NATIONAL STEAM OLYMPIAD

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1. Introduction

In a world driven by technology, facial recognition has emerged as a powerful tool with applications ranging from security systems to user identification. The project aims to develop a robust face recognition system integrated with Flask, a micro web framework in Python, to provide real-time face detection, identification. This system will not only recognize known individuals but also manage unidentified individuals by assigning them unique IDs for future recognition. By combining these technologies, the project seeks to enhance security and user management in various settings.

2.Project Statement

The goal of the project is to create a web-based application that leverages the face_recognition library and Flask framework to achieve the following objectives:

- Real-time Face Detection: The system should be capable of detecting faces in a live camera feed or video stream.
- Face Recognition: Upon face detection, the system should identify known individuals and record their names and timestamps in a log file.
- Unknown Face Handling: If an unknown face is detected, the system should save the face image, assign a unique ID, and log this information for later reference.
- User Interface: The project will offer a user-friendly web interface that allows administrators to associate names with unrecognized faces and manage user identities.

Problem-1: How to detect an unknown person's face?
Ans: To detect an unknown person's face, we can assign a random 9-digit ID to the person and save their face to an unknown person database. When the person appears again, the system will identify them by their ID.

Problem-2: Is video data saving a big problem?
Ans: Yes, it is. That's why we only save the ID of faces in our database. A 9-digit ID is a small amount of data compared to a video file. We save data every minute, so we can search the logs for any day and find out who crossed our camera that day.

Methodology

3.1 Project Goals

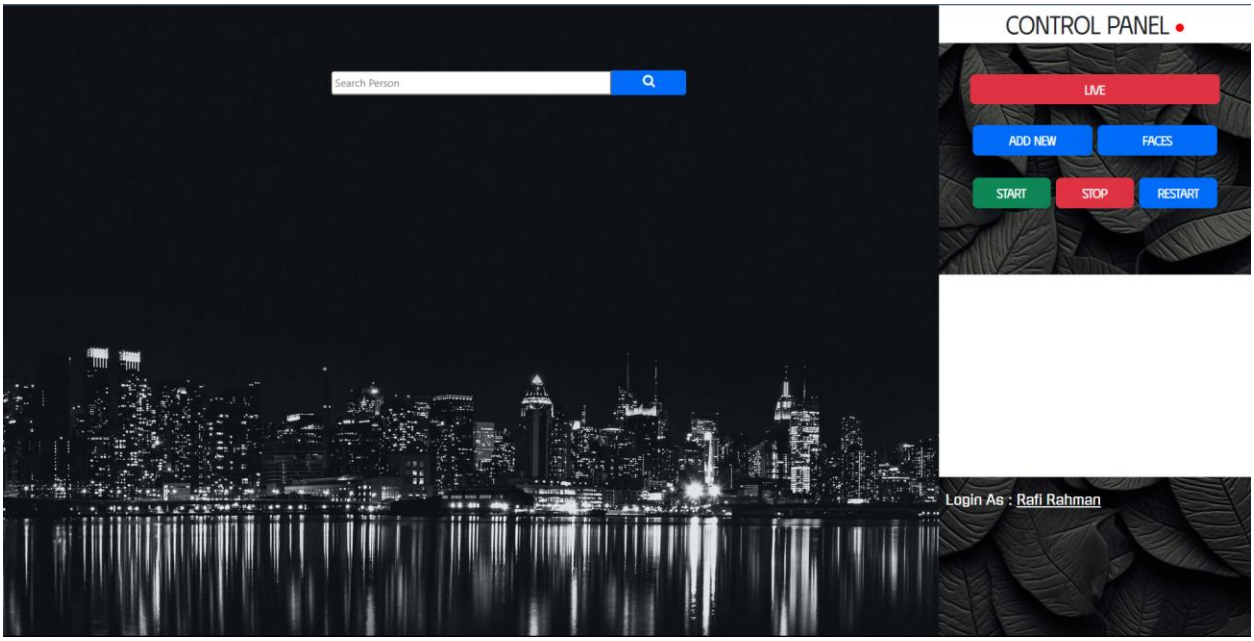
- Security companies: They could use your project to track people's movements and identify potential threats.
- Law enforcement agencies: They could use your project to investigate crimes and identify suspects.
- Retailers: They could use your project to track customer behavior and improve their marketing campaigns.
- Schools: They could use your project to monitor student attendance and identify potential problems.
- Businesses: They could use your project to track employee attendance and identify potential security risks.
- Individuals: They could use your project to keep track of their own movements or to identify people they know.

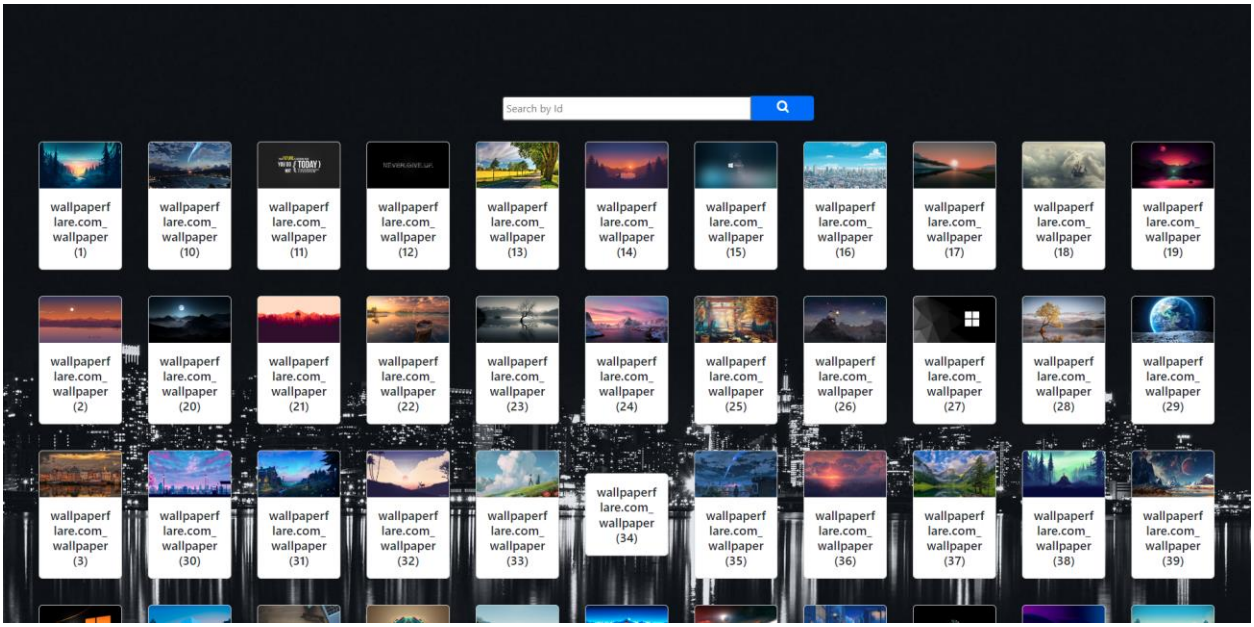
3.2 Project Scope

The scope of the project encompasses:

- Designing and building a Flask-based web application.
- Integrating the face_recognition library for face detection and recognition.
- Developing backend logic to process face data and manage logs.
- Implementing a user interface for administrators to interact with the system.
- Incorporating functionality to save unrecognized faces and assign unique IDs.
- Creating a system for logging recognized and unrecognized face events.

Diagram: (Under construction)





4. Conclusion

In conclusion, the project aims to create an intelligent face recognition and logging system using Flask and the face_recognition library. By detecting, recognizing, and logging both known and unknown individuals, the system enhances security and offers an efficient way to manage user identities. The integration of Flask provides a user-friendly interface, making it accessible to administrators for managing unrecognized faces. With the successful implementation of this project, it is expected to contribute to various applications where face recognition and user management are crucial aspects.

This report outlines the project's introduction, objectives, methodology, goals, and scope, highlighting its significance in the realm of facial recognition technology and user identity management.