NFC Based Mobile Ticketing System

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Abstract— Near Field Communication (NFC) is a promising new communication technology that, among other things, allows mobile phones to emulate smart cards such as the travel cards used in public transportation. Bringing the travel card into mobile phone creates numerous benefits for both end users and service providers, which is why mobile ticketing with NFC technology has been considered a promising service. However, despite optimistic predictions, NFC technology and mobile ticketing services based on it, has yet to take off. While technical problems have played a part in this delay early on, the most significant reasons can be found in the challenging business models needed to realize NFC services. In this study, we aim to analyze the NFC mobile ticketing business model holistically and to identify critical issues that affect the commercial success of such a service. For making the day to day life more convenient for the passengers travelling in bus some technologies can be used like Near Field Communication (NFC), the proposed system is based on ticketing and identification of passengers in public transport. The system suggest a user friendly automated ticketing system which will automatically deduct the passengers fare according to the distance travelled as well as detect the passengers detail information. The system also helps to calculate the total revenue of a single bus in a day. Another important aspect is reusability, which helps use ticket multiple times as it is rechargeable. This project is based on ticketing and identification of the passenger in the public transport. This project suggest a user friendly automated ticketing system which will automatically deduct the passenger's fare according to the distance travelled as well as detect the passenger's identification. This project basically deals with the identification and ticketing of the passengers sitting in the bus.
Key words: Near Field Communication (NFC), Mobile Ticketing System

I. INTRODUCTION

The project is implemented using NFC technology. This project suggests building a NFC system that can identify passengers in public transport as well as does all accounting purpose related to travelling expenses. Automated accounting of public transport can be used to provide useful estimates of the cost of travelling from one bus stop to another as well as the crowd density can be measured inside the public transport. But in case of India measuring crowd density is of no use. Near field Communication (NFC) tags has been proposed to be used in this project.

Public would carry NFC card with them. As soon as they enter into the bus they have to show the NFC card to the Conductor. The conductor will read the NFC tag by using his NFC Based Android cell phone. The cost would be automatically deducted according to the distance travelled.

A. Modules and their Description

The NFC Based Mobile Ticketing system consist of mainly three components as follows:
1) Server
2) Android Application
3) NFC tags
4) NFC Reader

B. Description
1) *Server:*
  − Administration management
  − Employee management
  − Passenger management
  − Account renewal
2) *Android Application:*
  − Conductor Login
  − TT Login
  − Ticket booking
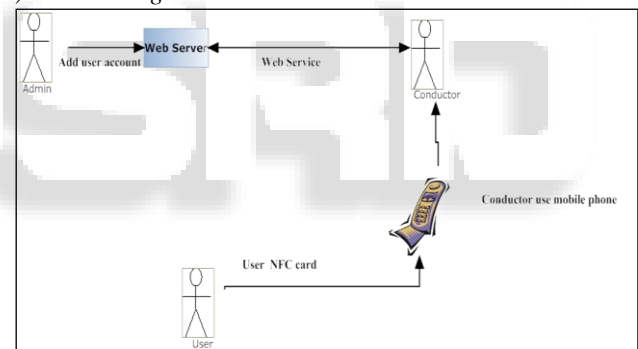 − NFC Reading
3) *Block Diagram:*

Fig. 1: Architecture of NFC Based Mobile Ticketing System

II. HARDWARE REQUIREMENT

− NFC tags
− NFC based Android Mobile
− 160 GB Hard Disk
− 1 GB Ram
− Intel processor IV and above

III. SOFTWARE REQUIREMENT

− Windows 7
− WAMP Server or XAMPP
− Notepad++
− My SQL 5.6
− Java Script
− HTML
− CSS
− Visual Studio
− .Net
− SDK for Android

A. Proposed System

As soon as the bus arrives at the bus stop, the passenger would board the bus and show the tag to the Conductor. The Conductor in the bus will read the NFC tag using android based NFC reader. NFC based card that will have a unique ID number. The card is rechargeable from certain electronic booths placed at certain locations of the city. The reader will detect the tag and require certain information from the passenger. According to the route distance between departure & destination the cost would be deducted from the NFC tag. The cost can be deducted according to the distance travelled by the public transport vehicle. The reader will accept the card if the card has required credit to travel that distance. After the whole day, the individual bus reader will know how much credit has been transferred to the corresponding account and also the information can be found in the main database.

B. Advantages of NFC Based Mobile Ticketing System

1) Wireless Connection
   Similar to the connection of other technologies such as Wi-Fi or Bluetooth but with a shorter range, generally between 10 and 20 centimeters. Its short range allows for avoiding possible security problems such as the reading of our transmission.
2) Connection Speed
   Almost immediate connection with a transfer rate that can reach 424 Kbit/s.
3) Autonomy
   The chips included in NFC technology do not need to be connected to a main battery.

IV. CONCLUSION

The main objectives of the project were to develop an algorithm that will be used to identify answers related to user submitted questions. To develop a database were all the related data will be stored and to develop a web interface. The web interface developed had two parts, one for simple users and one for the administrator.

A background research took place, which included an overview of the conversation procedure and any relevant chat bots available. A database was developed, which stores information about questions, answers, keywords, logs and feedback messages. A usable system was designed, developed and deployed to the web server on two occasions. An evaluation took place from data collected by potential students of the University. Also after received feedback from the first deployment, extra requirements were introduced and implemented.

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