

**SMART INDIA  
HACKATHON  
2022**

# Basic Details of the Team and Problem Statement

Ministry/Organization Name/Student Innovation:

PS Code:

Problem Statement Title:

Team Name: ByteSquad

Team Leader Name: Shubham Rai

Institute Code (AISHE):

Institute Name: Delhi Technological University

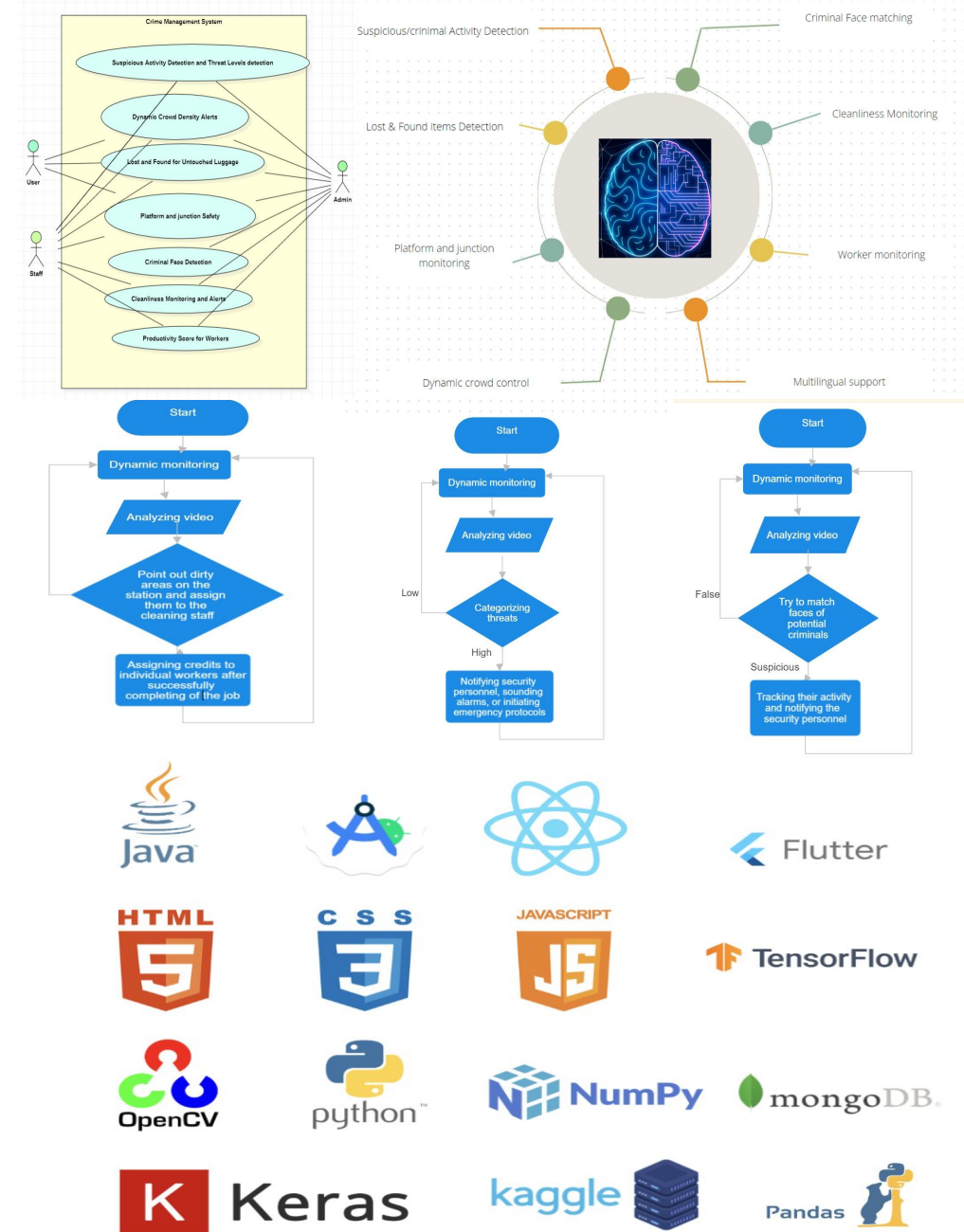
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Theme Name:

# 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:

- To implement our approach, we are first getting datasets containing videos of people walking, running, fighting etc and categorizing them based on threat level. After this, we are extracting the frames from the videos, preprocessing them by converting them into numpy arrays, normalizing them and encoding them using one hot vectorization. We then split into test, training and cross validation
- After encoding them, we are creating an LRCN based model and train the model on the dataset
- We integrate this model with the railway surveillance system and monitor it realtime for suspicious activity
- We develop a mobile app with real time monitoring capabilities, implement threshold based triggers for alerts, use push notifications for instant staff alerts and enable response feature within the app. We let the model continue to train on the live data for it to be self learning and optimize based those results



# Idea/Approach Details

- 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 access controls for specific data, we would establish user authentication with roles and permissions, categorize data by sensitivity and access requirements, use Access Control Lists (ACLs) or Role-Based Access Control (RBAC), Encrypt data, protect APIs, and enable login, conduct regular access reviews and security testing, ensure legal compliance and educate users, develop an incident response plan and continuously monitor and improve access controls.
- 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

## Software and Frameworks:

- Programming Languages: Python, JavaScript, Java, and SQL.
- Database Management System (DBMS): MySQL, PostgreSQL, or MongoDB for data storage.
- AI and Machine Learning Libraries: TensorFlow, OpenCV, Keras, or PyTorch for image and video analysis.
- Facial Recognition Libraries: Dlib, FaceNet, or commercial APIs like AWS Rekognition.
- Mobile App Development: Android Studio (Java/Kotlin) or Swift (iOS).
- Notification Services: Firebase Cloud Messaging, Twilio, or custom notification systems.
- Cloud Services: AWS, Google Cloud, or Azure for cloud-hosted resources.
- Security Protocols: SSL/TLS for secure communication.

## Data Processing and Analysis:

- AI Models: Custom or pre-trained models for object detection, facial recognition, and activity recognition.
- Data Preprocessing: Scripts for data cleaning, normalization, and feature extraction.
- Access Control: Implement user authentication, authorization, and encryption.

# Team Member Details

## Team Leader Name: Shubham Rai

Branch: BTech                      Stream: SE                      Year: III

## Team Member 1 Name: Vedit 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 Shankar ( imposter)

Branch: BTech                      Stream: MCE                      Year: III

## Team Member 5 Name: Parth Nangroo ( chilling in goa)

Branch: BTech                      Stream: IT                      Year: III

## Team Mentor 1 Name: Mrs Geetanjali Garg

Category: Academic	Expertise (AI/ML/Blockchain etc):	Domain Experience (in years):
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## Team Mentor 2 Name: Mrs Shweta Meena

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