

Social Distancing Monitoring and Warning System

Preamble: Social interaction has been a key factor in human evolution. Hence, tendency of social interaction is hardwired in human psychology. However, prevention from COVID-19 infection requires maintaining social distancing which is against the inbuilt psychology of human nature. Therefore, there is a need of system that monitors the public gathering and alerts & reminds the people and authorities whenever social distancing is violated.

Proposed System: The system uses a camera (preferably high resolution) to view gathering at a public place. The system continuously records the video and sends it to central server through the data network. Simultaneously, the system also analyze the people density in a given sample area. For example, if the sample space spans to area of 100 m² (actual area depends on the camera and its angular movements) then only 10 people may be allowed in this area (i.e. 10 m² area per person which may serve as threshold value, actual threshold may vary). The moment 11th person enters into this sample area (area per person < 10 m²) i.e. threshold is violated; a public warning through attached loudspeaker or siren may issued. This may serve as reminder to people to maintain social distancing. Further, based on the previous data and present scenario the system may also analyze that how much the present social distancing violation is likely to grow. This may be used to issue alerts to the authorities that in the sample area social distancing violation may become severe. Furthermore, the video of sample area stored at central server may be processed to identify habitual offenders of social distancing norms. Moreover, certain AI algorithms may also be applied to the processed video that would identify the people who are intentionally spitting/ infecting the public places. The identified people may be verified through “Aadhar” data base for further actions.

Salient Features & Deliverables:

- Monitors the public gathering in real time.
- Analyzing the people density in the given area in real time.
- Automated warning if social distancing is violated.
- Automated alerts to authorities when threshold is breeched.
- Use of congestion prevention and congestion avoidance type of algorithms to predict the possibility of public gathering.
- Feeding the live video to central server for online monitoring by authorities.
- Storing high quality video on central server for further processing to identify habitual offenders.
- Identification of people trying to spread the disease either intentionally or due to depression.

Future Extension: Once the system is ready for one sample space the same may be replicated at multiple points in same public place and a wireless network may be formed between the systems that may collectively work to meet the objective much more effectively. Further, multiple public places such as food markets, restaurants, multiplexes, parks etc. may be covered by similar system to cover multiple areas in a city.

Proposal Submitted by

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