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Smart Event Management System

The Case of King Abdullah Cultural Centre, Jubail Industrial City, KSA

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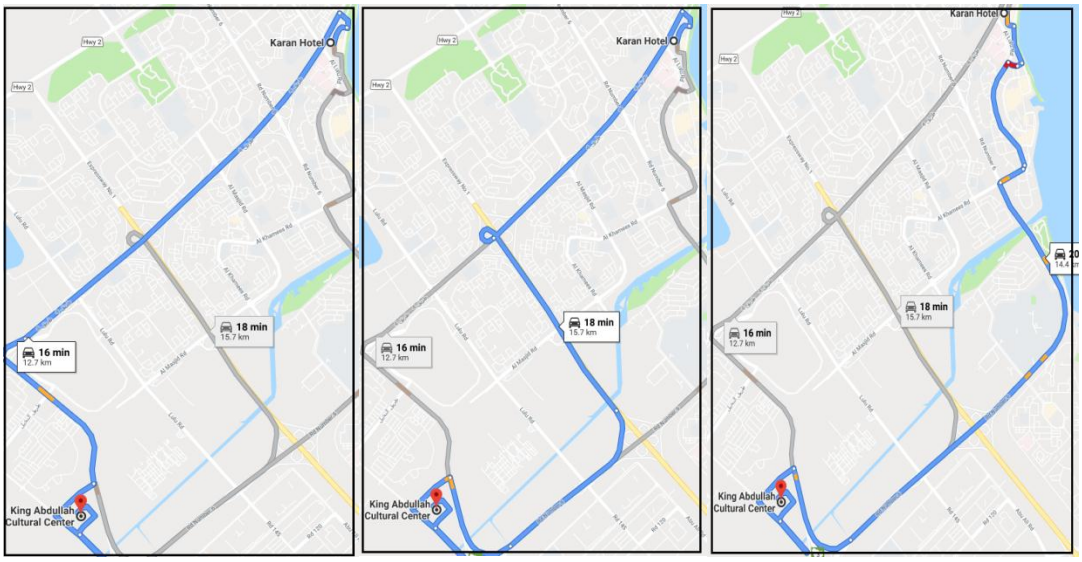
Abstract: This paper is based on the study and feasibility of the pilot project of arranging mega event organizes in King Abdul Aziz cultural center located at Jubail industrial city, Kingdom of Saudi Arabia. In this paper it is presented that how to design smart and adaptive systems which can efficiently manage traffic to nearby areas to cultural center and also inside and outside vicinity, by using minimum resources. In this proposed model, specially designed android app is discussed, this mobile app will use google live location feature to continuously update user to avoid traffic congestion from the entrance of the city till cultural center parking lot. Using OF Radio frequency Identity wrist band will guide user till his allotted location. Proposed model will minimize man power by integrating RFID technology with Internet of things and specially designed mobile application. Although study has been conducted based on specifications but application of proposed model can be done by minor modification in mobile app and infrastructure.

Keywords: Radio frequency identification: sensors: Google Maps: Wrist bands.

1. Introduction

The mega event center in Jubail Industrial city namely King Abdullah cultural center is distinguished for organizing events like, conferences, Seminars, exhibitions, cultural and heritage festivals, student graduation ceremony etc. To avoid Traffic congestion, this center is located far away from residential area, but on the other side it is also a bit far away from hotels where most of the time guest or attendees stay. As can be seen in google map snap shots, figure no1 to reach this destination three highways can be used namely Highway 4, Highway 6 and express way no1.All these Highways and supporting roads are crowded on peak hours and traffic speed reduced to one fourth of normal traffic speed. Further that after passing through these Highways and roads, parking without waiting in long parking queues and finally reaching to allocated location or even unspecified location are considered and proposed in this model.



a) Using Highway 6 & 4 b) using Highway 4 c) using Highway 6 & 4

Figure 1

2. Literature Review

Research's and statistic's shows time timing selection on and roads and highways affects a lot on vehicle speed. Figure no 2 shows variation in traffic speed with different hours of the same day [1]. Before reaching to event location how to manage traffic and how to monitor real time traffic has been proposed by different models using RFID google map location [2-6].In the previous models different techniques were discussed for managing such an events. For example for managing and monitoring using RFID technology and sensors [8-10]. Using of IOT using mobile app has tremendously revolutionized things in our daily life. Now to visualize real time situation by integrating smart mobile apps and IOT opened new era in technology [11-14].

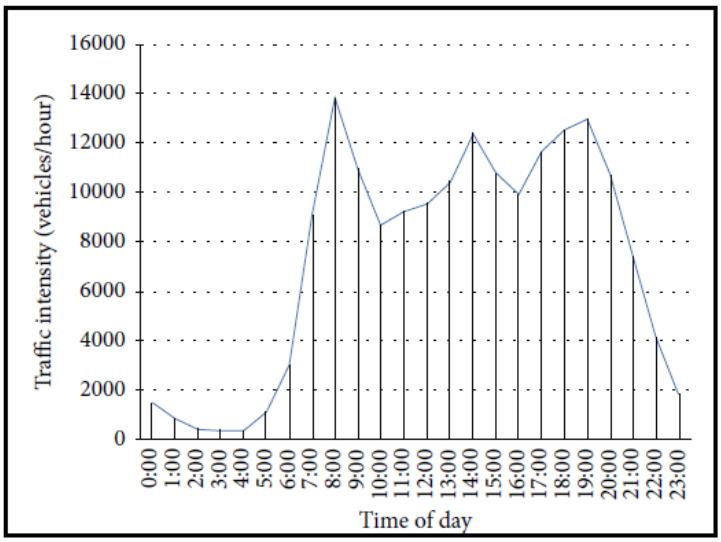


Figure 2

3. Methodology

In this section of paper mechanism and strategies with required infra-structure to implement the proposed system will be discussed. For smooth and efficient organization of management proposed model is distributed in three areas/sections/potions. First part of section is based on the calculation of real time traffic on the highways and roads that go toward cultural center, in order to navigate best possible available route. Secound section define the mechanism and approach for smooth parking system as some time in mega event , without proper guidance of parking system serious parking problems may occur. Third part of the model is based on the pedestrian routing to its allocated seat or available sat with shortest queue.

3.1. Traffic Management System.

In this section, vehicle routing system is defined. It is considered that before starting event RFID is placed on the every authorized vehicle. On above specified three routes mentioned in table 1, RFID readers are placed, to know status of traffic on different routes. RFID readers continuously scan traffic status. Whole this system is connected to IOT for providing best possible route. To see exact status of routes RFID system is integrated with google navigation. Above mentioned model and similar to this model has been proposed by many researches.

	Roads -Highways				
	Route no 1: Using highway 4	Al Wajeha Rd to Fahad Rd 3 min (600 m)	Along Hwy 4 8 min (9.1 km)	To destination 6 min (3.0 km)	
Main Hotel	**Route no 2:**	Al Wajeha Rd to Fahad	Hwy 4, Express No.1		King

Area	Using highway 4 and Express no 1	Rd 3 min (600 m)	Rd Number 6 10 min (12.1 km)	To destination 6 min (3.0 km)	Abdullah Cultural center
	Route no 3: Using highway 6	Ad - Danah Road Rd to Al Lulu Rd 3 min (1.0 km)	Along Rd Number 6 11 min (10.4 km)	To destination 6 min (3.0 km)	

Table 1

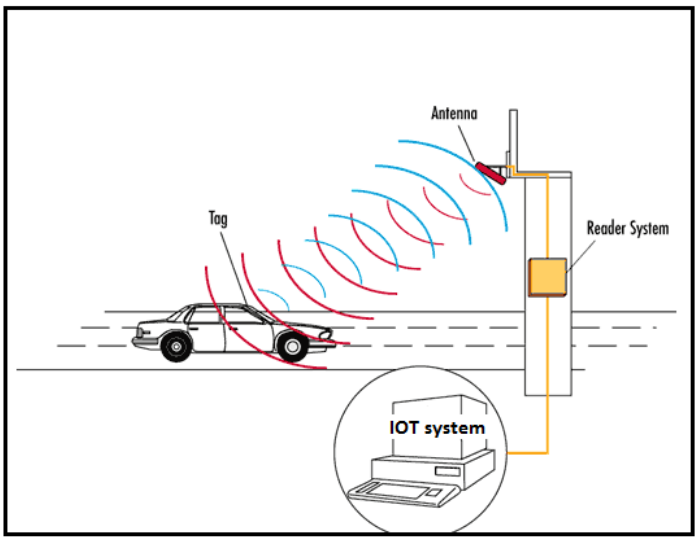


Figure 3

3.2. Vehicle Parking System

In this section of paper, an approach using IOT based auto car parking system is defined. Finding a space for parking in mega events may become terrible experience. For proper and continuous guidance about vacant parking, PIR sensors are placed at the starting and ending of each parking lane. As soon any vehicle comes close to parking, app parking system option indicates about space availability. Near to mega event center there are ten parking lots, each has capacity of around 30 vehicles. On every entrance and exit these PIR sensors are located. Status of parking lots will be updated on mobile app. Other than these close parking places, also there is parking lot on road side near to cultural center. Once inside parking will be occupied, user will be notified before coming to parking.

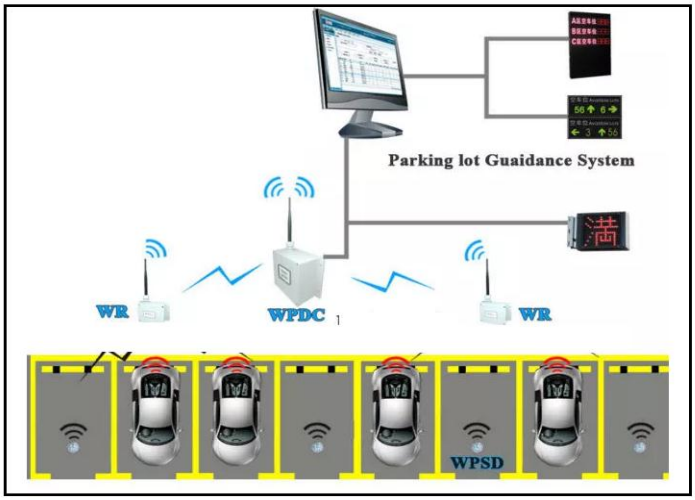


Figure 4

3.3. Pedestrian Guidance System

In this section model solution for pedestrian guidance system is discussed. At the time of registration RFID wrist bands are provided to every participant. King Abdullah cultural center has many entrances; to avoid congestion on one entrance and to guide for least crowded path RFID readers are placed on different places. In case some entrance will be crowded indication in mobile app will appear and also other gates entrances can be monitored.

Figure 5

Results

Organizing smooth mega event starting from attendees staying location till event place is not easy, especially when it is not far away from residential and downtown. The study and proposed model will be very helpful as it covers not give solution of mega event management, but also explain potential areas where problems might occur. With advent and access of technology like RFID, IOT, sensing systems and mobile apps, implementation has significantly reduced in terms of cost and time. Together with desired tasks RFID tags using for pedestrian guidance it will also automate the registrations and check-in process.

Figure 6

Acknowledgements:

The inspiration is based on personal experiences, as most of our college programs like conferences, graduation ceremony and other events taken places. Author would like to thanks concerned authorities for providing useful statics required in compiling data.

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