CROWD DETECTION SYSTEM

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Abstract

With the expanding population and several problems arising due to crowded situations, the necessity of crowd detection is also at a raise. It includes assessing the number of individuals in the group and in addition the appropriation of the crowd density in different regions of the group. Estimation of such crowd density can be done from the image of the crowded scene. In CNN approach, deep learning technique is used to estimate the crowd density. Since, crowd behavior analysis is an emerging field in the scope of artificial intelligence, the problem as discussed can be relieved to a certain level by precognition of stampede at the region of interest, i.e., pilgrim places.

The system so proposed is based on the concepts and approaches of computer vision, image analysis and deep learning. The crowd is analyzed and tracked by the neural model are compared in context to the density limits of the defined area, which if exceed are marked as threat and an alert signal is displayed on the video feed as received by the authorities.

A dashboard is also provided with the analytics containing the peek hour measure of people in a certain region over a given time interval.

Innovation & Impact

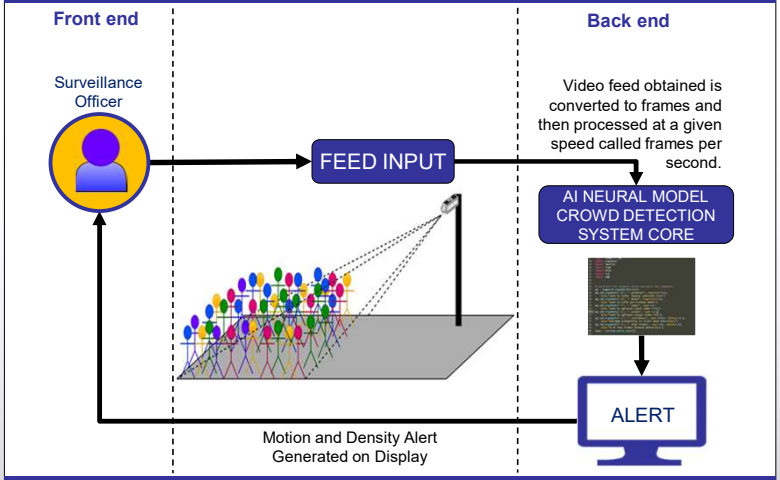
INNOVATION:

- Density detection and alert generation
- System/Manually defined density limit to fit the requirements of system's vision
- Detection of motion on basis of frame comparison

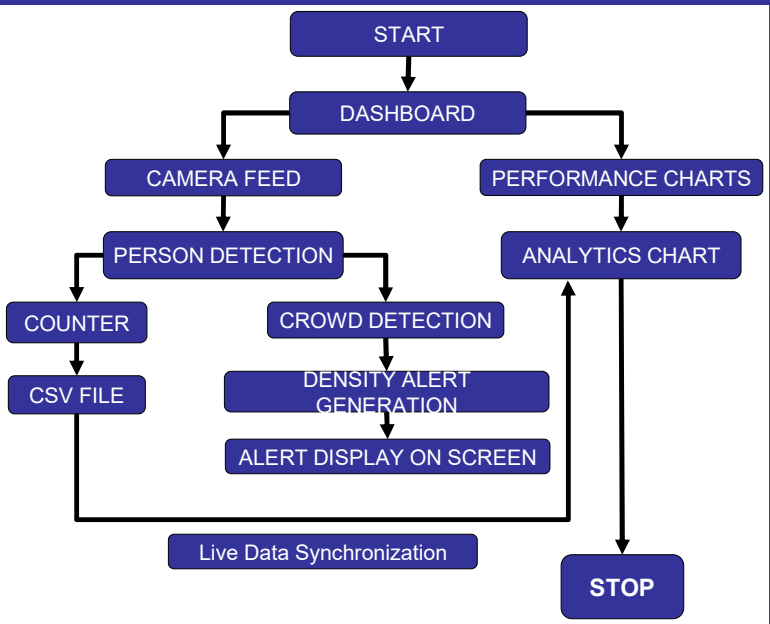
IMPACT:

- Overcoming and prevent the damage caused by STAMPEDE.

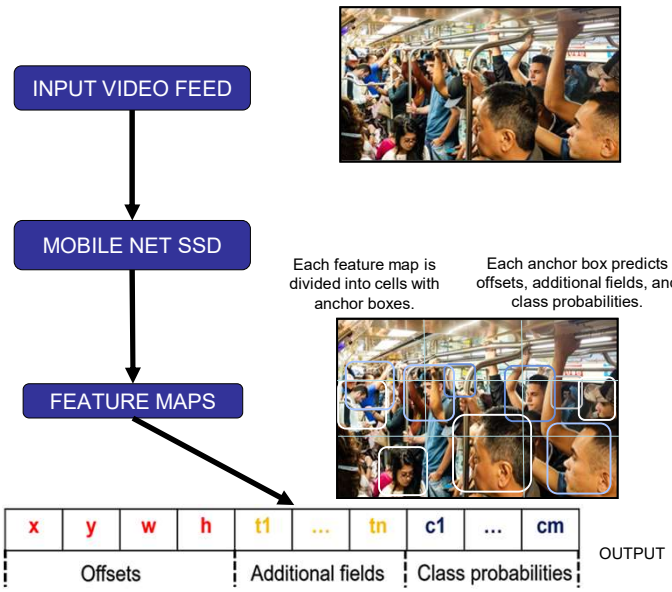
Functional Workflow



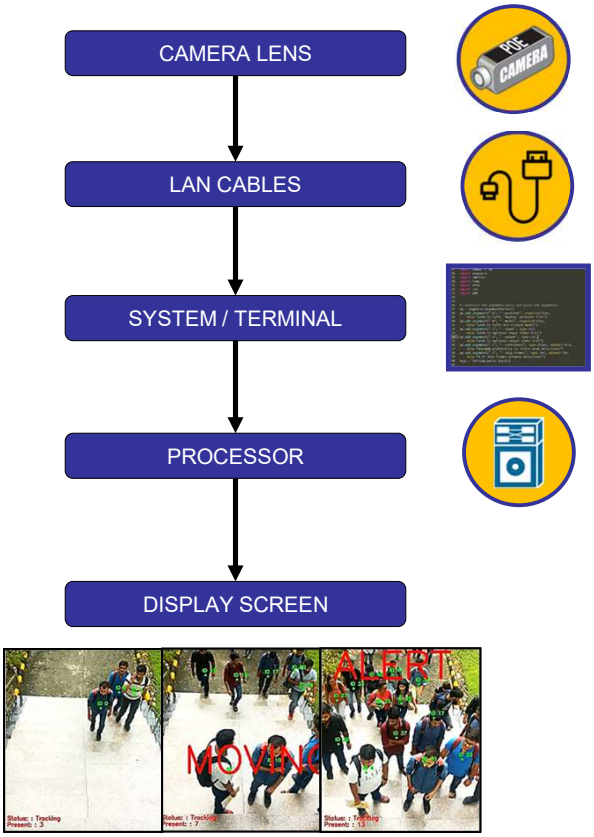
Interaction Model



Data Processing Workflow



Architecture Diagram



Language(s) | Technology Stack

LANGUAGES:

- PYTHON

TECHNOLOGY STACK:

- COMPUTER VISION
- DEEP LEARNING
- VIDEO ANALYSIS

API(S):

- TWILLI