

Train Traffic Management system

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ABSTRACT-- Trains play an important role in Development of any Nation. Trains are considered a lifeline of nations in Countries like India. Populous countries like India, USA, and China have large Train Networks. Indian Railways runs 13,169 passenger trains daily on a large network of 67,956 km. IR has 16

divisions on the basis of geographical location.

Millions of Passengers and Tons of goods need this train network.

To manage such a huge network and large number of trains and passengers we need a good system for management of train networks.

This paper mainly focuses on the system that can manage train traffic and networks.

1 INTRODUCTION

Today trains are being more popular even in the times of private vehicles like cars etc. Trains are the main way of transport in many countries including India.

In India trains are considered as the life line of the nation. IR network covers the distance of 67,956 km all over the nation with 16 divisions geographically, about 13 to 14 thousand trains and millions of passengers who travel by train on a daily or regular basis.

Thus we have such a huge network of trains so we need a good system that can manage this train network.

The main focus is on Train Traffic management. Like cars, trains also face traffic and a lot of other issues that can break down the network, making trains run late by time.

If a train becomes late for any reason it can create issues in the complete network of trains nearby so it becomes very essential to avoid such cases.

IR has made many train routes double line but still has some single line routes too. Single lines face more problems than double lines.

We also have some premium trains. Rather we have different kinds of trains like Express, Superfast Express, Rajdhani, Shatabdi, Duranto, Humsafar etc. according to priority we need to manage the traffic. All of them have different speeds.

So in conclusion we need a system that will manage the train network considering all above issues.

2. TRAINS AND TYPE OF TRAINS

Indian Railways have different types of trains all of them have different speed and priority. Indian railways also include trains like rajdhani shatabdi duronto etc and also some private trains like humsafar and tejas.

2 TRAIN TRAFFIC

Railway Network runs numerous trains in the network. The metro cities like mumbai have so many railway stations, junctions, terminus stations at number of both local and long distance trains covering them so it becomes more important to manage the traffic of trains, not only in metro cities but at normal place of any network too it is essential to manage the train traffic for safe and secure transport.

3. SIGNALLING

Railway Signalling is a system used to manage the train traffic and keep trains clear to each other. As we know trains move on fixed rail so they can collide with each other if we fail in proper signalling. So it is essential yet the most important part of train traffic management. There are so many different kinds of train signalling, block signalling is one of them.

We can avoid the accident if we do not allow any other train in the section of track where the train is already present, i.e. we make blocks of some distance around the train.

5. OVERTAKING

Overtaking is a Major Concept in railways used to manage traffic as we know there are so many types of trains with different speed and distance to travel and time so it becomes essential to use the concept of overtaking.

The trains with higher priority overtakes the other one.

6 MAJOR ROUTES IN INDIA

Indian railways have a total network of 67,956 Km. 71% of it is electrified.

Delhi - Vadodara - Mumbai

Delhi - Kanpur - Varanasi - Howrah

Delhi - Bhopal - Nagpur - Bangalore

Mumbai - Nagpur - Howrah

Bengaluru - Visakhapatnam -

Bhubaneswar - Howrah

4 ABOUT THE MANAGEMENT SYSTEM

A Train Traffic Management and signalling system is a system which controls the traffic and transport of trains in a network and guides the trains with route and speed.

The important part is we need to locate the train, radar is used to do so.

And we do have already predefined schedules of trains. We need to go with that first, if any issue occurs then changes take place for both regular schedules and changing one traffic management and signalling is an important task.

5 ARCHITECTURE OF THE SYSTEM

The System will have different modules included in it. Such as,

5.1 Control Room Portal

Control room portal is the portal os system for authorities in control from where the rail network is managed. It will give complete information about the network , locations of train, train details, issue details (if any in network)

It will also include a graphical view.

5.2 Locomotive Portal

Locomotive Portal will be used in locomotives of trains and it will provide the guidelines for Loco Pilot about routes, stops, time and speed.

5.3 Central Database

Database will be created in MongoDB.

The data will be updated every second which will be collected from trains and control rooms.

The same database will be shared with WebEnds.

5.4 Web Ends

Web Ends will be the website and web applications for the end user where he can track the train...

5. TECHNOLOGIES USED

5.1 PYTHON

Python is interpreted and it is a High Level language. It is almost similar to human language English.

We decided to use Python as the language of the project as python is platform independent language and also it provides a number of libraries. And also python is easier to maintain object oriented language.

5.2 MongoDB FOR DATABASE

We decided to use MongoDB for Database. MongoDB is a NoSql Database which stores data in the form of Documents.

5.3 MERN STACK FOR WEB

We decided to use MERN stack for Web Development. MERN stack includes,

5.3.1 MongoDB

MongoDB is a cross platform object oriented Database in which each record is a document.

5.3.2 Express js

Express js is Node js framework which is used to code backend frameworks. It is efficient, fast and scalable.

5.3.3 REACT

React is a javascript library used for front end development.

5.3.4 Node js

Node js provides a javascript runtime environment.

No Major risk is involved in the project..

10 REFERENCES

[1] <https://www.w3schools.com/python/>

[2] <https://www.geeksforgeeks.org/mern-stack/>

[3] <https://indiarailinfo.com/>

[4] https://en.wikipedia.org/wiki/Indian_Railways

[5] https://en.wikipedia.org/wiki/European_Rail_Traffic_Management_System

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9 Feasibility STUDY ..

9.1 Technical

Our team has learned python in the previous semester and is also familiar with MERN.

9.2 Budget

We are using Microsoft Visual studio code and spyder IDE for the project both are free..

9.3 Time

Time is more than enough for this project..

9.4 Risk..