

Secured Railway Tourism Using Biometric

Ramya.S.K¹ and Kavya.R²

¹Assistant Professors of Computer Science, SDM & MMK MahilaMahaVidyalaya, Mysuru-570004, India.

²Assistant Professors of Computer Science, SDM & MMK MahilaMahaVidyalaya, Mysuru-570004, India.

Abstract: In the era of Digitization, every Organization is concentrating on Smart Work Process with less Human Intervention. In this regard, the paper is focusing to provide a safe travel in Railways. With this concern, the paper focuses on a new development in Railway Tourism. The Conventional system in Railways has CCTVs for providing security. The proposed system creates a secured environment for passengers using Biometric which is an added security component to the conventional system wherein the system allows only authorized passengers to get inside the Coach.

Keywords: Digitization, Biometric, Security, Tourism, Passengers.

Introduction

Security is an important aspect in Tourism and the Organizations try to provide better facility for the passengers during their Travel. The Present Security Systems in Railways in India include installation of CCTVs in train Coaches and introduction of Smart Coaches which has “Vibration Based Self Power Harvesting Sensor” which mainly deals in predicting wheel defects, defects on the bearings, brake system defects and defects on the track. The Proposed System provides an “Automatic Door Locking System” for train coaches using Biometric Technology.

The rest of this paper is organized as follows. Section II will be the Literature Reviews. Section III gives the information about various Biometric Technology Section IV gives the Methodology of Door Locking System of Railway Coaches and Section V gives the Conclusion.

Literature Review

In paper [1], authors are discussing about Automatic Ticket Vending Machine(ATVM) for Indian Railways which enables cashless payment using Biometric Device wherein the Passenger has to input his/her finger print to the ATVM which accepts the finger print and gets linked with the Aadhar Card Details which will be stored in ATVM database. Further the Passenger has to give the Password of any of his/her SB Account to the ATVM from which the amount gets deducted.

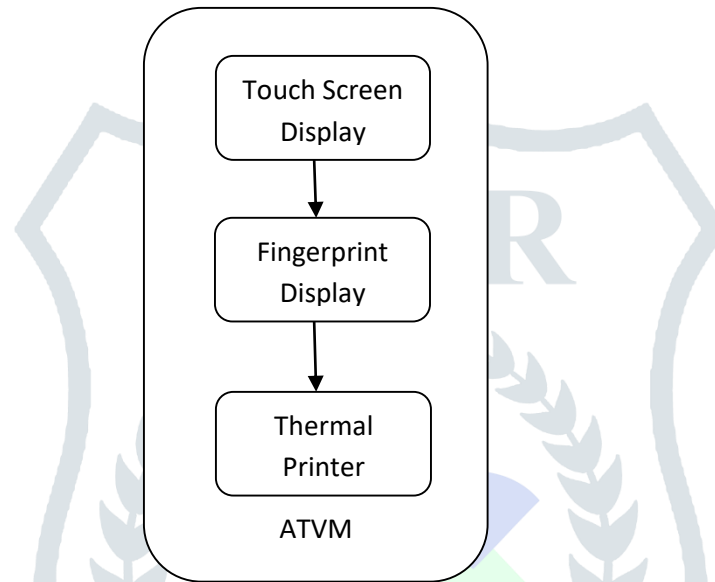


Figure 1 – ATVM Model [1]

In paper [2], the authors are proposing a Finger print biometric system for ticketing with a centralized, well manageable data base which reduces the number of ticket counters. The paper proposes methods for single and multi riders. The system reduces the cost of token and smart card.

In paper [3], the authors have compared the safety and security issue since 1950 and are discussing about features and attributes during the travel such as lack of security which leads to regional stagnation or decrease in tourists flow. Within the elements of safety and security only a small number of factors are given importance such as drinkable water, necessity of vaccination, cleanliness of toilets. Additional risk factors appear in travel and tourism which includes air plane hijacking, terrorist actions as a tool of social struggle.

In paper [4], the authors are discussing about various biometric security technologies such as finger print, face, speech, iris, retina, signature, hand geometry, palm print, key stroke.

In paper [5], authors are focusing on using Wireless Sensors to detect welding problems in tracks, worn out rails etc. The data collected from sensors gets stored in database of wireless sensor networks and gives alert message to the Railway Board. This system works in real time and avoids train accidents before train arrives to the location.

In paper [6], author is discussing about total tourism product which concentrates on all tourists needs during the duration of travel and also after reaching the destination. The methodology in this paper includes critical and comparative analysis of literature (marketing literature in German, English and Greek), the codification of the scientific discussion regarding the tourist product and the formulation of analytical, theoretical principles for the definition of the tourist products and its components. The paper concentrates on Primary and Secondary Tourist needs.

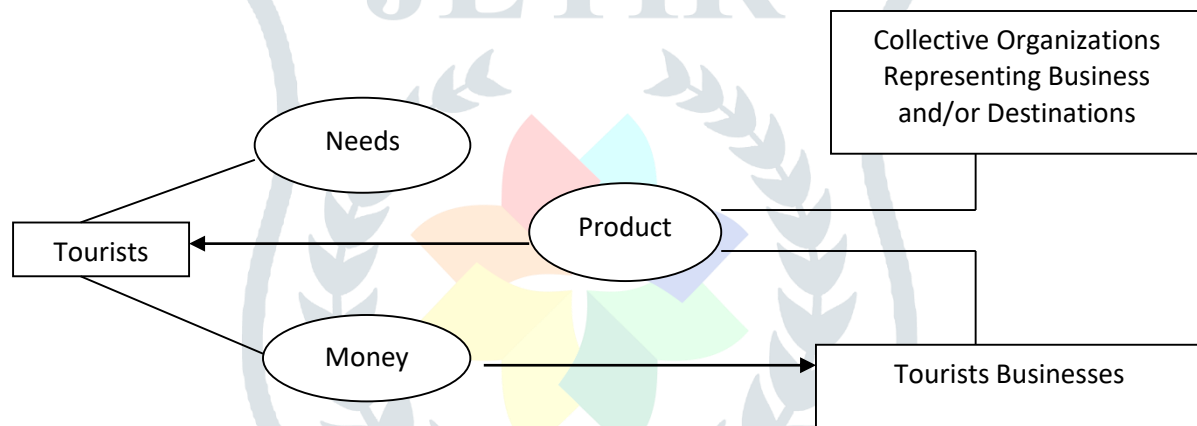


Figure 2 – Relations between the subjects and the objects of tourism marketing [6]

In paper [7], authors are discussing about transformation in tourism towards digitization by considering empirical results from German Experts. The paper focuses on Structural Equation Model (SEM) which briefs on increase in sales, classic booking, sharing economy, process costs, personalized offers, social media, customer reviews and virtual reality.

Biometric Technology

The word Biometrics comes from the Greek words “bios” (life) and “metrikos” (measure). The Biometric refers to automatic technologies for measuring and analyzing biological and anthropological characteristics such as fingerprints, eye retinas and irises, voice patterns, facial patterns, and hand measurements, especially for identity proof.

A biometric system is a pattern-recognition system. Such a system involves three aspects: data acquisition and preprocessing, data representation and decisionmaking. Data acquisition is a

method of acquiring data from the traveler and this data will be preprocessed wherein the required data is extracted from the obtained image. The preprocessed image will be digitized which is the stage of data representation. This digitized image will be compared with the knowledge base (data base) for the identification purpose(decision making).

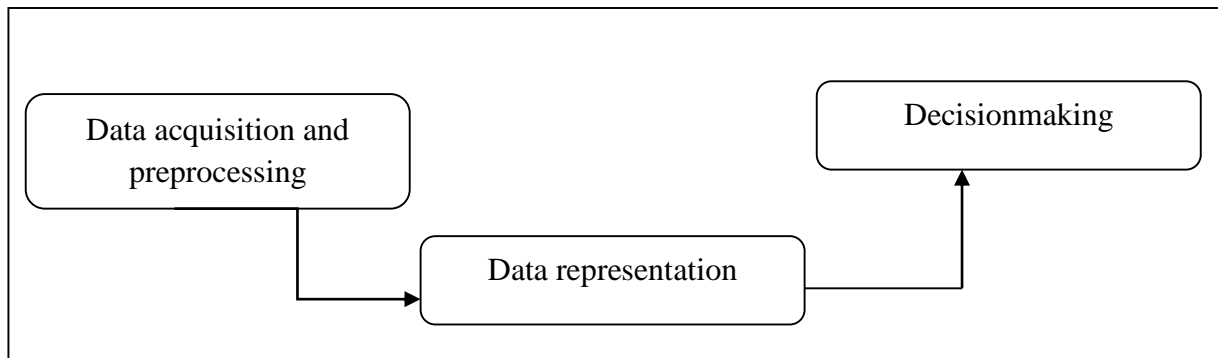


Figure 3 – Three Aspects of Biometric system

Methodology

The first phase of the proposed system is the Travelers Registration. The Registration process will be online wherein the traveler initially has to obtain a smart card by giving their personal details to the railway website. The Smart card will be provided by railway authority which holds the personal details such as traveler's name, age, date of birth, address, photo(text embedded within it) for the purpose of security and mobile number. Once the traveler obtains the smart card which has validity for a certain period, he/she can book the tickets online whenever required.

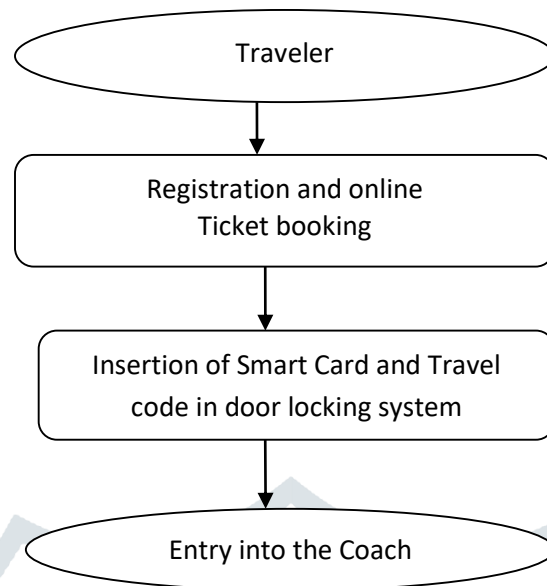


Figure 4 – Secured Biometric Door Locking System

Once the ticket is booked online, the system will generate a Travel Code which will be sent to the mobile phone of the registered user and the validity of the Travel Code will be from source start time to destination end time. Each individual traveler has to insert the smart card and travel code to check into the coach.

Conclusion

In Finger print biometric and palm print recognition system, the disadvantage observed is that the impression of fingerprint and palm print in some cases may change due to cuts, wounds etc. Hence, the proposed railway coach door locking system, scans the smart card, recognizes the text embedded image and also accepts the travel code which is better than finger print and palm print biometric recognition systems.

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