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Prayer Hall Vacancy Detection
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Abstract
The issue of overcrowding in prayer rooms located in public areas, such as shopping centers, educational institutions, and other public spaces during prayer times, is a matter of concern nowadays. This condition has the potential to induce discomfort and adversely impact public health issues due to the increased risk of disease transmission, particularly respiratory illnesses. To address this issue, this paper presents a proof-of-concept system that uses computer vision techniques to detect, track, and count the number of people entering and exiting a prayer hall and subsequently count the total number of vacancies. The proposed system is based on the YOLOv5 object detection algorithm the Centroid Tracker object tracking algorithm and an existing object counting method. A custom dataset of 1,993 images of people entering and exiting a prayer hall was collected, cleaned, and annotated for use in training the system. The results of a sample video inference showed an average people detection mAP score of 98.9% and a people counting accuracy of 40% running on a Macbook Pro with an MI chip. The counting results were displayed on a web app platform hosted on the Heroku cloud application platform. © 2023 IEEE.

Author Keywords
Centroid Tracker; computer vision; Heroku; person counting; person detection; person tracking; prayer hall; proof-of-concept; vacancy counting; web app; YOLOv5

Index Keywords
Health risks, Object detection, Tracking (position); Centroid tracker, Heroku, Person counting, Person detection, Person tracking, Prayer hall, Proof of concept, Vacancy counting, Web App, YOLOv5; Computer vision

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