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Face Detection and Identification System

Using pre-trained deep learning

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PROJECT DESCRIPTION

Build a simple face detection and identification system using a pre-trained deep learning model. The system will detect faces in images and identify individuals using a small custom dataset.

Instructions:

- Use OpenCV to load and preprocess images.
- Load a pre-trained face detection model (e.g., Haar cascades or SSD-based model).
- Detect faces in input images and crop them.
- Use a pre-trained face recognition model (e.g., FaceNet) for embeddings.
- Train a simple classifier (e.g., KNN) on embeddings for identification.
- Test the system on unseen images to detect and identify faces.

PROJECT DELIVERABLES

1. **Code Implementation:** A functional script or notebook with the complete pipeline for face detection and identification, including preprocessing, model loading, training, and testing.
2. **Documentation:** A concise report or markdown file explaining the project workflow, algorithms/models used, and any challenges encountered.
3. **Demonstration Results:** A set of input images or a short video showing the system successfully detecting and identifying faces with predictions labeled on the output.

FURTHER INSTRUCTIONS

1. Load and Preprocess Images:

Use OpenCV to load images, convert them to grayscale, and resize them for uniformity.

2. Load a Face Detection Model:

Use a pre-trained model like Haar cascades or an SSD-based model for face detection.

3. Detect and Crop Faces:

Apply the face detection model to locate faces in images and crop the detected regions for further processing.

4. Generate Face Embeddings:

Use a pre-trained face recognition model, such as FaceNet, to extract feature embeddings from the cropped face regions.

5. Train a Classifier for Identification:

Train a simple model like K-Nearest Neighbors (KNN) or Logistic Regression using the face embeddings and corresponding labels.

6. Evaluate on Unseen Images:

Test the pipeline on new images to verify the system's ability to accurately detect and identify faces.

_____ BEST OF LUCK ... :) _____

THANK YOU!

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