

## **LITERATURE SURVEY**

### **Smart Solution for Railway**

#### **1. Android suburban railway ticketing with GPS as ticket checker**

##### **Abstract:**

One of the biggest challenges in the current ticketing facility is “QUEUE” in buying our suburban railway tickets. In this fast growing world of technology we still stand in the queue or buy with oyster & octopus cards for our suburban tickets, which is more frustrating at times to stand in the queue or if we forget our cards. This paper Android Suburban Railway (ASR) ticketing is mainly to buy the suburban tickets which is the most challenging when compared to booking the long journey tickets through ‘M-ticket’ which fails with suburban (local travel) tickets. Our ASR ticket can be bought with just a smart phone application, where you can carry your suburban railway tickets in your smart phone as a QR (Quick Response) code. It uses the smart phones “GPS” facility to validate and delete your ticket automatically after a specific interval of time once the user reaches the destination. User's ticket information is stored in a CLOUD database for security purpose which is missing in the present suburban system. Also the ticket checker is provided with a checker application to search for the user's ticket with the ticket number in the cloud database for checking purposes.

**Published in:** 2012 IEEE International Conference on Advanced Communication Control and Computing Technologies (ICACCCT)

#### **2. Comparative analysis of QR code generators**

##### **Abstract:**

The goal of this paper is to describe ASP.NET application for comparative analysis of QR code generators. The application includes the implementation of existing solutions of QR code generator provided by the third parties over which the research was conducted and the results will show us which solution is best in terms of consumption of computing resources and speed of execution. This paper explains the technology and development tools that are necessary for the

development of the application and the way of implementation of existing solutions QR code generator provided by third parties.

**Published in:** 2018 41st International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO).

### **3.Design and Development of an Online Bus Monitoring System**

#### **Abstract:**

This research demonstrates the design and development of an online bus monitoring system. The primary purpose of the bus monitoring system is to track city buses for obtaining their location information. The proposed bus monitoring system consists of two fundamental sections: tracking the location of city buses and monitoring the city buses from website or android based phones. In order to monitor city buses, global positioning system (GPS) modules must be installed in the buses so that location information can be updated in the server. People can obtain the information of the city buses from the website of the bus monitoring system and using the android application of their android devices. The information regarding the location of any particular bus is obtained just within 40 seconds from both the website and android application. Although the proposed system is applicable in any cities of Bangladesh, we considered Khulna City as the model during our research. Furthermore, we analyze the performances in terms of response type and error for both website based and android application based systems under variable number of users. We strongly believe that our proposed bus monitoring system will be valuable to monitor the city buses of any city of Bangladesh.

**Published in:** 2018 10th International Conference on Electrical and Computer Engineering (ICECE)

### **4. Tracking, Arrival Time Estimator, and Passenger Information System on Bus Rapid Transit (BRT)**

### **Abstract:**

Trans Metro Bandung is a new Bus Rapid Transit in Bandung, Indonesia. As a new mode of transportation, it proposes comfort, safety, and give an affordable price. However, information systems related to buses are still lacking and far from expectations. That includes the uncertainty of the bus departures and arrivals times at bus stops. Therefore, in this study, an integrated online system is designed to provide information, including bus arrival time, bus position, and the number of passengers on the bus. This information system is a website application that is connected to the Firebase real-time database so that all data can be accessed in real-time and then displayed at the bus stop. The hardware system consists of an infrared detector to count the number of passengers and a GPS module for bus tracking. From the bus position information, the system can estimate the arrival time at the nearest bus stop.

**Published in:** 2020 8th International Conference on Information and Communication Technology (ICoICT)

## **5. Data Validation System Using QR Code and Meaningless Reversible Degradation**

### **Abstract:**

QR Codes are used as information channel on several cryptographic architectures due to their technical properties, such as data capacity and retrieval reliability. This paper presents a novel string data validation system using QR Codes and meaningless reversible degradation. The proposed scheme exploits reversible degradation properties, using the systematic Berlekamp Reed-Solomon error correction algorithm and the QR Code. This new mechanism encodes up to 388 characters in two information channels: a dynamic version QR Code (channel 1) and a wireless network (channel 2). A byte mode QR Code stores partial corrupted and masked data input bits. Its version size varies between 1 and 11 according the stored data quantity. The wireless channel downloads a previous generated Reed-Solomon redundancy file to correct the QR Code retrieved information and decode the secret message. The QR Code information is meaningless when scanned by a standard QR Code reader. Compared to real-time retransmission data validation systems, the proposed scheme reduces the download data (channel 2) up to 50%.

**Published in:** 2019 International Conference on Applied Electronics (AE)

## **6. Fast automatic seat assignment for large-scale passengers reservation systems**

**Abstract:**

In this paper, a fastest seat assignment algorithm based on the well-known Left-Edge Algorithm (LEA) and the data structure of buckets in multi-dimension for large-scale passenger reservation system is presented. The time and space complexities are both  $O(N)$ , where  $N$  is the number of tickets. In the meantime, the group tickets will be reserved in the neighbouring seats. The concept of the proposed algorithm can be also applied to scheduling and channel assignment for Printed Circuit Boards (PCB) and Electronic Design Automation (EDA).

**Published in:** 2016 IEEE International Conference on Automation Science and Engineering (CASE)

## **7. Smart ticketing system for railways in smart cities using software as a service architecture**

**Abstract:**

Ticketing system for railways in Mumbai suburbs was introduced in order to authenticate and authorize valid commuters to suit one's comfort, purpose or needs while travelling. Due to very high job prospects in Mumbai city, the population which started travelling through this train increased immensely, which resulted in various issues such as never ending queues, wastage of paper, lots of resources and staff utilization. The alternatives techniques introduced to resolve these issues failed drastically. Moreover in spite of having such a massive amount of data generated of the commuters, no analysis was ever done ever to improve the railway service and the commuter's experiences. To overcome the above pitfalls this paper proposes a smart ticketing system architecture for railways which completely scraps the idea of paper tickets and completely harness the amount of money commuters has invested for their travelling. If the commuter intends to travel from a source to destination with no intention to return on the very same day, then only half journey ticket costing will be taken into consideration. The commuters will be benefited with the provision of using the seasonal tickets as per there requirements depending on the number of days they has subscribed. This model also enables the authorities to detect those commuters who never pay and buy or fail to carry their tickets or pass while travelling. The proposed system will also have features like crowd analysis and suggesting cost effective offers to the railway commuters.

**Published in:** 2017 International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC)