MINOR PROJECT

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(*) **Fake Image** (digitally Altered image)

ML & Neural N/w

Even Complex neural N/w not possible to predict if image is fake or not without identifying a common factor across all fake images.

Giving raw pixels to neural N/w, we gone Error level analysed image. (ELA)

(ELA → Check inconsistency in a Image's Compression Level.

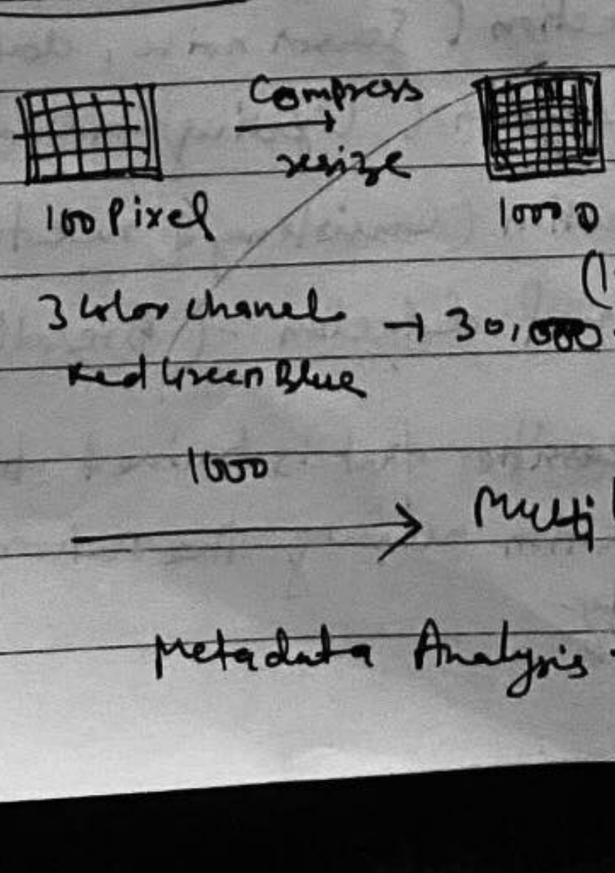
when image is saved or modified, different part of it may have different Levels of Compression.

how ELA work -

* Save Image at lower Quality (90%)
* Compare newly save image with ~~saved image~~ original
* Identify the variation in error levels across different regions of the Image
* Highlight the inconsistent area where modification might have been made

Image's Meta Data → Not reliable

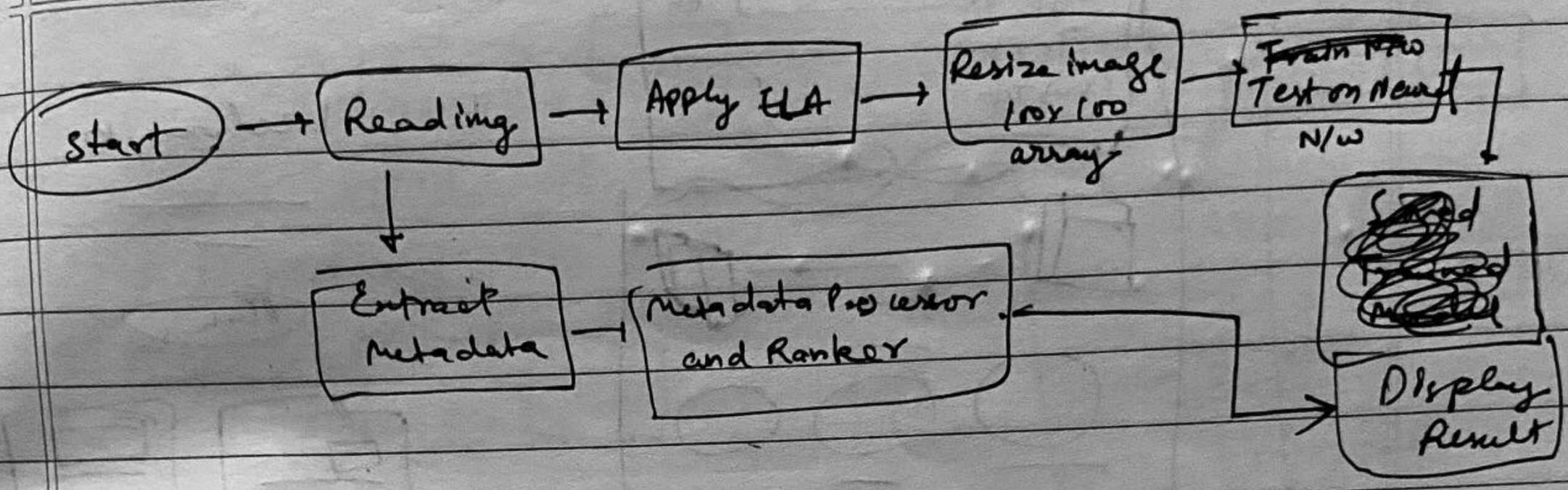
Like if Image edit by Adobe PhotoShop then it mention it version of Adobe Photoshop used.



① Neuoph Studio – neural N/w framework (Loading images)

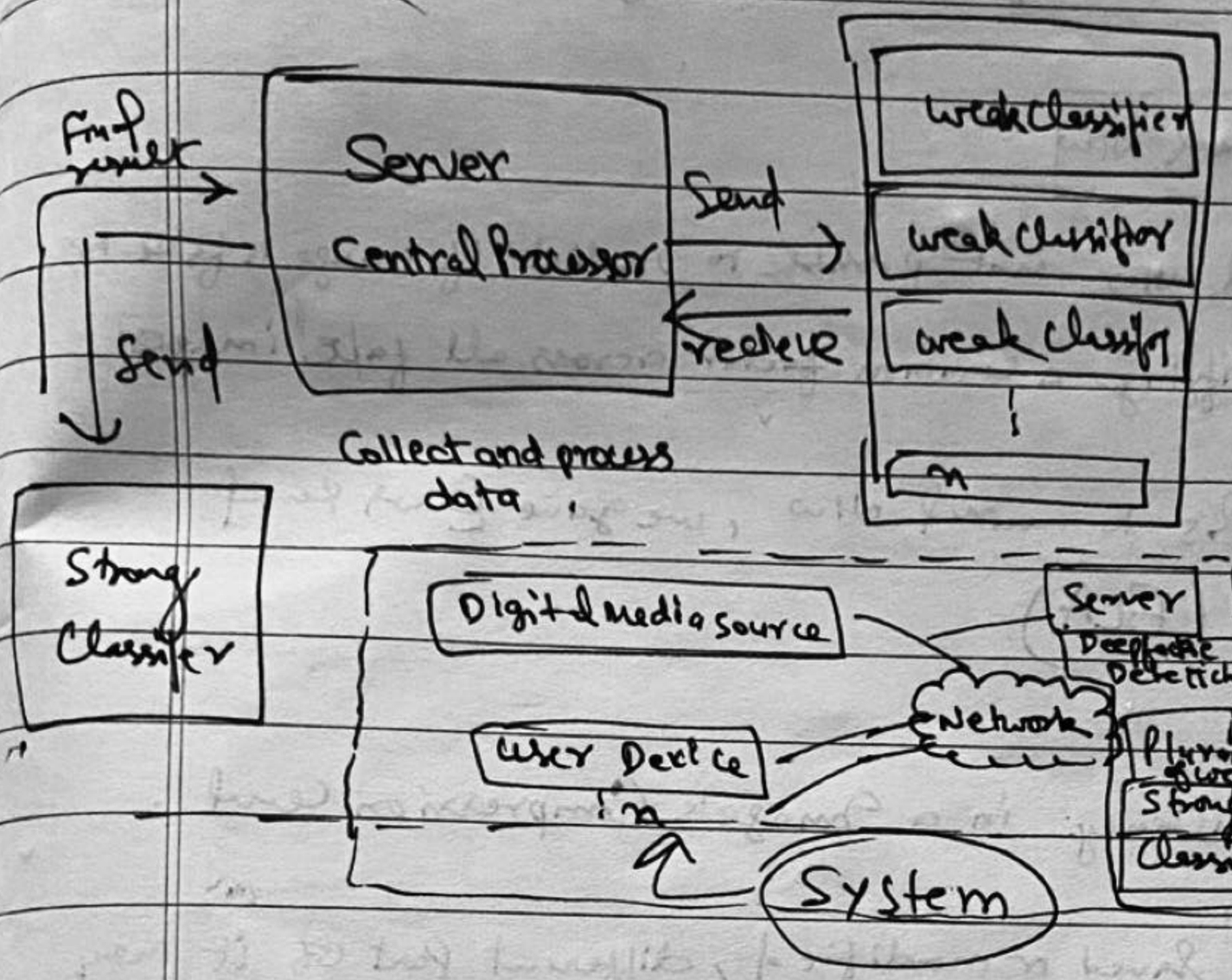
② Metadata extractor – extract metadata from images

③ Javafx – Javafx is used to implement modern user interface



Google Patent US - US2021/0420657

[Synthetic video detection]



⊙ weak classifiers :- train on real & Synthesis videos.

⊙ unfacial natural movements, frame inconsistencies, audio mismatch

⊙ detect irregularities.

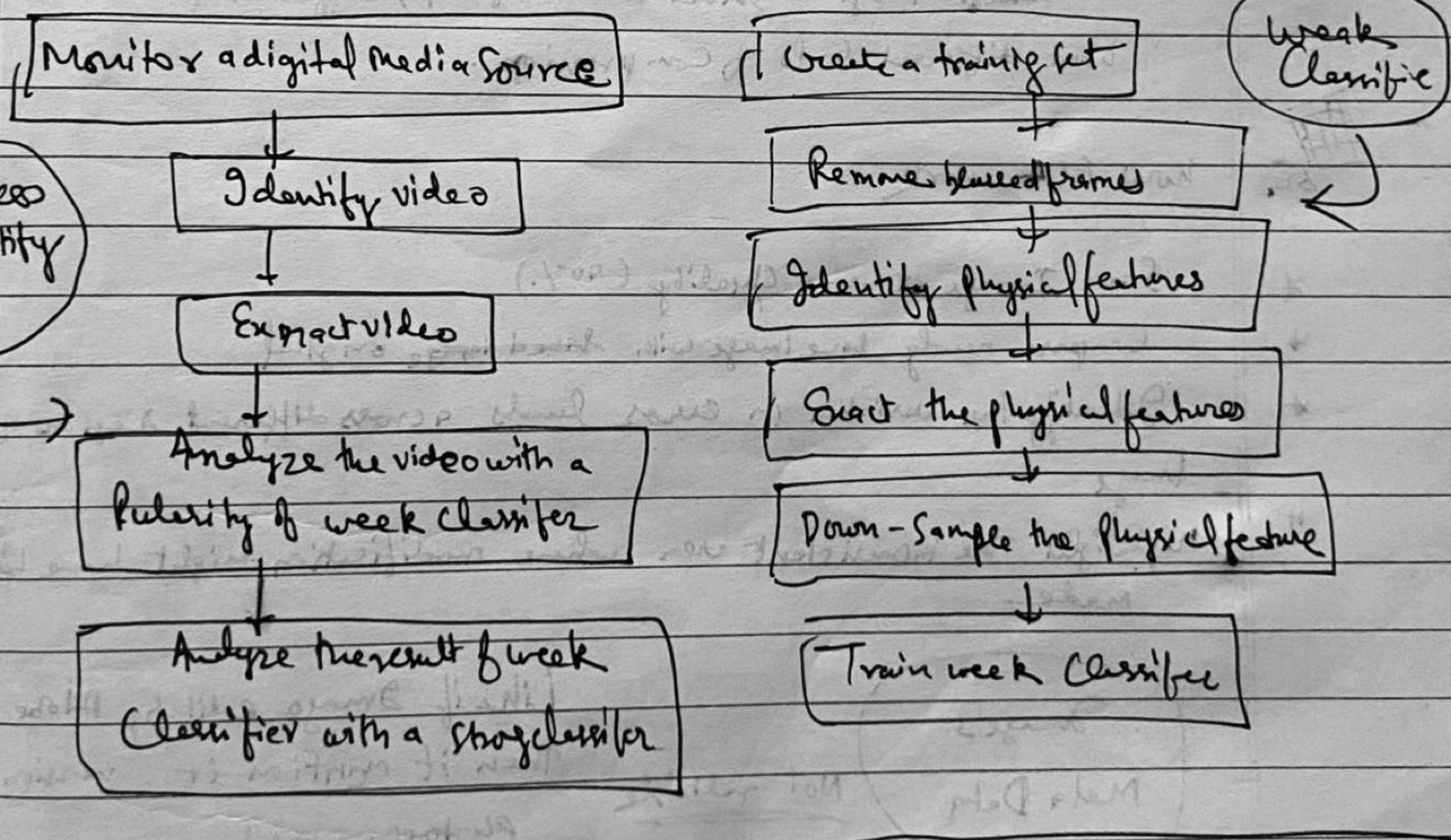
⊙ Each weak classifier generate respective prediction result.

⊙ Sent to Server.

⊙ Strong - recieve prediction from all weak classifiers.

⊙ strategy these prediction to look for patterns

⊙ make result.



Possible Methodology - { Single level detection (Sensor noise, double JPEG Compression)
Physical level detection (Lighting Condition, Shadow, Reflection etc)
Semantic level detection (Consistency of meta data)
Physiological Signal detection - (breathing & blinking)

Strong Classifer :- a Network / Classifier that is trained to be well correlated with true classification meaning the network is trained to learn to directly classify.

weak classifier : neural network train to detect & analyse certain certain Characteristic.

by individual mesh may only loosely predict true classification

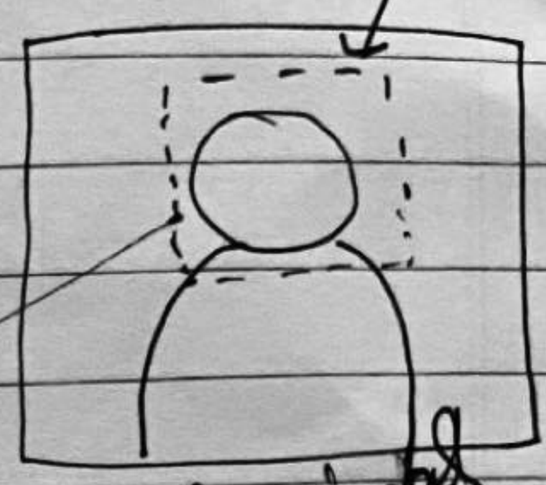
[Irregularities in]

① weak classifier – mouth detection

② weak classifier – movement of head

③ weak classifier – audio gain of video file

Numerical confidence level



what if video is of animated or an animated video.