A Study of Movement and Speed of a Vehicle by Using Vehicle Tracking Systems Depending upon Location Based Services

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Abstract

In modern arena of working a vital role is being played by technology and backup provided through various organizations. The smoothness in information extraction and information circulation is providing base for fast availability and easy orientation of tools which are saving time in day to day working with least resources. A certain configuration of technological background for tracking a vehicle has developed and utilized during information distribution to various end point for tracing movement and speed of target vehicle. In modern environment of tracking, different Vehicle Tracking systems had been utilized by various organizations for getting efficient and meaningful information to save money and exploiting the resources of technological background during the run of vehicles. The information (Movement and Speed) received through different Vehicle Tracking Systems must be exact with respect to various parameters so that the user should get a satisfaction level for existing services. This paper is an attempt for making comparison between two Vehicle Tracking Systems by considering position and movement of vehicles.

Keywords: *GPS, Vehicle Tracking System, Movement, Position, Speed etc.*

1. Introduction

Handling of data in any system is a crucial aspect when getting a information efficiently and accursedly. For providing information to different users related with vehicle through Vehicle Tracking System, data handling is required and the collection of data from various sources has been done by using a defined processes. The foundation of information provided to users has always been created by using data collected from desired vehicle by using GPS device mounted on source vehicle. This information checked, verified and processed for providing knowledge and evidence about the facts related with fuel, temperature, route and location in a vehicle. The analytical method for such extraction is always monitored by a team of experts and managers. The Vehicle Tracking System has worked for saving time and money of owners in logistics industry from the years which creating an essence for analyzing the data which is going to be used to

maturing the information. In this direction need is data availability and handling should tackled carefully. The assignment is to track closely, data and information so that vast and redundant data and information can be avoided. Now a day's data is flowing in Exabyte's from e-mail to online processing of many applications. In recent years digital spatial data sets have grown with rapid speed. This change is facilitated by GPS and GIS for primary data collection. When the issue is related with tracking of a vehicle, GPS device can produce the related data in desired format. The real working of Vehicle Tracking System is being reflected in Figure 1[2].
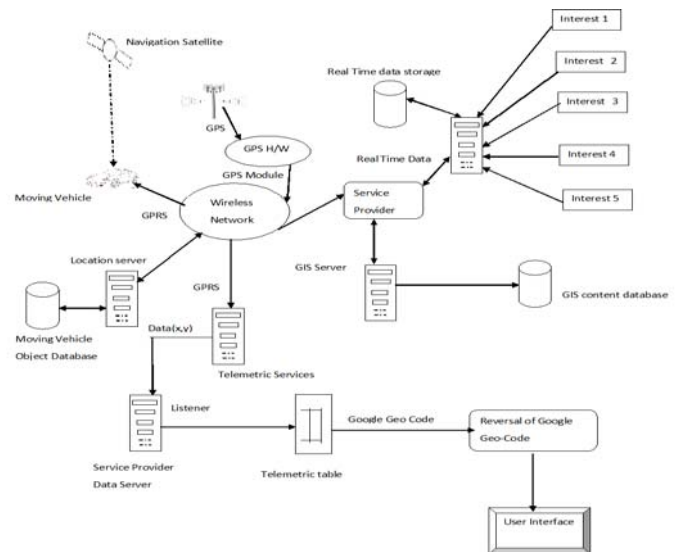

Fig. 1: Real Working Scenario for Vehicle Tracking System [2]

2. Related Works

Performance is a issue related with higher concern of researchers and Grishikashvili [1] was presented an idea for performance evaluation in failure recovery when a system is going to be in implementation phase. For this work all kind of networks are considered by author with

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all kind of dependencies and independencies. Vasileios Baousis [3] was provided a computing frame work for virtual home environment (VHE). In his approach he presented the aspects of real implementation of VHE with a dedicated location aspect. Xinwei Luo [4] was presented an predictive method based on an analytical approach for services which based on location accommodated with mobile multi hop networks. This approach was implemented in MANET with great efficiency. Armando Ferro [5] was contributed in the field of efficiency of network traffic analysis. He was presented a logical model for calculating factors related with performance of network traffic systems. The performance evaluation of network traffic analysis systems has been also done by the author. Tao Han [6] was discussed the role of Web in modern scenario with suggestions for improving the efficiency of related services. The author presented an evaluation model for web and related services. After this idea the web related services performed in optimized manner. C´eline Boutrous [7] was presented an idea related with variant of web services with increasing usage of composite web. The rules and semantics of composite web produced, by using these facts the performance of composite web evaluated. Rossano Gaeta [8] was presented a theory related with peer distributed networks. The strategies of model building and idea of performance evaluation was proposed by author. Through this approach of author many problems related with peer to peer network resolved. T. Wild [9] was studied on trace based transaction inspired simulation. Author mainly was concerned with chip oriented systems. After considering this type of systems, performance has been analyzed. The evaluation of performance for that kind of chip based explored.

Vincent S. Tseng [10] was proposed a algorithm for human prediction when movement is taking place. TMSP was the name of algorithm and by using this algorithm first time the mining of mobile data can be done in location based environment. PD Mzila [11] was proposed a service delivery approach in mobile environment through location based for facilitating commerce related activities. This approach was very helpful for strangers to accommodate themselves in new environment. Nico Deblauwe [12] was proposed an approach for energy efficient algorithm for GPS and GSM Cell-Id positioning the mobile. By this approach many related aspects for users were deployed in location based services. Jinchuan Chen [13] was proposed a approach for improving the efficiency of quarries when a person is searching the services in a locality based on its location. By this approach the result of fired quires optimized up to that extent by which a user can get accurate and relevant information. Yang He [14] was proposed for improving locating aspect when mobility of mobile node is very fast.

He presented an algorithm Mobile Locating Agent (MLA) by which the location of any movement based object can be determined by using location based services. Pieter-Paulus [15] was proposed a system by which the position of person can be identified without using GPS in Location Based services. In this system image search concept is implemented by using the camera of mobile of a person having that time. Nattapong Swangmuang [16] proposed an analytical method for improving the efficiency of positioning techniques in an indoor situation. By this approach the information validity has been improved in indoor position identification. Liping Chen [17] proposed an approach for evaluation and improvement in the performance of Web Services which was based on memory immune network classifier. This approach was a step towards relation of human internal power and web services. Raj Kumar Samanta [18] proposed a mathematical model for evaluation of QoS in NGN cellular wireless networks. This mathematical modeling provided the background for improving the quality of service parameters in modern and future wireless communication. Amjad Osman [19] proposed an solution for improving the prediction time of an moving object in wireless environment without the probable loss of signal strength. He also challenged the fact that nodes are getting accurate services in wireless environment. Eddy Caron [20] presented an approach for solution of network problems related with resource distribution. According him for a complex work more resources are needed and distributed in complete network. This complexity is solved by his recommendations.

Brad McKenna [21] proposed a study of user perception related with usage of location based services. He analyzed the entertainment habits of users and collected the facts related with perception about services they are getting. In his study he used UTAUT model. Govind P Gupta [22] presented an performance evaluation and comparison of Agent based and Non agent based dissemination protocols. His approach helped the network experts providing the simulation of work. Andreas Emrich [23] proposed the work for performance evaluation based on social recommendations. He analyzed different social contributions by location based services and collected the recommendations for improvement. Thang Tran [24] presented a work based on vertical Hand Off related with performance of location based services. He prepared a simulation based framework for evaluating the performance of location based services in coordination with handoff scenario. Christos Anagnostopoulos [25] presented an approach for improvement in performance of LBS by analyzing the group of mobile nodes. With his approach the performance of location based services optimized up to extent. Markus Fiedler [26] proposed the work for quality of location based services when we are

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talking about the network at anywhere, anytime and by any source. His approach helped the experts in improving service strength with movement.

3. Comparision of systems on the bases of accuracy for result (in identification of position)

On the bases of received data from users of Vehicle Tracking System about accuracy in term of finding position through Latitude and Longitude by considering both the systems (G-track, Tracking Genie) the information is being projected. We can compare the performance of both the systems by using line chart generated through SPSS and the result is reflected by Figure 2. The comparison helped us in making views about efficiency in tracking and to identify real facts, which are directly related with performance of vehicle tracking system in term of Latitude and Longitude for finding position.
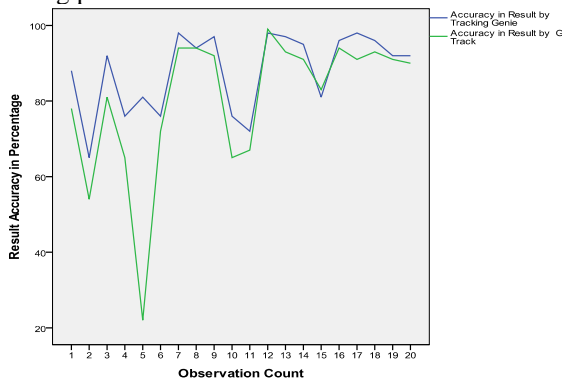

Fig. 2: Comparison of Performance of Vehicle Tracking Systems in Terms of Accuracy Shown in Result

In above graph the percentage of accuracy is being represented by y-axis and the different observation by which the accuracy related facts are collected from users is by x-axis. The volume of accuracy of G-Track and Tracking Genie is shown by two lines which are the parameters of accuracy according users of Vehicle Tracking Systems.

4. Comparision of systems on the bases of accuracy for result (in identification of movement)

On the bases of received data from users of Vehicle Tracking System about accuracy in term of tracing the movement due to speed by considering both the systems(G-track, Tracking Genie) the information is being projected. We can compare the effect of speed on performance of both the systems by using line chart generated through SPSS and the result is reflected by

Figure 3. The comparison helped us for making views about effect of speed on accuracy of result which is tracking a vehicle.
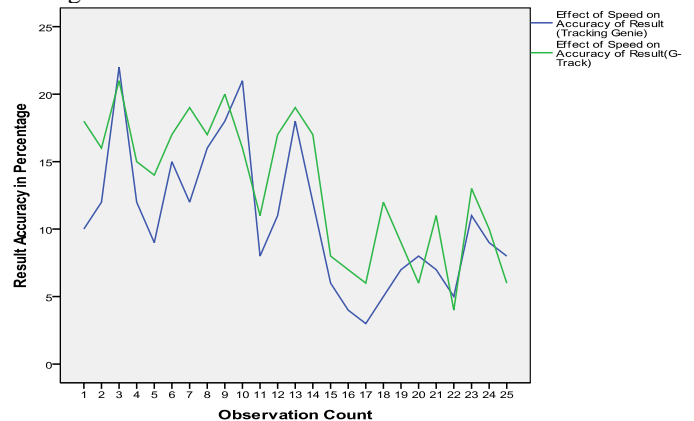

Fig. 3: Comparison of Effect of Speed on Accuracy of Result through Vehicle Tracking Systems

In above Figure 3 the percentage of accuracy is being represented by y-axis and the different observation through which the effect on accuracy of result due to speed is observed by x-axis. The related facts are collected from users. The effect of speed on accuracy of result when tracking a vehicle by using G-Track and Tracking Genie is shown by two lines. These lines are the parameters for discrepancies in accuracy of result in front of users of Vehicle Tracking System.

4. Conclusions

In this paper the working of two Vehicle Tracking Systems is being studied which are utilizing Location Based Services. The reports received from two running tracking environment provided by G-Track and Tracking Genie System (Provided Through ITG Solutions Private Ltd. and Genie Solutions) providing base for study. The overall work giving rise some facts for making comparison between two running tracking environments. After above comparison this is possible to analyze the performance in term of parameters and to use these parameters for improving situation of tracking environment. The analysis done with the results received from two working software scenarios also making a comfortable insight in front of users. Through above analysis we got the fact about the working efficiency of G-Track System which is not as good as Tracking Genie. By above work some performance related issues have been matured in the mind of author which is quite useful for further research in this field.

References

[1] Grishikashvili, R. Pereira, A. Taleb-Bendiab."Performance

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www.IJCSI.org

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Evaluation for Self-Healing Distributed Services", Proceedings of 11th International Conference on Parallel and Distributed Systems (ICPADS), 2281-2285, 2005.

[2] Adil El Bouziri, Azedine BoulMakoul, Robert laurini, "Mobile Object and Real Time Information System Modeling for Urban Environment" Urban and Regional Data Management UDMS, 1-9, 2007.

[3] Vasileios Baousis, Miltiadis Kyriakakos,"Performance Evaluation of a MobiIe Agent-Based VHE Architecture in 3G Networks", 9032-9039, IEEE 2005.

[4] Xinwei Luo, Tracy Camp, William Navidi, "Predective Methods for Location Services in Mobile Ad hoc Network", Proceedings of the 19th IEEE International Parallel and Distributed Processing Symposium, 1530-2075, 2005.

[5] Armando Ferro, Igor Delgado, Alejandro Muñoz, Fidel Liberal, "An Analytical Model for Performance Evaluation of Network Traffic Analysis Systems", Proceedings of the 11th International Conference on Parallel and Distributed Systems, 2081-2084, 2005.

[6] Tao Han, He-qing Guo, Dong Li, and Ying Gao," An Evaluation Model for Web Service", Proceedings of the First International Multi-Symposiums on Computer and Computational Sciences, 2081-2083, 2006.

[7] C´eline Boutrous, Tarek Melliti, Lynda Mokdad, "Performance evaluation for mobile access to composite Web services", Proceedings of the Advanced International Conference on Telecommunications and International Conference on Internet and Web Applications and Services, 2522-2530, 2006.

[8] Rossano Gaeta and Matteo Sereno," Model-based Evaluation of Search Strategies in peer-to-peer Networks", 0054-0059, IEEE 2006.

[9] T. Wild, A. Herkersdorf, R. Ohlendorf, "Performance Evaluation for System-on-Chip Architectures using Trace-based Transaction Level Simulation" IEEE 2006.

[10] Vincent S. Tseng, Eric Hsueh-Chan Lu, Cheng-Hsien Huang,"Mining Temporal Mobile Sequential Patterns in Location-Based Service Environments", 1890-1898, IEEE 2007.

[11] PD Mzila, MO Adigun, SS Xulu, "Service Supplier Infrastructure for Location Based M-Commerce", Second International Conference on Internet Monitoring and Protection,2911-2919, 2007.

[12] Nico Deblauwe, Peter Ruppel,"Combining GPS and GSM Cell-ID positioning for Proactive Location-based Services", IEEE- 2007.

[13] Jinchuan Chen, Reynold Cheng," Efficient Evaluation of Imprecise Location-Dependent Queries", 586-595, IEEE 2007.

[14] Yang He, Yuanxin Ouyang, Yunlu Liu and Zhang Xiong," On Design of Mobile Agent Based Location Service for Geographic Routing", The 4th International Conference on Mobile Ad-hoc and Sensor Networks, 195-202, IEEE 2008.

[15] Pieter-Paulus Vertongen, Dan Witzner Hansen, " Location-based Services using Image Search", IEEE 2008.

[16] Nattapong Swangmuang and Prashant Krishnamurthy," Location Fingerprint Analyses Toward Efficient Indoor Positioning", Sixth Annual IEEE International Conference on Pervasive Computing and Communications, 100-109, IEEE 2008.

[17] Liping Chen ,Weitao Ha, Guojun Zhang, "A Model for Evaluating the Quality of Web Service Based on New Artificial Immune Network Classifier", 2009 International Conference on Information Management, Innovation Management and Industrial Engineering, 362-365, IEEE 2009.

[18] Raj Kumar Samanta, Partha Bhattacharjee, Gautam Sanyal, "Mathematical Modeling for Evaluation of Quality of Service Parameters in Next Generation Cellular Wireless Networks", International Conference on Advances in Computing, Control, and Telecommunication Technologies, 767-771, IEEE 209.

[19] Amjad Osmani, Abolfazl T.Haghighat, Shirin Khezri, "Performance improvement of two scalabe location services in MANET", International Conference on Computational Intelligence and Communication Systems, 172-176, IEEE 2010.

[20] Eddy Caron, Benjamin Depardon and Frédéric Desprez, "Modelization and Performance Evaluation of the DIET Middleware" ,39th International Conference on Parallel Processing, 375-384, IEEE2010.

[21] Brad McKenna, Tuure Tuunanen, Lesley Gardner, "Exploration of Location-Based Services Adoption", Proceedings of the 44th Hawaii International Conference on System Sciences, 1605-1614, IEEE 2011.

[22] Govind P Gupta, Manoj Misra, Kumkum Garg,"Performance Evaluation of Agent and Non-Agent based Data Dissemination Protocols for Wireless Sensor Networks", 123-128, IEEE 2011.

[23] Andreas Emrich, Alexandra Chapko, Dirk Werth and Peter Loos, "Social Recommendations for Location-based Services", IEEE/WIC/ACM International Conferences on Web Intelligence and Intelligent Agent Technology, 287-291, IEEE 2012.

[24] Thang Tran, Maike Kuhnert and Christian Wietfeld, " Performance Evaluation of Feasible and Holistic CSH-MU Handoff Solution for Seamless Emergency Service Provisioning", 000317-000324, IEEE 2012.

[25] Christos Anagnostopoulos, Kostas Kolomvatsos and Stathes Hadjiefthymiades, "Efficient Location Based Services for Groups of Mobile Users", IEEE 14th International Conference on Mobile Data Management, 00006-00015, IEEE 2013.

[26] Markus Fiedler, Katarzyna Wac, "Estimating Performance of Mobile Services from Comparative Output-Input Analysis of End-to-End Throughput", Transction on Mobile Computing, Vol. 12,No.9, 1761-1773, IEEE 2013.

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