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Live Crowd Visualization and Event Tracking : IOT based Multi purposed PWA

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Abstract: ***The purpose of this paper is to offer knowledge of live crowd to people at a given location and even help them through the trending events. This PWA gives the user insight about the live density of people at a certain place. Now to achieve this we will be using IOT device which will be enabled with LDR sensors to gather information to detect current crowd density and information pre- loaded by the managers of the events. LDR sensors with Raspberry Pi would be used to determine the current density. Based on the LDR readings the crowd status would be displayed .If the end-user wishes to track the events with desired crowd status, the option would be made available. Also the event-manager will get benefits by advertising their events. While developing this application our main focus is to develop a PWA which displays the updates generated by LDR sensors with the help of Raspberry pi. This technology will help the user to know more about the crowd and events in the nearby commercial places. A single PWA can be used in android, iOS, desktops, etc. Once the application is ready it can be downloaded offline and consumes less storage place. The application can run in low internet speed. Size of Application is less as compared to mobile applications and websites.***

Keywords: Crowd detection, Event tracker, IOT, LDR Sensor, Progressive Web App, Raspberry Pi, visitor counter.

I. INTRODUCTION

Whenever we wish to go to any commercial places, mall is the first thing that comes to our mind. There is lack of potential interface for us to track live crowd at a certain place. We wish to out bring a solution to exhibit better and efficient places. We can arbitrate the probable live crowd at that particular place. Goal of the Progressive web Application provides us with the tools, resources and information required to be ahead of the crowds at most popular park resorts and travel destinations. The system should have hardware with LDR sensor at the entry and exit gateways. The exit gateway should be comparatively narrower so that only single person can exit at a time to assure accuracy of the count. This count is then uploaded to the server. There is an interface where manager/staff of the mall can update trending activities to attract customers. Crowd detection is the essential to retail analytics .If you don't know how many people entered the mall, you don't know how many prefer coming to that particular place and actually take advantage of the trending events and offers of that mall. The purpose of this system is to count people. The application is most suited for commercial places like malls and while making this system it is necessary to keep track of the people in the mall or auditorium .If there are more people in the room, then it switches on the light in the room.

II. LITERATURE REVIEW

A. Human Counter using Laser Beam with Door Alarm

This paper is all about observation of the number of people entering & exiting in a particular area or vehicle is depicted where a limited count of people are allowed inside. This system uses a laser beam to count the persons entering the particular area .The laser was used because of its features that laser doesn't scatter & it is invisible. In the transmitter section the laser is used and the receiver end has a light beam sensor. The counter counts the total people entering by crossing the system and gives an alarm on every count. When a person enters by interrupting the light beam there is a break in the beam falling on the receiver. When the incident beam is stopped then the resistance fall upon the sensor and the buzzer makes a sound. At the same time counter counts and it is displayed on the 7 segment LED display. Thus the inspection on the crowd entering a particular place is done which can be used for implemenation in different industrial applications.[1]

B. Bidirectional Visitor Counter Using IoT

Here the system given is an approach to enhance previous appliances and the controlling experience using IOT based on Bidirectional crowd detector. Appliances are controlled using sensors. The sensor data are processed by single-board computer named Arduino Uno and delivered to mobile applications through wireless connection. The outcome of implementation and experiments has proved the proposed system can provide more IoT application possibilities in daily life.[2]

C. Isitpacked

Goal of the website is to provide us the tools and information needed to be ahead of the crowd at some of the popular park resorts and travel destinations. Our Crowd forecasters provide free crowd forecasts and overall ratings of popular travel destinations. [3]

D. A Survey on Bidirectional Visitor Counter with Automatic light and Fan Control for Room

Bidirectional visitor counter with automatic light and fan control for room is a system wherein the number of people entering or exiting a room is kept track of and displayed on a LCD and to turn on and turn off light and fan according to human presence in room with respect to light intensity & room temperature. A person entering the room increases the count while a person leaving the room decreases the count . IR sensing mechanism is built to sense the entry & exit of visitors and the whole counting operation is done by a microcontroller.[4]

E. People Counting based on Sensor

In this paper, we discussed an automatic crowd detection system which has the light dependent resistor. In this paper we built a system which can count the total people visiting a place and get environment information to save an ecosystem . For crowd detection our system uses double light beam sensors , one for rechargeable power and another for a calculator. Our counter method can count only the number of incoming people at a particular point in real time.[5]

F. Automatic Home Lighting solutions using Human Detection, Sunlight Intensity and Room Temperature

Our system design is divided into three modules- human detection circuit, LDR based light detection circuit and temperature sensor based fan on/ off controller circuit. The first circuit controls the main switch which turns on only if a person is detected; it is based on IR sensor and microcontroller.[6]

G. Detecting Events in Online Social Networks: Definitions, Trends and Challenges

Event tracking is an area that attract attention during the last many years due to the global availability of social media and its data. The problem of event tracking has been examined in multiple social media sources like Twitter, WhatsApp, YouTube and Facebook. The task includes many challenges like the processing of huge amount of data and high levels noise. In this context, we present an inclusive range of event tracking algorithms and evaluation methodologies. In addition, we extensively discuss on available datasets, potential applications and open research issues.[7]

H. A Smart Building Automation System

The given system controls the active systems such as lighting likess artificial lighting (on/off & intensity control), air conditioners and safety measures like fire alarm & gas alarm. In future the proposed idea can be implemented for the whole commercial area, i.e. various malls or areas and then all of them can be combined on a unique platform for monitoring and control of different equipment.[8]

I. Evaluation and Implementation of PWA

Progressive Web App is a new technology with web applications, enabled for the most part by the Service Workers apis. Service Providers allow apps to run onine by receiving and analysing network requests to deliver programmatic or cached responses, Service Providers can receive push notifications and transpire data in the background even when we are offline, and—along with Web App Manifests—allow users to install pwas to their devices' home screens. we have dened a number of pwa features and documented an implemented tests for detecting them in the open source app pwa Feature Detector.[9]

J. Current Market Survey

IsItPacked.com is a wesite used for crowd detection and tourism planning mainly build in sunny Anaheim, California (home of our favorite place, Disneyland!). We've been detecting crowds at commercial places for more than a century. Progressive Web Apps are mountable and live on the user's home screen, without the requirement for an app store. They offer an deeply engaging and fasinating full screen occurence with help from a web app evident file and can even employ users with web push messages. The Web App evident allows us to control how your app comes into sight and how it's inaugurated. You can specify display device icons, the page to load when the app is introduced, screen inclination, and even whether or not to show the browser chrome.

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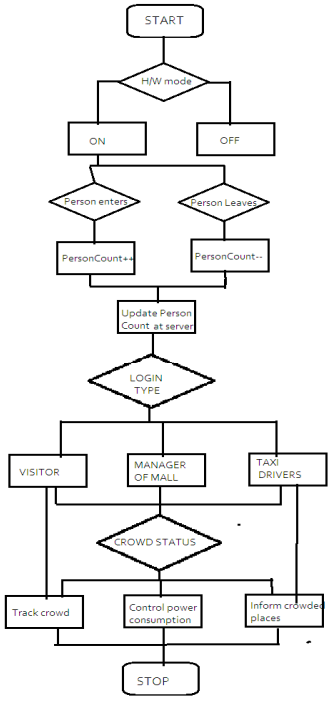
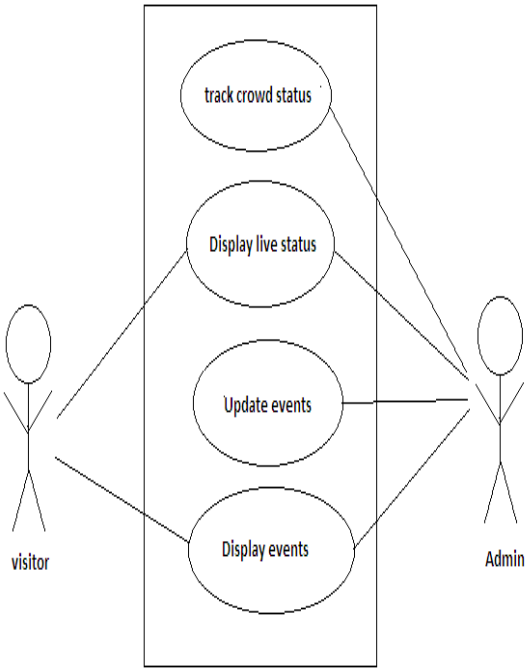
III. GENERAL DESCRIPTION AND REVIEW

A. Flowchart for Crowd Visualization



FLOWCHART

B. Use Case Diagram



IV. FUTURE USE AND SCOPE

The main aim of the project is to utilize the results calculated by IOT device in following areas:

A. Helping the visitors to track Live crowd :

1) Live count of the visitors present inside the mall/ seminar hall is forecasted to the users using different data visualization techniques. So that it is possible to track live crowd before visiting the place.

2) Users can get pre-notification about the upcoming events, music concerts, offers, etc. using this application.

B. Notification To Ola/Uber Drivers

1) Transportation is the major need of visitors, it is necessary for private taxi drivers to be present at a location where there is need.
2) Density count of people can help taxi drivers to be present at crowded locations.
3) Also, there will be reduction in waiting time for those who want to hire a ride.

C. Control the electricity consumption:

1) Places like malls are generally equipped with Air Conditioners, to control the usage of these kind of electrical equipments , we are going to use count of people indoor.

2) Lesser the people present inside, lesser energy will be consumed.

D. Events Advertisement

1) The manager of events can update the trending events and offers which will be displayed to the users along with the crowd visualisation.

V. CONCLUSION

As we are using various latest technologies in this paper, it will be helpful for the users to get previous knowledge of the existing crowd at the desirable place and even for the commercial place owners from business point of view as they'll get a special platform to promote their events and offers to attract customers. Also automatic control of linghting and air conditioners will give customers a comfortable environment and ensuring conservation of energy.

VI. ACKNOWLEDGMENT

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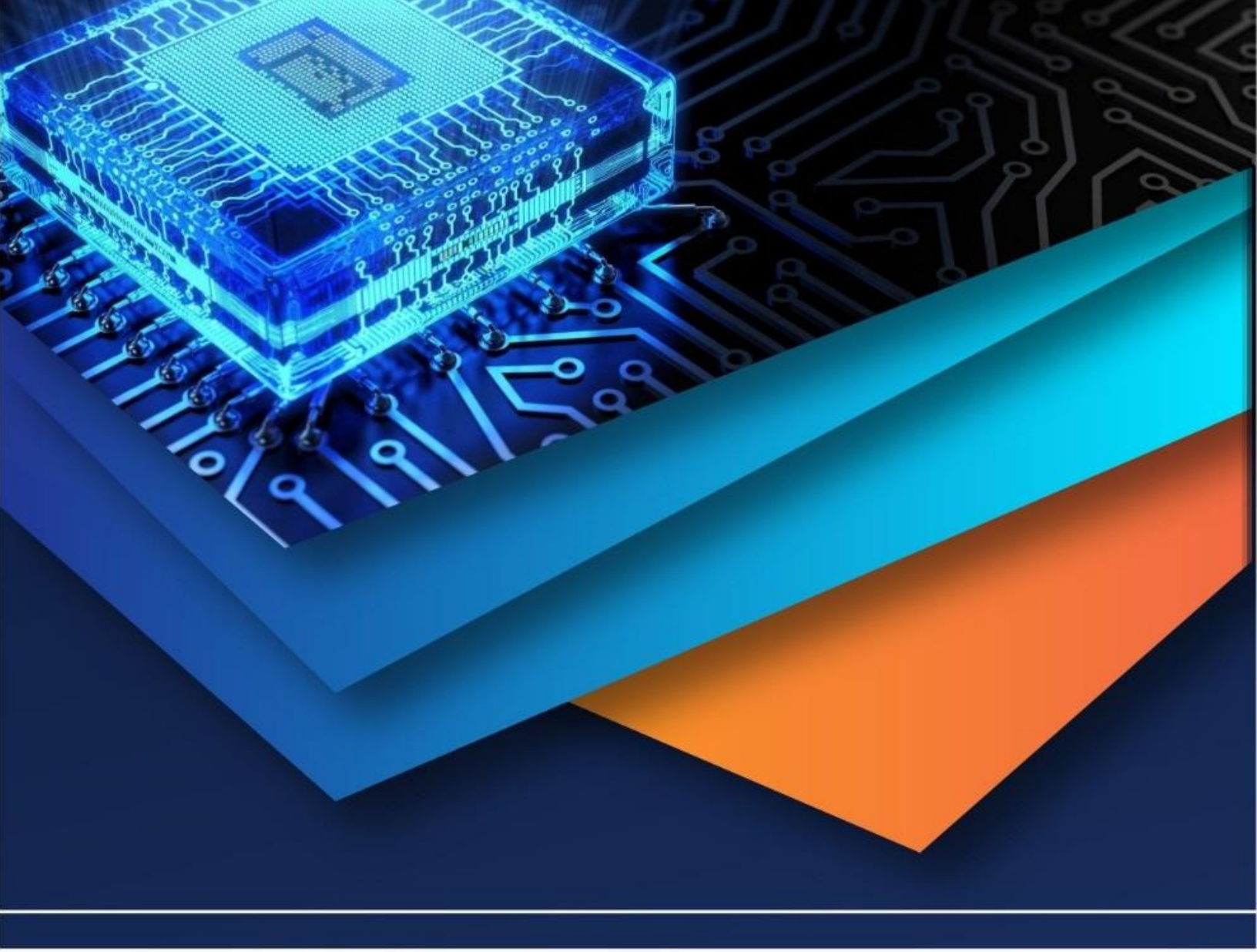

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