Description de la structure de class

Class: FaceRecognition

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|-- Constructor (\_\_init\_\_)

| |-- Initialize the Face Cascade Classifier for face detection

| |-- Set the number of images to capture per person

| |-- Initialize dictionaries and lists for data tracking and storage

| |-- Create the LBPH Face Recognizer for facial recognition

|-- Method: capture\_photos(name)

| |-- Open the camera and start capturing photos

| |-- Create a directory for the person if it doesn't exist

| |-- Display instructions for capturing photos

| |-- While the required number of photos per person is not reached:

| | |-- Capture an image from the camera

| | |-- Detect faces in the image using the Face Cascade Classifier

| | |-- Display instructions for the current photo

| | |-- Check for user input to capture the photo

| | |-- Save the captured image in the corresponding directory

| | |-- Increment the image counter for the person

| |-- Release the camera and close the capture window

|-- Method: register\_faces()

| |-- Prompt the user to enter the name and surname of the person

| |-- Call capture\_photos() to capture photos for the person

| |-- Add the captured data to the training dataset

| |-- Train the facial recognition model with the training data

| |-- Save the trained model to 'face\_recognition\_model.yml'

|-- Method: recognize\_faces()

| |-- Open the camera for facial recognition

| |-- Load the fake face detection model

| |-- While the camera is open:

| | |-- Capture a frame from the camera

| | |-- Convert the frame to grayscale

| | |-- Detect faces in the frame using the Face Cascade Classifier

| | |-- Calculate the probability of fake face recognition

| | |-- If the probability is below a threshold:

| | | |-- Recognize the face using the trained model

| | | |-- Draw a rectangle around the recognized face

| | | |-- Display the name of the recognized person (if recognized)

| | | |-- Display "Unknown person" (if not recognized)

| | |-- Display "Fake face" (if probability of fake face recognition is high)

| |-- Release the camera and close all windows