publically Availability	Links
1	UADFV	Video	1:1	98	No	-
2	DeepFake -TIMIT	Video	Only Fake	620	Yes	https://www.idiap.ch/en/dataset/deepfaketimit
3	Celeb-DF	Video	1:9.5	6229	Yes	(on request) https://github.com/yuezunli/celeb-deepfakeforensics
4	FaceForensics++	Video	1:5	6000	No	On request
5	DFCD	Video	1:3	3000	Yes	(On request) http://cvlab.cse.msu.edu/dffd-dataset.html
6	Wild Deepfake	Video	Only Fake	707	Yes	https://github.com/deepfakeinthewild/deepfake-in-the-wild
7	DFDC	Audio /Video	1:5	128064	Yes	https://ai.facebook.com/datasets/dfdc/
8	ForgeryNet	Image /Video	1:1	2.9 million/221247	Yes	https://yinanhe.github.io/projects/forgerynet.html #download
9	DFFD	Image	1:5	299039	Yes	http://cvlab.cse.msu.edu/category/downloads.html
10	FFHQ	Image	-	70000	Yes	https://github.com/NVlabs/ffhq-dataset
11	iFakeFace DB	Image	-	87000	Yes	https://github.com/socialabubi/iFakeFaceDB
12	VoxCeleb	Video	-	100000	Yes	https://github.com/cyrtavoxceleb
13	VGGFace	Image	-	3.31 million	Yes	https://github.com/ox-vgg/vgg_face2
14	Deepfake AVMiT	Audio /Video	1:11	6000	No	-
15	FakeAVC eleb	Audio /Video	1:19	20,000	yes	FakeAVC eleb (google.com)



Core Model Architecture

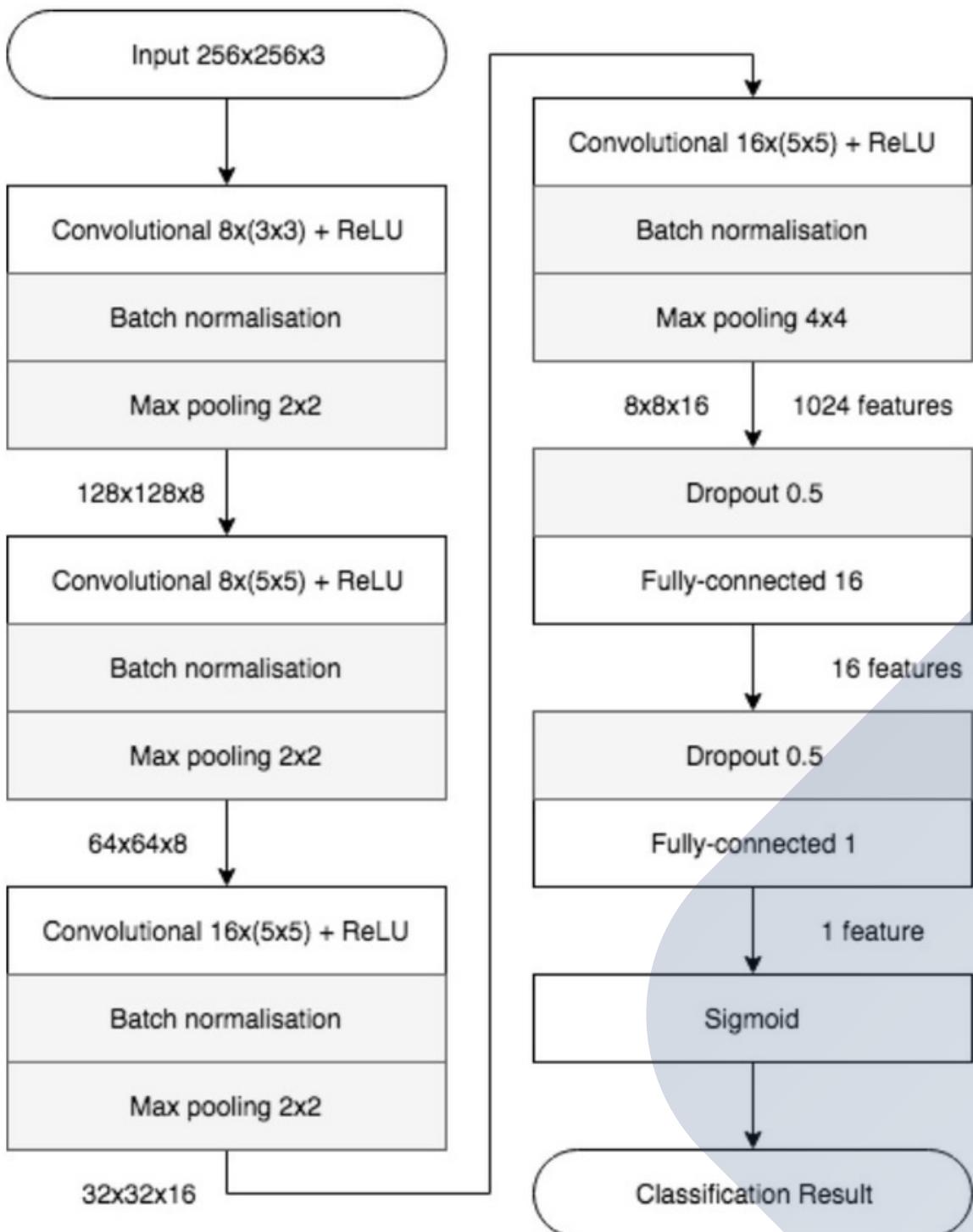
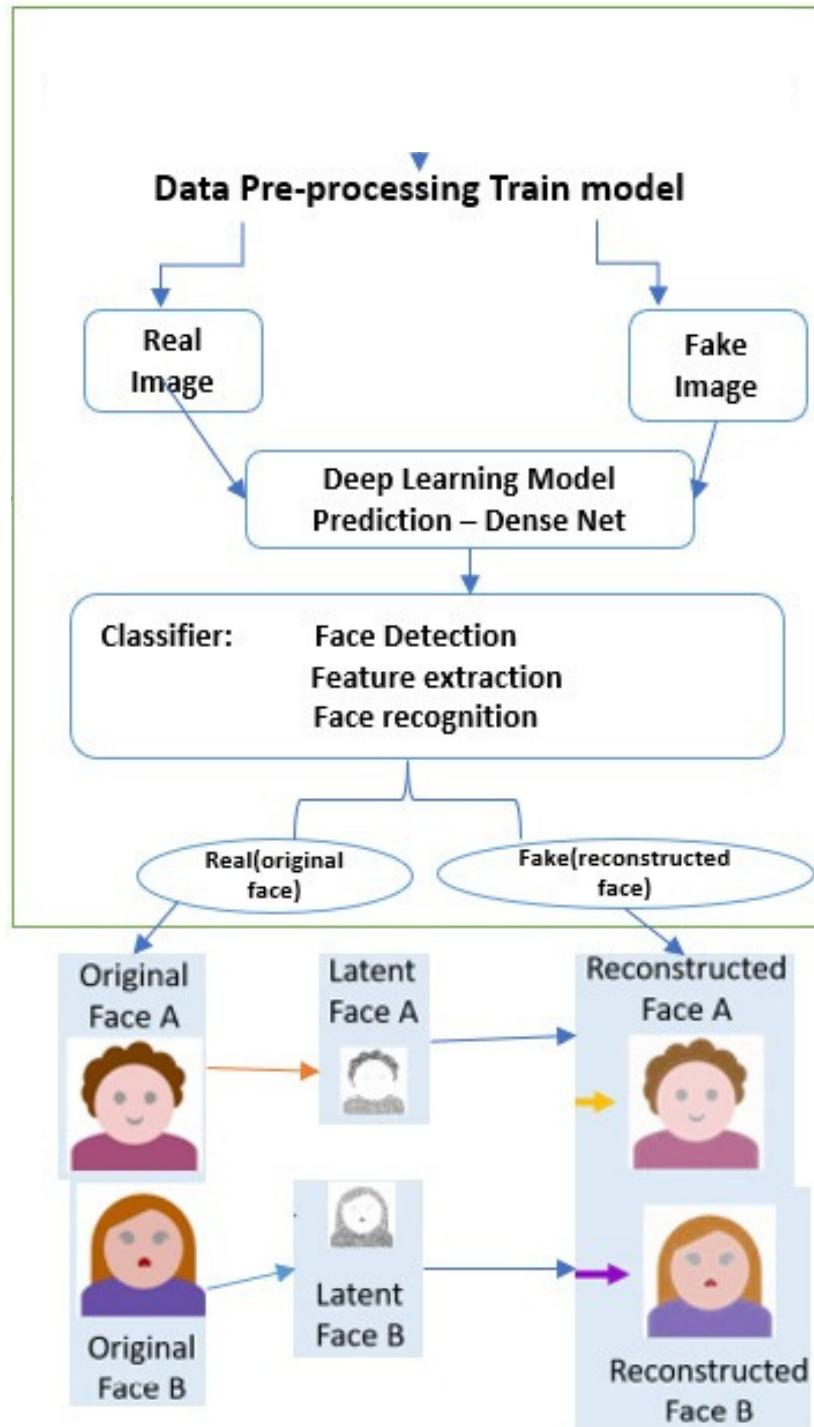
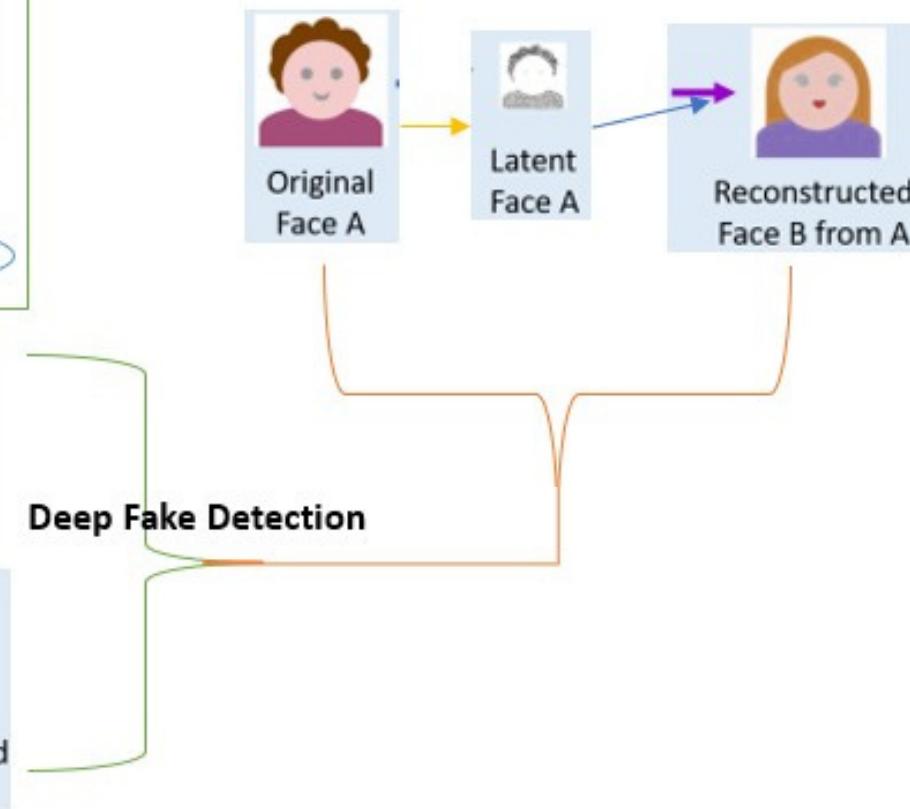




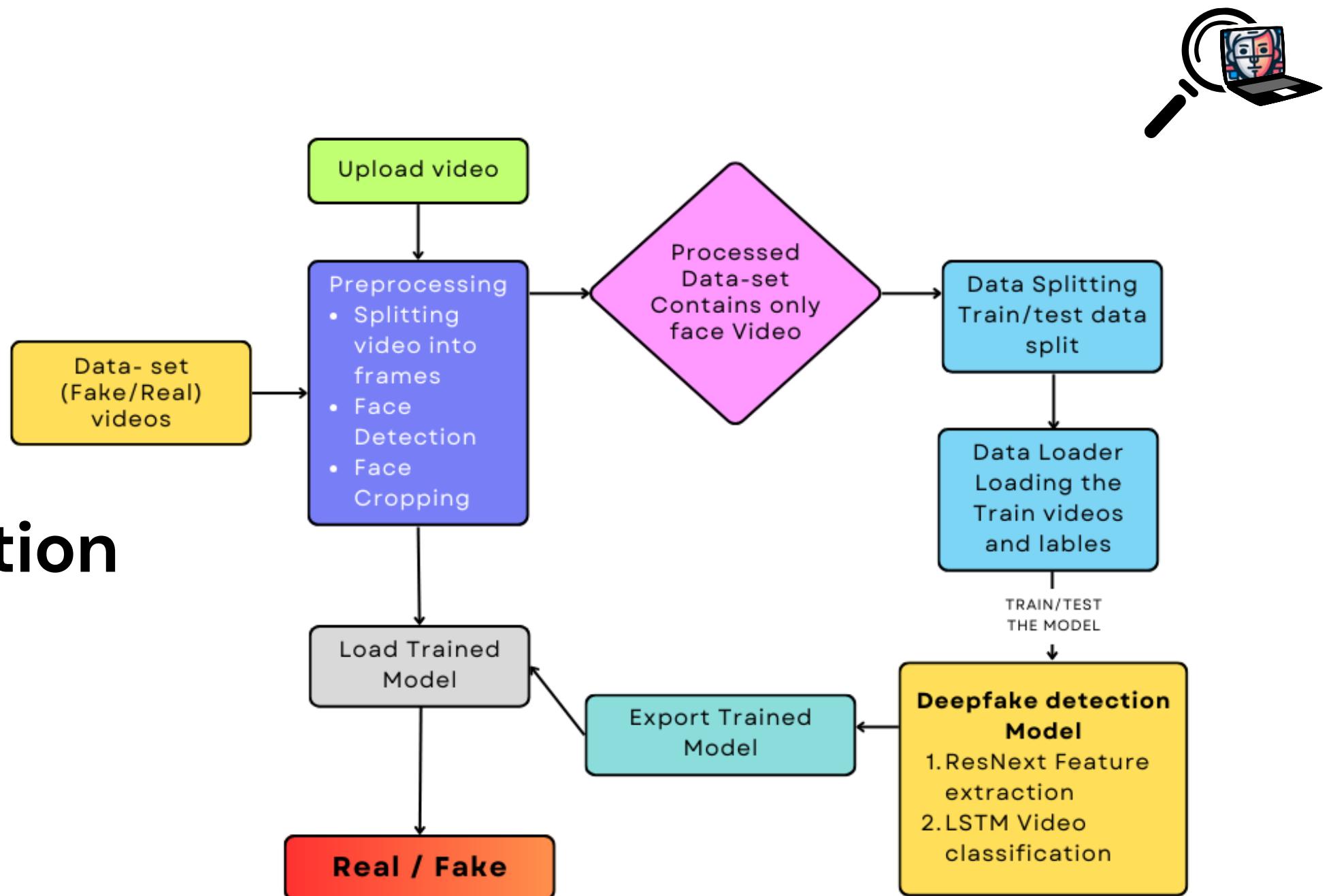
Image Detection



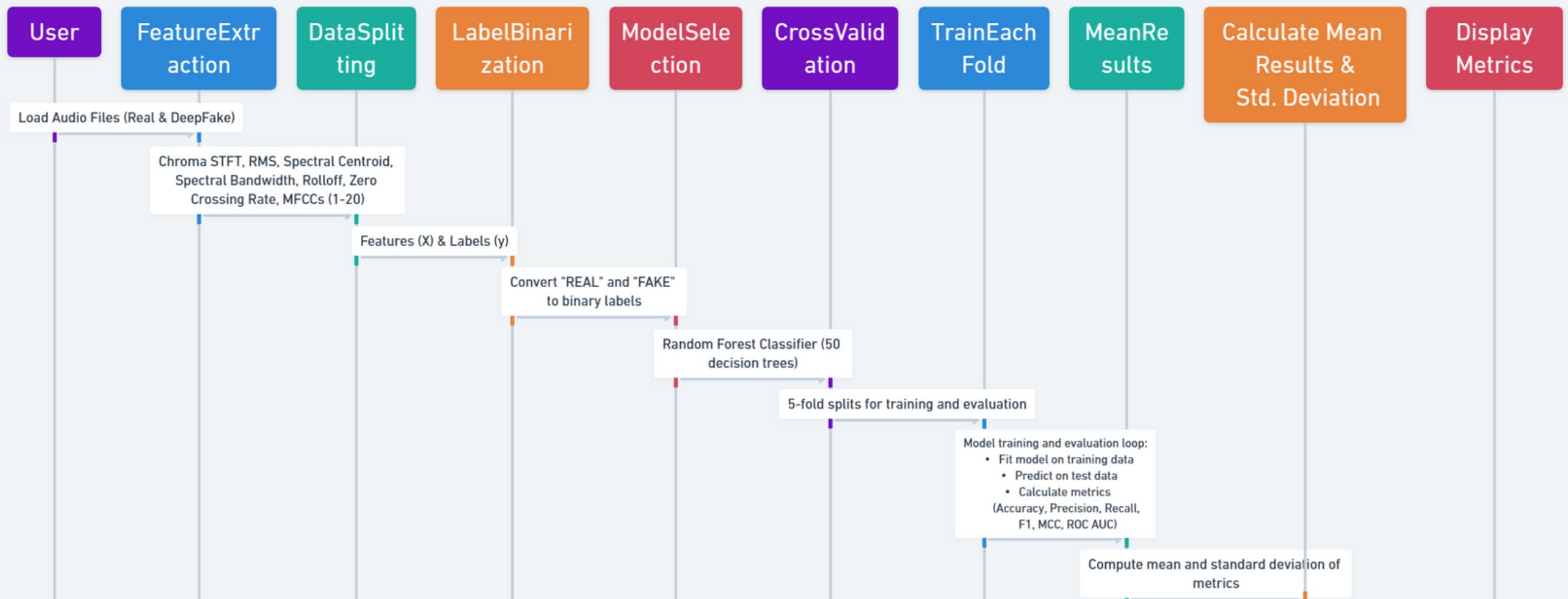
Deep Fake Test Facial Animation



Video Detection



Audio Detection



Deepfake + Blockchain = DeepChain



Configure IPFS yourself

CONNECT TO IPFS USING PINATA

UPLOAD FILE

Enter your API Keys

ba1277dc9403018e97fc

Enter your Pinata Secret

.....

Enter your Pinata Token

.....

Connect to Pinata

Supports JPG, PNG and MP4 videos.

Drop your file here or [browse](#)

Upload Files to IPFS

Enter IPFS CID

[View the section](#)

Configure IPFS yourself

[View the section](#)

Enter IPFS CID

Enter IPFS CID

<https://ipfs.io/ipfs/QmR1zKD4TmK6fhA67KpyLkgPMgBfdfvDkis>

Confirm Final Transaction

IPFS CID

Address (send to) : (set to default address)

0x7ela3I293b444BB16E9f770DA9C7leb2bA7Bb6b3

Address (sending from) :

[Stamp Data File on Blockchain](#)



1280×720 pixels



First Published on
FOXNEWS

Credited Source
Getty Images

Transaction Hash
Oxe a724952....2e902 ↗

Signature
Oxfde9242a....8171c ↗

Curve
secp256k1

hex encoded secp256k1 signature of the keccak2
content field with the signers private key

Date & Time
2024-01-09 11:00:56 GMT



USP FOR OUR SOLUTION

REAL TIME
MONITORING
TOOL

INTEGRATED
DEEPFAKE
DETECTION

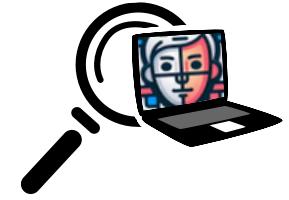
SCOPE FOR
VERTICAL
SCALING

COMPATIBLE
LOW END
DEVICES

FORENSIC
ANALYSIS
TOOLKIT

PUBLIC
AWARENESS
CAMPAIGN

How Deepfake Detection Beneficial to Police Department



1

CRIMINAL INVESTIGATION

1. Authentication of evidence
2. Witness testimonies

2

CYBERCRIME AND FRAUD PREVENTION

1. Identify theft
2. Financial Crimes

3

NATIONAL CRIME

1. Political manipulation
2. Social engineering Attacks

4

TRAINING AND AWARENESS

1. Education for investigators
2. Public awareness Campaigns

Limitations

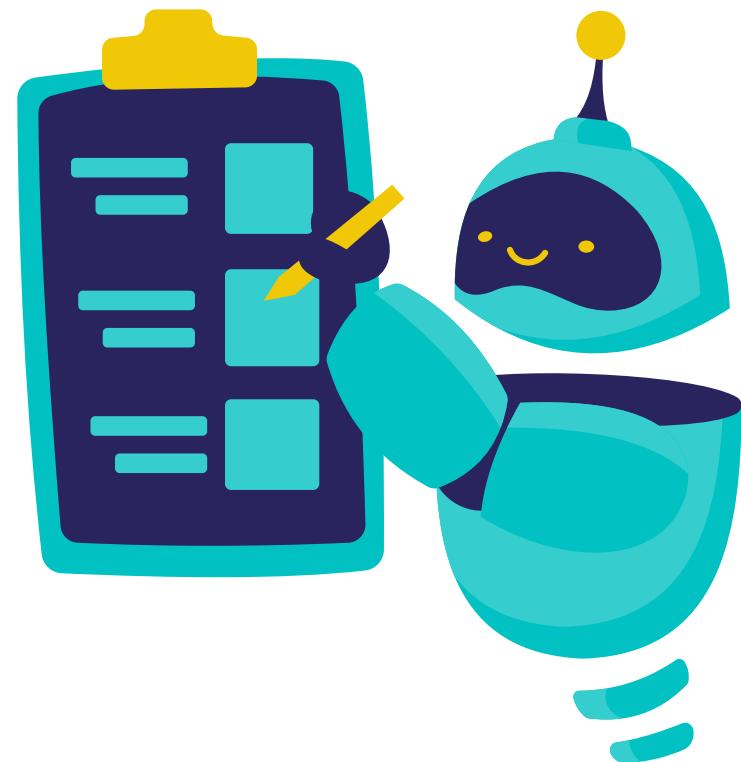
- Rapid Deepfake Generation.
(by GANs)
- False Positive / Negative impact.
- Poor quality of input data.
- Legal & regulatory Challenges.
- High Computation cost for large data.



Future Scope



- Explainable AI for legal Validity
- Blockchain for Secure Verification
- Real-time Social media integration
- Global Standard & Regulations
- Adaptive training Mechanism
- Neuro-informed deepfake Detection





Thank you!