**Proposed system advantages:**

|  |  |
| --- | --- |
| Existing System Drawbacks | Proposed system Advantages |
| The OpenCV Haar-based classifier could only detect full front-facing faces. | The MTCNN detector was able to detect a larger variety of faces. Even if face, turn it partially away from the camera, or partially obscure it with hands, it was still able to recognize it as a face. |
| Less accurate bounding box around face. | Detects more accurate face area and keypoints. |
| Feature extraction takes more space and it does not learn from face images. | FaceNet maps a face into a 128D compact euclidien space. |
| False result for unknown person’s beacause system needs training for new images. | Sytem more accurately predicts unknown persons as ‘unknown’. |
| Less accurate face recognition. | More accurate face recognition. |

**Algorithms / Frameworks Used in System:**

1) Face Detection:

Algorithm: MTCNN Face Detector

Face detection and alignment in unconstrained environment are challenging due to various poses, illuminations and occlusions. Accuracy of MTCNN Face dectector is more for detecting faces from image.

2) Face Embedding(Feature) extractor:

Algorithm: Facenet

FaceNet is a system that directly learns a mapping from face images to a compact Euclidean space where distances directly correspond to a measure of face similarity.

FaceNet maps a face into a 128D Euclidien space. The L2 distance(or Euclidien norm) between two faces embeddings corresponds to its similarity.

3) Face recognition:

Algorithm: siamese neural Network

A siamese neural network is an artificial neural network that uses the same weights while working in tandem on two different input vectors to compute comparable output vectors. Often one of the output vectors is precomputed, thus forming a baseline against which the other output vector is compared.