Automotive and Telematics Transportation Systems

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Abstract— Security mechanisms of a telematics system are exceedingly intersecting as they could pretend the ordinary influence of the vehicle and perhaps terminate in accidents. This paper includes a new look at automotive and telematics transportation systems, also refers to methods in modelling, facility location, data processing and assessment of risk in telematics networks.

Index Terms—Telematics, Facility location, Routing computing

I. INTRODUCTION

Looking at now pathway users, navigation systems are usual standards in closely every carriage or truck. In the expanse of carriage navigation, the most part of the applicable data ascent is composed. Ten percent of the pathway mesh innovate every year. This data should be composed from time to time to keep the data origin on immediate condition. To navigate traffic there are some more characteristic required, such as size and visible supercilious of streets, conveyance restrictions for uncertain serviceable transportations. The force proposition is acquisition those inevitable characteristic. There don’t exist any approximate to get this data in a grave valued way. For correspondence society isn’t inviting to congregate this data for the profit is much humble than the exhibit price. Further there is commonly not enough dexterous cognition about the required reputation and how to aggregate them.

This inferior is not novel and there are a few, not actually content solutions on the traffic. In the extent of rural logistics there are partly used traffic navigations systems. The benefit is the more extensive sketch data compare to to flag carriage navigation systems. There are some characteristic like visible tall and the size of roads. And further they’ve sketch evade roads for adventurous commodity or vehicle pressure limitations. But this is only for exchange. The vehicle construction in rural office is more multifaceted than only some classes of trade. Agricultural vehicles similar harvesters and tractors with a multitude of likely contributory equipage have many discriminating requirements on the course cue. Still there are omit in more ability the needful extent paths that are mightily used by those vehicles to gain the fields. So it is not practicable to compute a course instantly from location to extent.

II. TECHNICAL VALUATION

Transportation standard are also usefulness in technology assessment. Indeed, the technological elaboration in transit is often costly, which cause a safe economical appraisement of its result and bazaar intersecting. The absorption is therefore separate here from that in the antecedent pilcrow: instead of revolve the performance of removal policies at a participation-wide even, the strike of movement told techniques is now revolve from the moment of judgment of specific actors (productions, implementation organizers) within the connection. The areas of transit technique disturbed by these considerations broadly fall in the succeeding categories.[1]

- Infrastructural project. Probably the firstborn extent of request for conveyance standard is that of advance and updating of transportation infrastructures. Measuring the strike on bargain of mesh modifications, both in personal and general transport, is indeed a very usual request. The variety of situations is nevertheless very huge: motorways and polite roads, trains, coach, automobile, cyclists, ordinary passing, universal infrastructure sustenance and all combinations thereof supply an extended authority of research.

- Technological elevate in vehicles. A many of applications have been made in description with today’s technological elevate in automobile technology. Started many years ago with the navigate” features, the innovations gift the automobile some intellect and more sharp apprehension of its surrounding have outrushed. Gap discovery and cautioning, machinelike expedition arrangement, synchronized impelling all have their result on the common trade, not to numerate the uncompounded melioration in carriage performances.

- Technological elevate in communications. Possibly the top question in today’s standard proceed from the coming of progressive intelligence systems for conveyance users. These developments are supported on the premise that instruct conveyance users chance their behavior. The behavioral modification, at the user's steady, is then enumerate to source important turn in the planetary conveyance spectacle at city-wide even. Of course, the proposition is then to induce these
Telematics has three fundamental capabilities:

- two-way communications capabilities;
- situation technology (geographic attitude);
- computing model for system rule and interface to self-propelling electronic systems.

The cotter telematics technologies are two-way communications and situation technology, such as a planetary attitude system recipient, which are confederated with an information processing system hardware and software sketch to composed a telematics system. Depending on the telematics performance, this system is interfaced and incorporated with the machine’s electronics systems. Telematics technology will also have a huge strike on many other self-propelling electronic systems such as self-propelling restraint systems, mallet relieve systems (also called Intelligent Transportation Systems) and ITS. ITS will grow in adulteration over the next decennium and will increasingly need telematics capabilities in automobiles that can take benefit of ITS applications. The telematics assiduity is shape on these three telematics technologies and has several separate traffic section. The biggest telematics traffic section is the telematics systems that are in state by self-propelling manufacturers.

V. FACILITY LOCATION AND LOCATION SCIENCE

Facility location problems examine where to physically locate a set of facilities (resources, stations, etc.) so as to minimize the cost of satisfying some set of demands (customers) subject to some set of constraints. Location decisions are integral to a particular system’s ability to satisfy its demands in an efficient manner. In addition, because these decisions can have lasting impacts, facility location decisions will also affect the system’s flexibility to meet these demands as they evolve over time.

Facility situation models are used in a wide variety of applications. These include, but are not limited to, locating warehouses within a supply chain to minimize the average time to market, locating hazardous momentous sites to minimize exposure to the public, locating railroad stations to minimize the variability of delivery schedules, locating automatic teller machines to best serve the bank’s customers, locating a coastal search and rescue station to minimize the maximum response time to maritime accidents, and locating a lookout stations to cover monitored area. These six problems fall under the realm of facility location research, yet they all have different objective functions. Indeed, facility location models can differ in their objective function, the distance metric applied, the number and size of the facilities to locate, and several other decision indices. Depending on the specific application, inclusion and consideration of these various indices in the problem formulation will lead to very different location models [2], [3].

VI. DATA PROCESSING AND APPLYING ITS TECHNOLOGY

Parallel conquest shorten two similar margin (each start- and endpoint must be the tautological) to one edge. The sharpness will be shorten, if the geometry between the two nodes is closely homogenous. The likeness is fitted with the Hausdorff distance between the two edges. If the edges content the likeness circumstances, the algorithmic program estimate couple of the edge item and terminate an medial coordinate. The geometry starting at begin node, result at end node using the ordinary coordinates will be the modern diagram edge. The common cause of similar subjection is visage conquest. Face conquest extend the used edges to more than two. This case appearance if more GPS-tracks cross. Depending on variances of the several course there will be more crossroads moment (see Fig. 1). [4]
Intelligent Transportation Systems (ITS) can advance the secure transportation of adventurous materials. These professional technologies contain vehicle superintendence and driver intelligence systems, weighty vehicle discovery systems, and driver/vehicle accomplishment supervise systems. These systems can supply estimable instruction to relieve in the secure transportation of adventurous materials while passing. A fresh contemplation had as its’ subjective to immediate the most effectual Advanced Transport Technologies (ATT) applicable in adventurous materials nimble guidance in expression of charge conquest, improvements of even of benefit, belittle of conveyance exposure, and melioration of drivers’ operation circumstances and safeness. The might categories of Advanced Transport Telematics for adventurous materials hasten guidance are:

- Automatic Vehicle Location – vehicle locality assumed in authentic opportunity;
- Mobile Communication Systems – two way data and expression transmission between driver and dispatcher;
- On-Board Computers – supply advice narrated occupation transactions, locality of the vehicle, avail hours;
- Routing and Dispatching software – assist the choice of minimum charged passing and the optimal assignment of drivers;
- Vehicle Condition Monitoring – supervise the requisite of the vehicle and transportation.

Since the entire linear programming model of an abridged interpretation of the problem of the routes of the ship is an unacceptable solution times for a typical daily planning process, a heuristic approach to decide on the hand. Author determined on this approach for its implementation comparatively straight computation, as well as its record of good results with congruous issues to the inherent.

There are a few other algorism such as Dijkstra’s algorithm, which is an individual source-single goal shortest path algorithm, the Bellman-Ford algorithm to calculate the shortest path algorithm with a free hand, A* algorithm solves the single pair shortest path problems using a heuristic algorithm and Floyd Warshall algorithm to find all pairs of Johnson-perturbation and the shortest path algorithm to find the shortest path locally. Genetic algorithms are also used to finding shortest path. [5], [6]

VII. ASSESSMENT OF RISK IN TELEMATICS NETWORKS

The assessment of exposure in the choice of passing in a meshwork along which to transportation uncertain materials, engage into contemplation the duration of time in conveyance, the likeliness of a conflict and the exposure of population exposure in the result of an casual. There are a diversity of theories, perspectives, advances and algorithms that have been put agreement to explain multi-objective problems for bound the most passing to transportation adventurous substances.

While it is unmingled to inclination efficacious substitute that can control passing decisions such as population compactness, expertness stamp, essential to be reward, and exposure, the censure is to appropriate these substitute into limited temperate criteria to appropriate to limited grounds in a meshwork and then evolve algorithms which can use the calculate to recognize the most passing.

Risk is characterized by two aspects:
- Occurrence likeliness of an adventure; and,
- Consequences of an appear adventure.

Quantification of exposure is crabbed for probabilities for bargain accidents are low and those surround hazardous things are even lower, but the consequences of the latter can be huge.

The strength conception is to divide the optical even and the computation even. This constitute our standard more inconstant: it is calm to innovate the input data to manifest. The input data thus could be either those from simulations, or those from naturalistic on the pressing bargain meshwork which are detention from on situation cameras, if it is practicable. Moreover, this divorce also termination the consequence of preserver expedition on the visualisation: we could counterfeit with a colossal multitude of agents with a little dilatory acceleration, but the inference are then show as those of immovable acceleration for the parade is now uncontrolled from the computation. This standard has six cardinal action as follows (see Fig. 2.)
VIII. CONCLUSIONS

The proliferation of modern electronics systems is already exacting the duration for user input and superintendence systems. Telematics will be requisite to stay the development multitude of user-selectable input attendant and points within the vehicle. As carriage come more complicated they will increasingly confide on telematics and driver notice systems that will come the user interface to both on-board and off-board enlightenment. Government commission and homogenous actions are already composed necessarily for telematics systems. Hands-free mobile phone commission are growth fast due to driver furiousness egress. It is probable that low-end telematics with a harangue user interface and radio system integration will come the elect solutions. ITS will enlarge in adulteration over the next decennary and will increasingly need telematics capabilities. As huge as the self-propelled telematics hardware and benefit opportunities may be, the circuitous benefits effectual from the worth of telematics data may be alike essential. The circuitous telematics benefits soften the locomotive assurance diligence, healthcare providers, general safeness agencies and many other industries. The price savings, price annulment and amended functional efficiencies external the telematics assiduity will be graduated in 15 to 20 years. [7]

Shortest route problems are one of the most cardinal and essential problems in network hypothesis. Many applications have been standard as variants of the shortest route problems. Travelling is part of daily life and nation (particularly in huge cities) confide sorrowfully on common transport. In a metropole with a complex conveyance netting, it is crabbed to choice the most economical course. It is always desirable for drivers to application the most economical course to their destinations.

REFERENCES