RAILWAY DIRECTION OPTIMIZATION USING GENETIC ALGORITHM

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Abstract. These days the development of “clever cities” with a high level of nice of existence is turning into a previous assignment to be addressed. In this framework, promoting the model shift closer to extra dependable, greener and in widespread extra sustainable transportation modes, specifically toward a “smart mobility” should appreciably make contributions to reap this aim. The goal of this paper is to offer customers with greater regular and reliable rail machine through optimizing the direction among stations.

Keywords. Railway, Route, Optimization, Genetic Algorithm.

INTRODUCTION

The railway machine is a complex system. The operations accomplished with the aid of the railway gadget it extra difficult. The requirement of railway operations is to meet the call for assigned to railways through the optimization of usage of the railway transportation unique resources. So problem-solving orientated optimization algorithms or techniques form the basis, specifically in the technology whilst data technologies succeed, of modern-day railway operation, wherein the maximum regular instances are, now not confined to Railway control data systems layout.

OBJECTIVE

The railway device is a complicated machine. The operations accomplished with the aid of the railway gadget it tougher. The requirement of railway operations is to meet the call for assigned to railways through the optimization of usage of the railway transportation particular resources. So problem-solving orientated optimization algorithms or techniques form the idea, mainly within the technology even as records technology succeed, of current-day railway operation, wherein the most regular instances are, not restricted to Railway manipulate information systems layout.

LITERATURE REVIEW

Railway course Optimization gadget is evolved to allow many passengers or traveller to recognise the shortest course for their asked direction this is the principle motive of our machine. You could locate the shortest route of a train direction by using manually but there can be troubles that have to be confronted so to overcome such problems we want to help the Optimization techniques to understand the shortest course. There are lot of time required to most important the retrieve the info of educate, station and routes manually system [4]. Even an unmarried statistics for a educate or course from start line to finishing point it’s going to take lot of time hassle declaration. The passenger or end person requested for the shortest path between stations then optimized system is accountable to expose the direction in among two stations. The passenger required less time to reach the destination [2].

PROBLEM STATEMENT

The maximum essential paintings in railway management data machine layout are to design the physical structure. The requirement of physical structure optimization is to allocate the bodily assets of railway on the way to realize logical shape, minimizing the costs and time. The optimization objectives include purchaser fine diploma, reaction time, prices and so forth. The restrictions are reliability, safety and so on. Objective range, combinatorial complexity and objective index nonlinearity these troubles are passed off in physical shape of optimization gadget. Regular software of GA in railway management facts gadget layout is the bodily structure optimization of emergency succouring gadget. Right here we deliver the distinctive imposing procedure of GA in physical shape optimization of emergency succouring system via a computing case observe.

SCOPE

We’re providing system which is automatic, so that it is straightforward to retrieve the responses from
the machine smooth and updating the information once the response or services are supplied to the give up customers upon their request without any trouble and saves time.

IMPLEMENTATION

STATION MODULE
The information approximately station and operations like addition, deletion and change are maintained with the aid of this module. This module incorporates stations tables and fields are station-id, station-call. On this desk Station-id, station-name is specific value. The station-id is the number one key of this table. For arranging a path supply station, vacation spot station, through stations are ought to be registered in stations module, administrator can arrange the path amongst that stations. This station module is can't be dealt with the aid of give up user, handiest administrator

TRAIN MODULE
The data approximately extraordinary trains and diverse operations like addition, deletion and modification are maintained with the aid of this train module. The train module handles trains table and it incorporate special fields are educate-id, teach-name, supply-station, vacation spot station, arrival-time, departure-time, teach-type. It carries particular teach identification and duplicate values does no longer belongs to this module.

ROUTE
This module maintains the information approximately routes among stations and this module take care of the routes tables and fields are course-identification, beginning-station, destination also time taken for ordinary, and time taken for specific. This module offers the graphical representation of a path between beginning-station and vacation spot. This module is provides records concerning routes between two stations and additionally realize shortest route the various routes, and additionally gives graphical illustration of the corresponding routes.

POINTS
This module maintains the statistics about trains, routes tables and this module gives routes of educate on map.

PROPOSED ALGORITHM
Step1.
The initial population P[0] is generated via random approach.
Step2.
To grade the individuals.
Step3.
For refresh the individuals in elitists pool. The first grade in the elitists pool is stored by individual.
Step4.
To calculate the virtual adaptability consistent with step 1.
Step5.
To apply the share strategy in objective functions space according to step2 ~ step5.
Step6.
Selection: To pick out the individuals according to the adaptability ratio method (roulette).
Step7.
To crossover.
Step8.
To mutate.
Step9.
To generate the new generation ’P.
Step 10.
To apply the elitist strategy and add the individual in elitists pool into the new generation 'P' and delete the non-elitist individuals in 'P' randomly.

Step 11.
To adjust the size of new generation. Set the size to be N. The new generation is P.

Step 12.
To check the current condition is satisfied. If no, go to step 2, else

RESULT ANALYSIS
System Analysis is first stage according to System Development Life Cycle model. This System Analysis starts with the analyst. The detailed study of the various operations performed by a system and their relationships within and outside the system is major aspect of analysis. The major aspect of analysis is defining the boundaries of the system and determining whether or not a candidate should consider other related systems. The available information, decision points, and transactions handled by the current system is collected by data in the time of execution. Logical system models and tools are useful for detailed examination; skill development, experience, and common sense are required for collection of the information needed to do the analysis.

APPLICATION
GA can also be applied in many other fields of railway packages, consisting of the crew scheduling, station working plan optimization etc. Its optimization capability affords the opportunity to solve the optimization troubles in railway programs with high precision and efficiency. It's miles absolute confidence that GA has a shiny destiny inside the area of railway packages.

EXPERIMENTAL RESULT

![Figure 1. Flash Window](image-url)
CONCLUSION
The primary findings are as follows:

- The improvement to GA brings excessive calculating precision and efficiency. Assembly the calculating requirements of large scale optimization hassle with combinatorial complexity and nonlinearity.
- GA is appropriate for railway application orientated troubles fixing. Despite the fact that the answer may not be the finest solution, the calculating time cost is a good deal extra appropriate.
- GA could be very easy to apply in optimization hassle, now not best reflecting in choice variables description, however additionally in objective feature formulas.

REFERENCES


