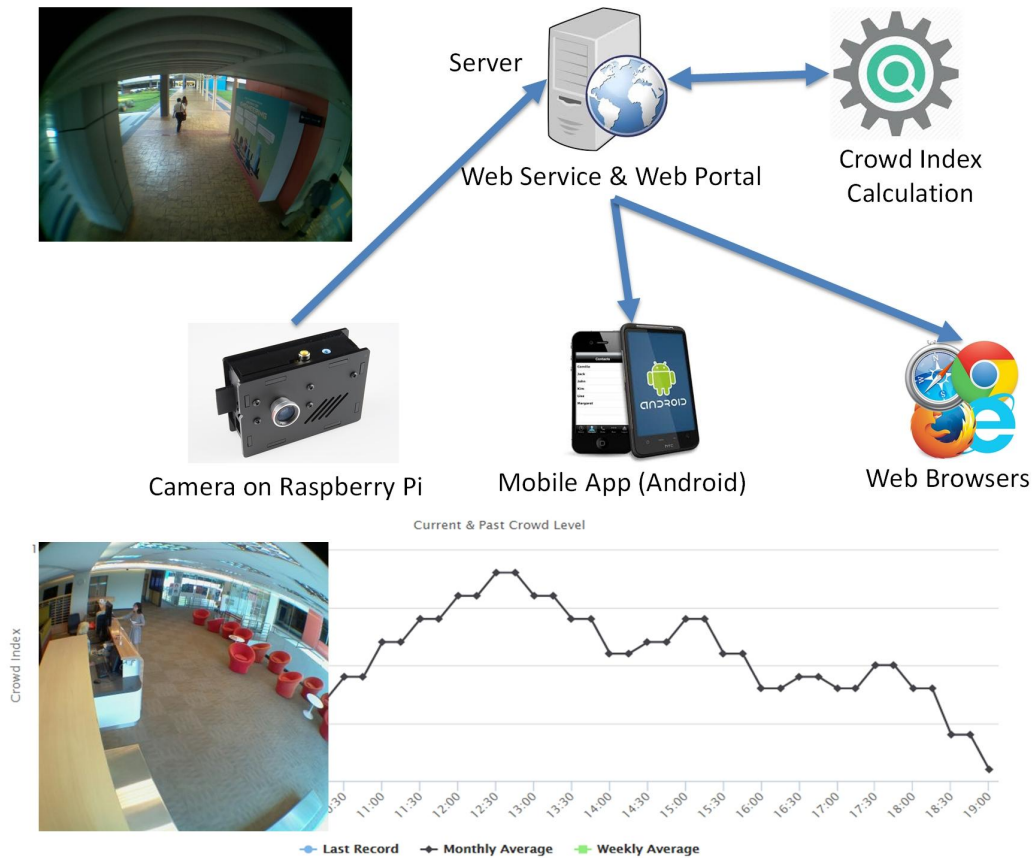


Crowd Density Monitoring System



Technology Overview

This is a platform in the cloud where crowd monitoring projects can be setup and configured. Camera integrated Raspberry Pi units are used as the built-in camera can be configured through a web portal to take photos periodically. These photos are sent to the server and analyzed for crowd density estimation. The photo and estimated crowd density index are served to users through the Android mobile app. The platform is designed to be extensible. More sensors can be added to the Raspberry pi module to collect more data to aid analysis.

Technology Features & Specifications

This system has a server setup in the cloud, which includes a web portal and a web service. The web portal is for users to manage their crowd monitoring setup. The web service provides API functions to Android mobile app. The system also includes camera modules built from Raspberry Pi.

- Crowd density estimation through image analysis
- Flexible deployment model - analytics can be deployed on server or on edge

- Images are stored on server and retrievable
- Android app for user to monitor their camera modules

Potential Applications

This technology is applicable in the following scenarios:

- Monitor the flow of people at designed areas to avoid overcrowding
- Improve safety management and evacuation plans by monitoring occupancy levels
- Reduce queuing times and improve queue management
- Improve customer service through efficient staff deployment
- Used as surveillance cameras for security purposes

Customer Benefits

This technology uses image analysis to detect the crowd level. Data analytics gives new insights to crowd behavior with the potential to improve retail sales, advertising, event management and crowd control. The analysis can be done on a server or be shifted to an embedded module client to lighten processing load on the server. The embedded client is flexible and customizable for different application requirements.

OVERVIEW

- Technology Category Infocomm - Video/Image Analysis & Computer Vision
- Technology Status Available
- Technology Readiness Level [TRL5](#)
- Keywords Video Analytics, Computer Vision, Crowd Density Monitoring, Video Surveillance



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