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import pandas as pd
import cv2
import face_recognition
from datetime import datetime

class Student:
    def __init__(self, roll_no, name, photo_filename):
        self.roll_no = roll_no
        self.name = name
        self.photo_filename = photo_filename
        self.attendance = {}

    def mark_attendance(self, date_time):
        self.attendance[date_time.strftime("%Y-%m-%d %H:%M:%S")] = 'Present'

class AttendanceSystem:
    def __init__(self):
        self.students = {}

    def add_student(self, roll_no, name, photo_filename):
        if roll_no not in self.students:
            self.students[roll_no] = Student(roll_no, name, photo_filename)
            print(f"Student {name} with Roll No. {roll_no} added successfully!")
        else:
            print("Student with this Roll No. already exists!")

    def mark_attendance(self, roll_no, date_time):
        if roll_no in self.students:
            self.students[roll_no].mark_attendance(date_time)
            print(f"Attendance marked for Student with Roll No. {roll_no} at {date_time}")
        else:
            print("Student with this Roll No. does not exist!")

# code over here
#adding excel sheet for storing data
student_data = pd.read_excel("student_data.xlsx")

# attendance data
attendance_system = AttendanceSystem()

# Add students excel sheet
for index, row in student_data.iterrows():
    attendance_system.add_student(row['Roll No'], row['Name'], row['Photo Filename'])

# photo and mark attendance for each student
for roll_no, student in attendance_system.students.items():

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print(f"Please capture photo of {student.name} (Roll No. {roll_no}):")
input("Press Enter when ready...")

# Capture photo
cap = cv2.VideoCapture(0)
ret, frame = cap.read()
cap.release()

# captured photo
photo_filename = f"captured_photos/{roll_no}_captured.jpg"
cv2.imwrite(photo_filename, frame)

# Load student image and identify
student_image = face_recognition.load_image_file(photo_filename)
student_encoding = face_recognition.face_encodings(student_image)[0]
detected_student = False

for roll_no, student in attendance_system.students.items():
    known_encoding =
face_recognition.face_encodings(face_recognition.load_image_file(f"student_photos/{student.photo_filename}"))[0]
    results = face_recognition.compare_faces([known_encoding],
student_encoding)
    if True in results:
        attendance_system.mark_attendance(roll_no, datetime.now())
        detected_student = True
        break

if not detected_student:
    print("Unknown person detected.")

# Save attendance data to a CSV file (for Final Result)
attendance_data = []
for roll_no, student in attendance_system.students.items():
    for date_time, status in student.attendance.items():
        attendance_data.append({'Roll No': roll_no, 'Name': student.name,
'Date & Time': date_time, 'Status': status})

attendance_df = pd.DataFrame(attendance_data)
attendance_df.to_csv("attendance.csv", index=False)

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