Project Synopsis

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Face Recognition Attendance Manager

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Motive

The present pandemic situation has been really tough to manage. The virus is spreading swiftly, and hence, making it unsafe for employees to work onsite.

One major aspect of this is the attendance system that uses the employee's biometrics.
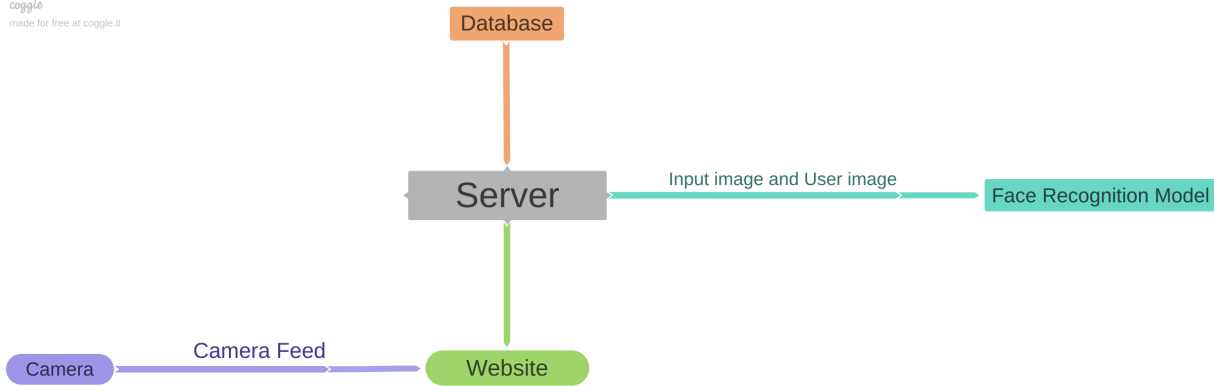Therefore, it is essential to come up with a way to solve this.

Objective

The spread of the virus due to attendance punching could be avoided by leveraging the power of machine learning to use a safe and secure attendance manager that captures the image of the employees' faces through a live feed camera in real-time.

This way, a contactless, yet safe and secure method is utilized to drastically reduce the spread of the pandemic.

Working Methodology

Please take a look at the project flow diagram below.

Database

Server — Input image and User image → Face Recognition Model

Camera — Camera Feed → Website

The project flow.

The working methodology:

1. The server hosts a face recognition model in the cloud, which is trained to recognize faces in an image.

2. The server is connected to the organization's database, with access to the employees' ID images and attendance records.

3. A portal with a live camera feed is hosted, that captures the relevant images and sends them to the server.

4. The server then retrieves the employee's ID image from the database and sends both images to the machine learning model.

5. The model returns whether they are the same person or not to the server. If yes, attendance is updated in the database.

Technology Used

- Server
    - Flask
    - Docker
- Machine learning model
    - face_recognition module
    - Dlib

- Database
    - MongoDB
    - AWS S3
- Webpage
    - Heroku
    - ReactJS

Work Plan

1. Create API and ML functions.

2. Configure the database and AWS S3.

3. Create the front-end and deploy on Heroku.

4. Configure RPi and try if ROS integration is possible.