Videotron in Intelligent Transportation Systems to Help Smooth Traffic

Amat Damuri, Ridwan, Deny Ariestandy, Arman Syah Putra*, Nurul Aisyah

STMIK Insan Pembangunan, Indonesia
*Corresponding Author**

Abstract: **Providing accurate information is one of the things that is very necessary when on the road, the task is the government and the police in providing information to the public what is happening on the road-ways with accurate information so that people can sort and choose which way they can and which way they can't take, therefore one of them is the use of videotron. A Videotron is one of the information media provided by certain parties on the highway. With this, it can help the public know what happened to the highway in front of it and when did it happen.The method used in this research is by referring to previous studies as the basis for future research. There are manyvideotron methods used to provide traffic information to motorists on the highways, one of which is by running text on the side of the road so that motorists can know and read what is happening in front of them, for example, accidents with this method are very common. Effective but with the new method using videotron it will be much more effective to provide information to the public what is happening on highways.Study will prove that the effectiveness of videotron in providing information to the public, especially information on traffic services on the highways and can provide what happens on the highway in front of it, for example, crime and accidents. Therefore, with information, can find other routes so that no traffic jam on the highway.**

Keywords: **Videotron, Intelligent Transportation Systems, Help Smooth, Road Traffic, Highways.**

I. INTRODUCTION

The evolution of transportation and traffic systems in developing countries today is faced with safety problems, due to the high rate of accidents. Generally they are faced with connectivity, coverage, and network issues. Lack of road infrastructure is the source of many accidents and deaths. For example, otou 2010 states that 1,450 people died in road accidents in this 9 years ago, give examples in 2020/2021 in Cameroon. The emergence of ITSensures good monitoring of activity on the transportation network. By using 3 methodologies, the first is for control point management, the second is for fault detection and distribution and the last is for dynamic route planning, and uses Non-Dominated Sorted Genetic Algorithm II (NSGA-II) for the deployment of each point in order to minimize costs[1].

It is hoped that the development of this communication infrastructure can reduce the rate of accidents that often occur on city border roads in developing countries[2].

The purpose of this research paper is to conduct a systematic analysis of ITSwith Statistical Methods / Analysis. Into account several works since 2008 from various popular digital libraries. It has been found that incorporating various new technologies like agent based computing, cloud computing, VANETetc. ITS becomes very efficient to solve transportation problems[3].

The purpose of this research paper is to develop a communication architecture to provide oversight of inter-city transportation networks in developing countries. By introducing two types of control points: Relay Control Points (RCP) and Maintenance Control Points (MCP) and also designing two multi-purpose models for the deployment of these points. To ensure good coverage, minimize installation costs and place greater emphasis on areas with a high number of accidents. Point distribution was performed using the NSGA-II Non-Dominant II Sorted Genetic Algorithm[4].

The system that is proposed in this research is that there are several examples of integration systems that are connected to smart systems, by connecting to infrastructure and transportation with this protected system, the ITS [5].

In the journal “Scientific and methodological approaches to the development of feasibility studies for intelligent transportation systems” it can be concluded that the initial national standards imposed requirements on the feasibility studies of ITS, including methods for calculating the efficiency of implemented projects and developed cost estimates. This standard is intended to improve the quality of ITS project development. Then a system for controlling commercial proposals submitted by producers and suppliers will be developed. This will make it possible to carry out a proper project evaluation and identify in a timely manner serious losses that could lead to poor operation of the ITS[6].

In this journal, we will discuss a system that will provide temporary data on a smart transportation system. With this system, no anomalies will be proposed for the detection of ITS [7].

In the journal article "Study models for intelligent transportation systems with big data" it can be concluded that data-based modeling and simulation methods are significant research focuses. However, it is still questionable when applying such a method in practice because data-driven modeling sometimes lacks good interpretation and data noise can cause modeling errors. Experimental and analysis of the data results show that data noise can lead to significant errors

in the calibration of the model while it does not appear to have much effect on the simulation results when applying the calibrated model in calculations and simulations [8].

In the case of traffic control vehicles, an RFID solution is not possible because every vehicle has to be involved from the RFID part and the traffic signal is isolated unlike a fully connected signal. In addition, EVs (Emergency Vehicles) may not always be available in an emergency. In such cases there is a possibility of abuse by the driver with unnecessary priority. So the job going forward is to build intelligent, efficient, scalable, flexible and fully connected traffic with very high interconnectivity and interoperability[9].

It can be concluded, ITS will be one of the pioneering technologies that can make a city better, and can make traffic in a city easier to pass.

Machine learning and data driven techniques have long been used to aid adaptive learning in ITS. Actual research is far ahead of real-world application. Because it is difficult to test algorithms, protocols and policies in real time, which are tested on the simulator. Simulations have shown successful results, which may not be the case when deployed in the real world[10].

Population growth due to migration from rural to urban areas has had an impact on transportation flows. In this article, we describe an efficient ITS model that is designed and integrated with a number of sensors and technologies on traffic, such as: traffic jam monitoring, speed limit monitoring, traffic sign violation monitoring, etc. For example, like India, with a dense population, social and economic challenges are problems that prevent ITS from operating efficiently. This article describes the development of the ITS, its implementation methods and strategies [11].

The writing discusses the intersection management system for automatic cars and measures fuel use, vehicle fuel consumption andCO_2 emission levels are carried out in simulations in a virtual world. Although the ITM algorithm is not aware of the actual position of the vehicle, the defined safety area allows the vehicle to cross the intersection without an accident. One of the efficient methods of reducing CO_2emissions and increasing traffic flow is EMITM, which is 50%. With the EMITM algorithm for vehicle communication via wireless IEEE 802.11 cars can automatically communicate with each other to avoid accidents at crossroads [12].

The development of GPS in the future will be better and more accurate, it is necessary to establish a privacy strategy in positioning from the perspective of EU regulations. This general data protection regulatory policy is widely introduced stating that profiling and processing a person's location information may impinge on the personal aspects of a person's movement and location data indirectly. Tracking and monitoring of user vehicle data should also be included in the data regulation policy. However, the definition of private location data should be treated more carefully. In the case of ITS, all positioning systems supported by vehicles should be controlled by the authorities, i.e. military for GPS and so on. To address this issue, the European Telecommunications Institute (ETSI) is actively developing the EN 303 413 standard aimed at addressing the interoperability of such systems [13].

Implementing the use of ITS will greatly affect travelactivities. Information services will remain fundamental to passenger satisfaction, which in turn will support the use of public transportation and reduce the use of private vehicles. This significantly contributes to reducing vehicle pollution. ITS provides a safe and good transportation experience[14].

ITS to improve traffic safety. This allows for an increase in the number of trips within the Colombo Municipal Council area. Colombo Municipal Council's economy will improve through access to a secure transportation system. It also affects the areas of business and governance on social and environmental aspects. The above are factors that are included in CMC's travel information [15].

The purpose of this research paper is to integrate and test VANET on the ITS prototype system. VANET is a generic communication conceptualization that can be applied to ITS that allows the exchange of information between moving vehicles, fixed infrastructure, pedestrians with personal devices, and all other electronic devices that can connect to the VANET environment[16].

The purpose of this research paper is to take an agent-based approach to support ITS SHMinformation that is used to monitor the condition of the bridge through an open source simulator. In particular, this approach seeks to reduce the energy consumption of WSN. This approach includes the use of two types of agents, namely Stationary Agents (SA) and Cellular Agents (CA). Stationary Agent can monitor events associated with sensor nodes during communication, CA is able to travel as well as interact with stationary agents on each node in WSN[17].

II. METHOD

Based on the picture below, we can see that the empirical review method is the method used in this initial research[18]. With this method, all of please kindly name them are used as the basis for the research. Previous research. Therefore, with the literature review, it will be able to find problems [19].

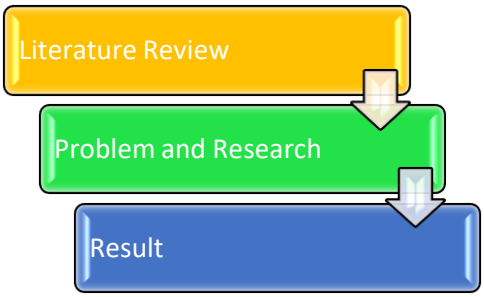

Figure 1. Research Method

III. RESULT AND DISCUSSION

The emergence of intelligent transportation systems ensures good monitoring of activity on the transportation network[20]. Therefore we want to make an innovation from the journal "Control Points Deployment in an Intelligent Transportation System for Monitoring Inter-Urban Network Roadway". Where this journal discusses two types of control points, namely Relay Control Points (RCP) and Treatment Control Points (TrCP), both points are useful for monitoring inter-city transportation routes that are prone to accidents. This journal also usesVANET and RSUwhich are useful for disseminating information for vehicles that have been integrated with VANET data communication technology[21].

The innovation that we want to make is to build a videotron and also install a monitoring camera that is useful for displaying information obtained through TrCP and RSU, the deployment of this videotron installation point is at the vehicle entrance, while the monitoring camera point is placed at the TrCP point.

With the videotron that displays information about inter-city transportation routes, it is hoped that all vehicles, both those that have been integrated with VANET data communication technology or have not been able to know the condition of the path they want to pass and minimize the number of accidents and congestion that occur due to lack of information.

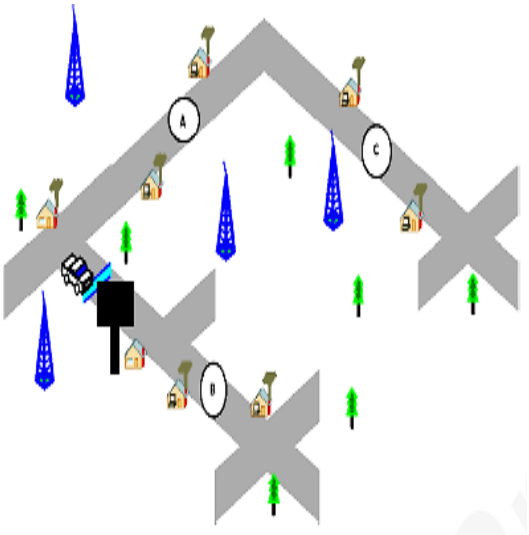

Figure 2.ITS Model

At the inter-city transportation entrance, each vehicle will have its information recorded by the RCP and then it will be sent and processed by the TrCP. If there are problems such as accidents and congestion that occur, VANET will send information about problematic road conditions to the RSU which is then conveyed to other VANET users, while TrCP will display road conditions on Videotron.

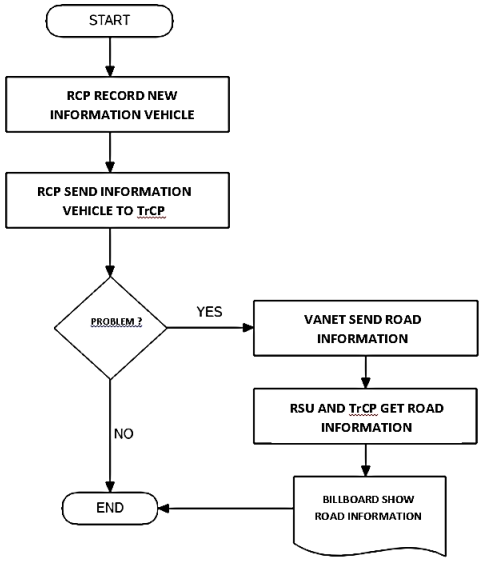

Figure 3. Flow Chart for ITS

Figure 4. ITS with Videotron

The picture above is the infrastructure that we want to build on the inter-city transportation route, where the blue tower is the RSU, the small house is TrCP, the blue line is RCP, and the black box is videotron.

The picture above is a form of videotron. This videotron serves to display information/problems that are happening on inter-city transportation routes to reduce the number of accidents and congestion that occur due to lack of information.

IV. CONCLUSION

At the beginning of this journal research, it is hoped that the design implemented will make it easier for motorists to monitor traffic, reduce gas emissions and monitor traffic conditions through cameras installed at the corner of the intersection. This traffic design also helps traffic users to avoid accidents and if something unexpected happens, immediate action can be taken, this also applies to traffic crimes such as robbery, burglary, or kidnapping of children & adults for illegal / unjustifiable ransomswhich often occur on roadways.

The conclusion drawn is that the analysis for invoking ITS is

well designed, in research using virtualization of traffic conditions in reducing gas emissions, it is proven on paper that it is effective up to 60%, handling traffic such as congestion points at traffic intersections can be handled with several traffic procedures, which has been simulated in the research.

Suggestions for developing this system are that videotrons equipped with cameras can be integrated with AIand detect accidents or burningcars in traffic to immediately contact the police or fire department so that they can be handled immediately and reduce casualties. It is hoped that cameras in traffic can also monitor the movement of crimes recorded on camera and the police can investigate certain cases more thoroughly.

REFERENCES

[1] A. S. Putra, et all ""“Examine Relationship of Soft Skills, Hard Skills, Innovation and Performance: the Mediation Effect of Organizational Le," IJSMS, pp. 27-43, 2020.

[2] A. Damuri, N. Isnain, R. A. Priyatama, Y. I. Chandra and A. S. Putra, "E-Learning Proposal System in Public Secondary School Learning," International Journal of Educational Research & Social Sciences (IJERSC), vol. 2, p. 270–275, 2021.

[3] N. K. Dewi and A. S. Putra, "PerkembanganGamificationdanDampak Game Online terhadapJiwaManusia di Kota Pintar DKI Jakarta," JurnalInformatikaUniversitasPamulang, vol. 5, no. 3, pp. 315-320, 2020.

[4] N. K. Dewi and A. S. Putra, "SISTEM PENUNJANG KEPUTUSAN PENERIMAAN KARYAWAN BARU DENGAN ALGORITMA GREEDY," JurnalVisualika, vol. 6, no. 2, pp. 154-160, 2020.

[5] N. K. Dewi, I. Mulyana, A. S. Putra and F. R. Radita, "Konsep Robot PenjagaToko Di KombinasikanDenganPengendalian Virtual Reality (VR) JarakJauh," IKRA-ITH INFORMATIKA: JurnalKomputerdanInformatika, vol. 5, no. 1, pp. 33-38, 2020.

[6] N. K. Dewi and A. S. Putra, "Decision Support System for Head of Warehouse Selection Recommendation Using Analytic Hierarchy Process (AHP) Method," Prosiding International Conference of UniversitasPekalongan, pp. 1-12, 2021.

[7] N. K. Dewi and A. S. Putra, "LAW ENFORCEMENT IN SMART TRANSPORTATION SYSTEMS ON HIGHWAY," Proceedings International Conference onEducation of Suryakancana 2021, pp. 321-326, 2021.

[8] N. K. Dewi and A. S. Putra, "Prosiding International Conference of UniversitasPekalongan," Prosiding International Conference on Education of Suryakancana 2021 (ICONNECTS 2021), pp. 321-326, 2021.

[9] N. K. Dewi, . B. H. Irawan, E. Fitry and A. S. Putra, "KonsepAplikasi E-DakwahUntukGenerasiMilenial Jakarta," IKRA-ITH INFORMATIKA: JurnalKomputerdanInformatika, vol. 5, no. 2, pp. 26-33, 2020.

[10] B. Givan, . R. Wirawan, D. Andriawan, N. Aisyah, A. and A. S. Putra, "Effect of Ease And Trustworthiness To Use E-Commerce for Purchasing Goods Online," International Journal of Educational Research & Social Sciences (IJERSC), vol. 2, no. 2, p. 277–282, 2021.

[11] M. S. Hartawan, A. S. Putra and A. Muktiono, "Smart City Concept for Integrated Citizen Information Smart Card or ICISC in DKI Jakarta," International Journal of Science, Technology & Management, pp. 364-370, 2020.

[12] A. S. Putra, "Analisa Dan PerancanganSistem Tata KelolaParkirCerdas Di Kota Pintar Jakarta," IKRA-ITH INFORMATIKA: JurnalKomputerdanInformatika, vol. 4, no. 3, pp. 13-21, 2020.

[13] A. S. Putra and N. K. Dewi, "PerkembanganGamificationdanDampak Game Online terhadapJiwaManusia di Kota Pintar DKI Jakarta," JurnalInformatikaUniversitasPamulang, vol. 5, no. 3, pp. 315-320, 2020.

[14] A. S. Putra, H. Waruwu, M. Asbari, D. Novitasari and A. Purwanto, "Leadership in the Innovation Era: Transactional or Transformational Style?," INTERNATIONAL JOURNAL OF SOCIAL AND MANAGEMENT STUDIES (IJOSMAS), vol. 1, no. 1, pp. 8-17, 2021.

[15] A. S. Putra and . R. R. Fatrilia, "ParadigmaBelajarMengajiSecara Online PadaMasa Pandemic Coronavirus Disease 2019 (Covid-19)," MATAAZIR: JurnalAdministrasidanManajemenPendidikan, pp. 49-61, 2020.

[16] A. S. Putra and L. H. S. W. Harco , "Intelligent Traffic Monitoring System (ITMS) for Smart City Based on IoT Monitoring," Indonesian Association for Pattern Recognition International Conference (INAPR) IEEE, pp. 161-165, 2018.

[17] A. S. Putra, L. H. S. W. Harco , S. A. Bahtiar , T. Agung , . S. Wayan and H. K. Chu-, "Gamification in the e-Learning Process for children with Attention Deficit Hyperactivity Disorder (ADHD)," Indonesian Association for Pattern Recognition International Conference (INAPR) IEEE, pp. 182-185, 2018.

[18] A. S. Putra, L. H. S. W. Harco , L. G. Ford , . S. Benfano and A. Edi , "A Proposed surveillance model in an Intelligent Transportation System (ITS)," Indonesian Association for Pattern Recognition International Conference (INAPR) IEEE, pp. 156-160, 2018.

[19] I. Ramadhan, A. Kurniawan and A. S. Putra, "PenentuanPolaPenindakanPelanggaranLaluLintas di DKI Jakarta MenggunakanMetode Analytic Network Process (ANP)," IKRA-ITH INFORMATIKA: JurnalKomputerdanInformatika, vol. 5, no. 1, pp. 51-57, 2020.

[20] V. H. Valentino, H. S. Setiawan, M. T. Habibie, R. Ningsih, D. Katarina and A. S. Putra, "Online And Offline Learning ComparisonIn The New Normal Era," International Journal of Educational Research & Social Sciences (IJERSC), vol. 2, no. 2, p. 449–455, 2021.

[21] V. Valentino, H. S. Setiawan, . A. Saputra, Y. Haryanto and A. S. Putra, "Decision Support System for Thesis Session Pass Recommendation Using AHP (Analytic Hierarchy Process) Method," Journal International Journal of Educational Research & Social Sciences, pp. 215-221, 2021.