

A Proposed Seat Allocation Model for Future Bullet Trains in India

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Abstract

India is a developing country, which might be soon among one of the developed countries in the world. The growth and development perspective of any nation depends upon its transportation system. As said by our Indian Prime Minister Shri Narendra Modi Ji, that bullet train will soon run on Indian tracks under Ministry of Indian Railways, so here we present a seat allocation model which can be implemented for seats allocations in Bullet trains. As many tourists carry their smart phone always with them we can introduce smart idea for choosing seat according to user choice. For this we are proposing an idea of an android application development which will help users to choose their own seats and enjoy their comfortable journey.

Keywords

Bullet Train, Seat allocation, Digital India, Smartphone, Android application

I. Introduction

India has one of the largest railway networks in the world, but as of 2015 it does not have any kilometers classed as high-speed rail (HSR), which allows an operational speed of 200 km/h or more [1]. As per our observations, we find that the proposed fastest train in India is the Gatimaan Express which is expected to run with a top speed of 160 km/h, with average speed of above 100 km/hr, and as of 2015 India does not have any roadmap or concrete plan to implement High-speed railway with all the projects still in consultation and ideation stage [2]. India is moving forward for achieving the goal of developing Smart cities. And one of the steps taken in this direction is running bullet trains in India. India's first bullet train corridor, between Mumbai and Ahmedabad [3], could turn out to be the fastest train service in the India as comparison to others bullet trains of the world. In this paper we have proposed a new seat allocation strategy for the end-user to enjoy his ride comfortably according to his need.

II. Survey of Existing Implementations

Indian railway in last few years have moved from traditional way of interacting with the railway system to digital way using the mobile application and also the online facility available at Indian railway website. Currently, users of these applications are provided with following features:

1. Checking PNR status
2. Running status of trains
3. Checking Train Schedule
4. Booking tickets
5. Online payments [4]

And if we consider the 4th feature from above list, we are able to book the tickets online. But we are not able to pick the seats according to our choice. We are provided with the priority to select the upper berth, lower berth and middle berth, but what if you want to have middle berth at the middle of the coach or 37th seat of 4th coach. There is no facility provided for such selection, well it's too complex to have such seat choosing facility in traditional seat allocation system of Indian railway due to various reservation quota and due to other predefined factors.

But if we consider the forthcoming Bullet trains this feature of choosing seat according to passenger choice can be made possible. In bullet trains there will be only sitter seats with variation

according to the type of comfort coaches i.e., 1st class and 2nd class coaches. Bullet trains are meant to lessen the time of journey. The first bullet train is anticipated to run between Mumbai and Ahmedabad. The time taken to cover this distance is 7hr – 8hr by current trains, this will be reduced to less than 2hr with bullet trains [5]. So this reduces the impediment of upper, lower and middle berth problems.

Similarly, if we consider the online booking prototype of current railway system, we are not able to reserve the ticket once the chart prepared, so this is another drawback present in online booking system.

Another problem is seats in waiting list. Trains are allowed to have above 200 waiting passengers travelling within the train with no seats available. This increases the mob in the train which results in congested trains and uneasiness for other passengers [6].

III. Proposed Model

In this paper we are proposing a Smartphone application that will provide user with the graphical overview of the coaches and seating arrangements within the coaches of the bullet trains. We are proposing an idea through which passenger will be able to select any seat of his personal choice in any coach throughout the train.

Here user will see the graphical organization of seats within the coach in which all the vacant seats (which are not reserved) will be displayed in green color and the occupied seats (which are already booked or reserved) will be in red colored.

- The user will select the source and destination station, will provide the date and time period.
- The app will then request to server to fetch the Bullet trains with given source and destination, on given date and time period.
- Server will provide the information back to client mobile.
- Now user will have a list of Bullet trains on their phone screen with its details and availability status.
- User can then choose its desired Bullet train, as the user clicks the Bullet train, it will request the server to get the seat map of that Bullet train's coaches.
- At this moment user will be provided with the seat map of the coaches, here user can select the coach and can see the seats arrangement within the coach with seats available in green

- color and reserved or booked seats as red in color.
- Next user will choose the seats and fill his necessary information such as name, email-id, contact number etc. As soon as he clicks the book ticket button. He will be redirected to the online payment gateway where he pays its fare and confirm his ticket successfully.
- After successful completion of booking process, user will get an E-mail confirmation of booking of ticket and also a message on his mobile, with ticket registration number and other necessary information.
- User will also be provided with the facility of canceling the ticket or changing the seat but before a particular time Stamp as per requirement. Charges may be applied after the time stamp is expired.
- Also Bullet will compromise of Wi-Fi facility, which can be used to provide numerous other functionality like
 - * Ordering food using this application.
 - * Tracking the live Position of Bullet train using GPS.
 - * We can provide a announcement system within the application which will provide a notification, before the destination station arrives.
 - * More superior features can also be added as per requirement.

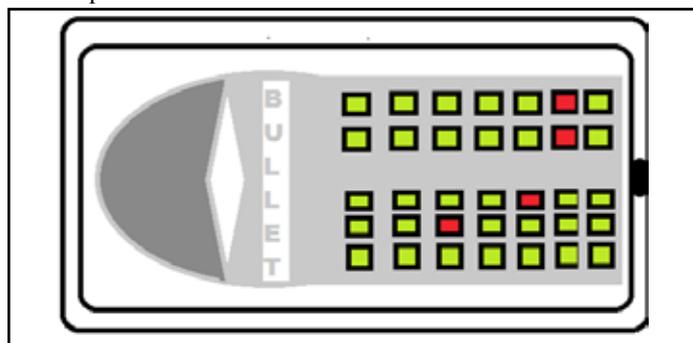


Fig. 1: Conceptual application screen

As it can be seen, this idea purely works on client server architecture.

- Client: The user's Smartphone acts as client in this architecture. It quires the server for getting the Bullet trains information and availability of seats.
- Server: In this system server main objective is to get the clients request and communicate with the database and provide the required information back to the client. Another important work of server is to handle multiple requests and handle the concurrent requests.
- Database Admin: The DB admin will manage the database and update the trains whenever required. This in may involve adding new trains, adding cancellation status of trains etc.



Fig. 2: Architecture of our proposed system

IV. Surmounting Present Drawbacks

- As the key objective of this idea is to help user to pick seat of his own choice, it overcomes the problem of getting desired seat in the desired coach.
- Another aim of booking ticket just before the train arrives at the station can be achieved, as there will be no time constraint for booking the bullet trains. If the seats are available in the train then just book it and get it, even if the bullet train is standing on the station.
- The problem of waiting list is also removed, as passenger will not be able to book the tickets if the bullet trains are already booked completely or No seats available. This will reduce the overloading of trains and will provide comfort to the passengers.

V. Conclusion

India is moving toward the objective of “DIGITAL INDIA” and “Smart cities”. Bullet trains are the important aspect of Smart cities. We are working to develop an android application that will run on user's smart-phones and then choose the best seat as per the user's requirements. Also inhabitants of India are becoming smarter with the advancement in Smartphone. Thus making smart use of technology is an essential aspect of human life. Therefore this idea works on Smartphone. This idea is completed devoted to India's PM Modi Ji's Vision. Through this travelers will get the best satisfaction by electing their seat on their individual choice. And will also be provided other desirable facilities like live tracking of train, ordering food whenever required, etc.

VI. Acknowledgement

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