

## First Project Progress Report: Intelligent Motion Detector with AI-Based Analysis

### Current Achievements:

At this stage of the project, we have successfully implemented a basic human detection system using a webcam and Python. The system operates by capturing and comparing two consecutive image frames from the camera. The detection mechanism relies on calculating the pixel-wise difference between the frames. If the number of differing pixels exceeds a predefined threshold, the system recognizes the presence of a human and triggers an audible alarm.

While the system is primarily designed to detect human movement, it may also detect other objects. However, in such cases, the alarm is not triggered, as the threshold is not exceeded or the movement pattern is not classified as significant.

### Insight & Future Goals:

Our next objective is to improve the system's intelligence by implementing face recognition features. Specifically, we plan to register the admin's face, so that the system will only trigger the alarm when an unknown individual (not previously registered) is detected.

### Upcoming Steps:

- Integrate the detection algorithm with hardware components.
- Install and configure the Doppler radar sensor alongside the existing system to improve motion analysis and reduce false positives.
- Continue refining the AI model to enhance its ability to distinguish between humans and non-human objects.