SMART INDIA HACKATHON 2022

Basic Details of the Team and Problem Statement

Ministry/Organization Name/Student Innovation: Ministry of Railways

PS Code: 1349

Problem Statement Title: Using existing CCTV network for crowd management, crime prevention, and work monitoring using AI/ML .

Team Name: ByteSquad
Team Leader Name: Shubham Rai

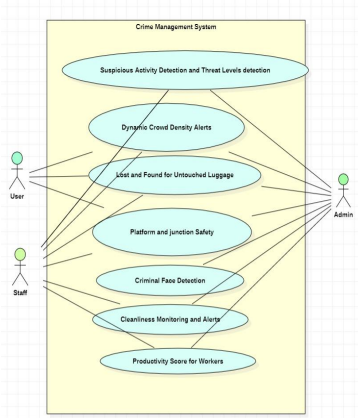
Institute Code (AISHE):
Institute Name: Delhi Technological University

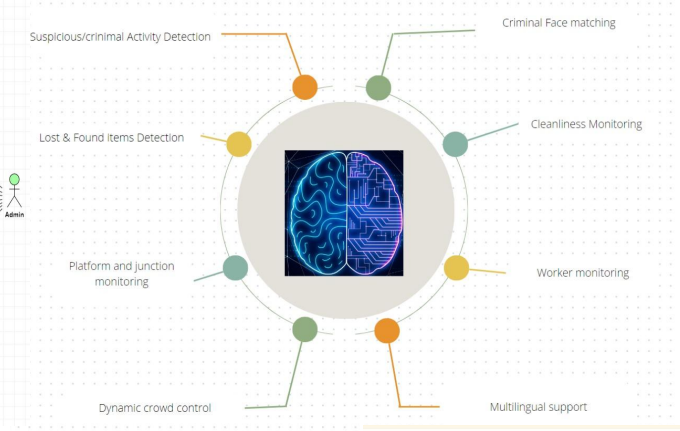
Theme Name: Smart Automation

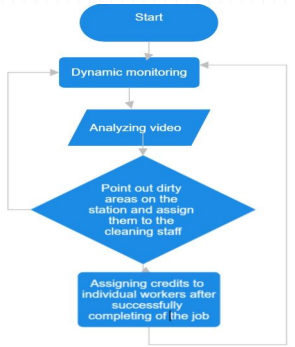
Idea/Approach Details

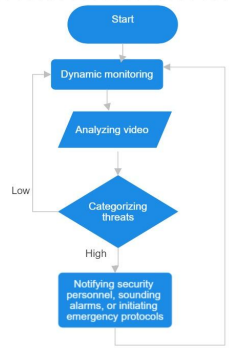
We are planning to develop a solution comprising both **Android** and **web** applications designed to detect potentially suspicious activities captured by CCTV cameras. This system will notify authorized personnel of any such incidents and also facilitate task monitoring and crowd management. The prototype will function as follows:

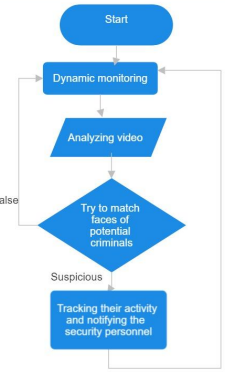
- Detect suspicious activities using Artificial Intelligence (**AI**) and Machine Learning (**ML**) algorithms to classify them under different threat level.
- Sending an alert notification to on ground staff through the app regarding the suspicion detected and its location with live video and an option to broadcast an **AI-generated** announcement.
- Tracking unknown suspicious items (like bags, clothes) and classifying them under lost and found while notifying the nearby staff and broadcasting them live to the public.
- Monitor live crowd density at various spots within the railway station and if the density surpasses a predefined threshold, it will notify on-site staff with a crowd management strategy.
- In addition, our prototype tracks the activities and performance of the working staff and assigns them a "productivity score" based on the **productivity scoring system**.











Idea/Approach Details

Describe your Use Cases here

- Our prototype will continuously learns and improves on a daily basis through the accumulation of daily data sets and experiential learning.
- For productivity tracking, we create user profiles for staff members, collect data on staff performance and attendance, implement a productivity scoring system. and notify staff of their productivity scores through the app.
- To implement face recognition with a criminal database, we would create a database of suspects,integrate facial recognition into surveillance and periodically analyze and compare faces to the database with high confidence thresholds.

Describe your Dependencies / Show stopper here

- A **multilingual** android and web based platform based on different regional languages.
- **Face recognition algorithm** that can keep track of individuals tagged for suspicious activities or trespassing and monitor their activities.
- **Crowd management system** which can dynamically monitor crowd by keeping a track of head count and notify the staff.
- In addition to face detection, implement a **database of known criminals and suspects**. If a match is found, initiate an immediate alert to security personnel for swift action.

Team Member Details

Team Leader Name: **Shubham Rai**

Branch: BTech Stream: SE Year: III

Team Member 1 Name: **Vidit Tayal**

Branch: BTech Stream: SE Year: III

Team Member 2 Name: **Utsav Joshi**

Branch: BTech Stream: SE Year: III

Team Member 3 Name: **Praveer Kumar Deo**

Branch: BTech Stream: SE Year: III

Team Member 4 Name: **Disha GPT**

Branch: BTech Stream: MCE Year: III

Team Member 5 Name: **Parth Nangroo**

Branch: BTech Stream: IT Year: III

Team Mentor 1 Name: **Dr. Geetanjali Garg**

Category: Academic Expertise (AI/ML/Blockchain etc): ML Domain Experience (in years): 10

Team Mentor 2 Name: **Dr Shweta Meena**

Category: Academic Expertise (AI/ML/Blockchain etc): Domain Experience (in years):