

CROWD MONITORING SYSTEM

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Abstract:

The waiting time in the queues and the behavior of people moving over queues makes standing in the queues a hard process so we are going to create an application that will detect all the people in the area and track the people who are joining a queue. The data collected from this detection and tracking process is used to train a machine learning model. A queue is actually measured by its appearance, size, arrival rate, service speed, and waiting time. The data collected from the tracking and detection of people are used to calculate the average waiting time and the busiest time of the queues. This will help the owner of the place to analyze the situation and make a decision like add or remove queues from the system. This application will serve as a business analysis model for the owner. For example: If there are 2 queues A and B. Queue A has 10 people waiting and Queue B has 5 waiting. Normally people will choose Queue B. But, using our Machine Learning model we came to know that the waiting time for queue A is 1 minute per person but for queue B is 3 minutes per person that is queue A will move faster by making this change we can manage the queue in a faster and efficient way.

Keywords: Machine Learning, Object Detection

1. INTRODUCTION AND OVERVIEW:

A queue is a specific kind of crowd organized in an arranged way, generally in public places such as railways and shopping malls. It is measured by its appearance, size, arrival rate, service speed, and waiting time. Successful queue management needs an active checking of these parameters, in order to identify whether further service desks should be opened or closed, and to make queues more manageable in the future. A queue can be defined by six attributes Arrival style, Service style, Queue

regulation, Capacity of the system, Number of service desk, Stages of service Estimating queue parameters is an important part of many business operations, including retail shops, public transport hubs, and airports. When these queues are particularly large, as, at airport check-in counters with multiple service stations, it is difficult for human operators to quantitatively assess queue parameters such as wait time, throughput rate and overall queue size.

In this project, we are going to use crowd counting and computer vision to monitor these queues and also suggest people take the queues that are best based on the queue parameters like, Queue length, Throughput rate, Wait time.

Successful queue management requires active monitoring of these properties in order to determine whether additional service stations should be opened or closed and to plan for future events.

2.OBJECTIVES:

The main objective of our proposed system is to monitor the crowd in public/private places. Based on the record gathered by monitoring the crowd we analyze people movements in selected areas. To develop a business model to make the management of the crowd easier. To reduce the problems caused by over congested queues.

3.COMPONENTS:

3.1.Camera:

A webcam is a video camera that feeds or streams its image in real time to or through a computer to a computer network. When "captured" by the computer, the video stream may be saved, viewed or sent on to other networks traveling through systems such as the internet, and e-mailed as an attachment. When sent to a remote location, the video stream may be saved, viewed or on sent there. A webcam is generally connected by a USB cable, or similar cable, or built into computer hardware, such as laptops.

3.2.Open CV:

comprehensive solution that integrates with your existing camera network — and any that you may own in the future.

9.CONCLUSION:

The proposed solution has great Social related benefits as it aids the managing people in public/private places. And also people can enjoy this innovation at a very low cost as the camera sensors are available in good quality at a low price. The entrepreneurial constraints were also concentrated in the literature survey of our system. The results indicate the marginal effect due to the proposed system is positive as it can be applied in any platform as desired there will be positive growth in the entrepreneurial growth.

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