SMART SIGN CONNECTIVITY FOR BETTER ROAD SAFETY

TEAM ID : IBM-Project-38206-1660374751

TEAM LEADER : GAUTHAM PRABHAKAR J - 910619104020

TEAM MEMBERS : DANIEL AMIRTHARAJ P - 910619104013;

ASHIK ROSHAN I - 910619104009;

ABISHEK A G - 910619104003.

DEPARTMENT : COMPUTER SCINECE AND ENGINEERING.

COLLEGE NAME : KLN COLLEGE OF ENGINEERING.

LITERATURE SURVEY

A literature survey or a literature review is that section which shows the various analyses and research made in the field of your interest and the results already published, taking into account the various parameters of the project and the extent of the project**.**

The following papers are studied in the following survey:

[1] "The Role of Blockchain, AI and IoT for Smart Road Traffic Management System" by Ashish Sharma ; Yogesh Awasthi ; Sunil Kumar at (2020 IEEE).

Nowadays vehicles are increasing on the road. Due to this, it is a challenge for society to manage traffic jams and road accidents all over the world. Artificial Intelligence (AI) such as Machine Learning (ML) algorithms are very helpful to improve the

performance of the overall road safety management system. AI is used for many real-world applications to make any system be a smart system. The Smart Road Traffic Management System (SRTMS) easily recognizes the influence occurs for random changes on road safety. The SRTMS detects the unsafe driving patterns as well as convey the information to the respective authorities. The Internet of Things (IoT) is a boon technology to observe human activities in real-time. IoT devices or nodes are composed of sensors that are commonly utilized to identify and reply to electrical and other signals. Currently, Blockchain (BC) is the most trending technology to automate transactions, which means sharing or exchange of information between the IoT devices or nodes. BC technology facilitates for sharing of information on the network is decentralized, secure, persistent, anonymity, suitability and trustworthy manner. With consensus algorithms and smart contracts, Blockchain holds to manage communication among nodes without the involvement of a third-party or intermediary body. Simultaneously, AI has the ability to offer intelligent and decision-making machines similar to human beings' minds. This paper proposes the SRTMS model for solving the road accident, traffic jam and disseminate the information to all stakeholders. This proposed model is a combination of most trending technologies such as AI, BC, and IoT.Keywords— Machine Learning (ML), Blockchain (BC), Consensus Algorithms, Smart Contract, Internet of Things (IoT).

[2]"Communication system for Intelligent Road Signs network" by Janusz Gozdecki ; Krzysztof Łoziak ; Andrzej Dziech ; Wojciech Chmiel ; Joanna Kwiecień ; Jan Derkacz ; Piotr Kadłuczka at (2019 IEEE).

The way of providing the end user with an accurate data regarding the current road conditions is one of the very important components in the area of Intelligent Transportation Systems (ITS). In such cases one of the possibilities is to display the adaptive content on a dedicated road sign. The most important issue in the process of building the trust between the road signalling infrastructure and the end user is the information significance and its value. The ongoing NCBiR project - InZnak - aims to introduce a new type of the road signalling subsystem which relies on intelligent road signs equipped with variety of sensors and adaptive led displays. Sensors feed the autonomous algorithms with data necessary to take decisions on

how to react to current road conditions. The proposed system typically consists of a few road signs communicating with each other and exchanging measured data: weather conditions, road surface condition, traffic volume, avg. vehicles speed, detected road events, etc. On the basis of the information exchanged between road signs, each of them runs the autonomous algorithm to process that data and computes the current status of road section driving conditions. The InZnak project focuses on the problem of the traffic control using intelligent autonomous road signs. The process of the speed limit determination is often complicated and in many cases it is defined by numerous legal standards. In general, speed determination should take into account not only the technical aspect, but also social and legal aspects, which makes this process especially difficult. This paper presents the InZnak communication system architecture with the deployed prototype and its current status of integration. Keywords—intelligent road sign, traffic moderation, intelligent transport system, ITS communications.

[3] "J. Kotus, A. Czyżewski, Counting and tracking vehicles using acoustic vector sensors", 176th Meeting of the Acoustical Society of America and 2018 Acoustics Week in Canada, Victoria, Canada.

We show how to count vehicles and determine their direction of travel using an acoustic vector sensor. Assumptions of how to use the spatial distribution of acoustic intensity determined with the help of the integrated 3D intensity probe are discussed. An intensity probe developed by the authors was used in the experiments. The algorithm's capabilities are presented in relation to the noise characteristics of moving vehicles. Algorithm optimization is based on measurements of the sound intensity emitted by the vehicle under controlled conditions. For this purpose, a test setup was set up with measuring devices installed along roads with varying traffic. Reference data on the number of vehicles and traffic direction were generated using recorded video and a reference traffic analyzer using lidar technology. It has been shown that the developed acoustic method can contribute to improving the effectiveness of current vehicle counting systems with inductive loops or Doppler radars. [Project funded by the Polish National Center for Research and Development (NCBR) from the European

Regional Development Fund within the operational program Innovative Economy Number POIR.04.01.04-00-0089/16 "INZNAK – Intelligent Road Signs..." .

[4] "An IoT Architecture for Assessing Road Safety in Smart Cities" by Abd-Elhamid M. Taha ; Published at 19 November 2018.

The Safe System (SS) approach to road safety emphasizes safety-by-design through ensuring safe vehicles, road networks, and roadusers. With a strong motivation from the World Health Organization (WHO), this approach is increasingly adopted worldwide.Considerations in SS, however, are made for the medium-to-long term. Our interest in this work is to complement the approachwith a short-to-medium term dynamic assessment of road safety. Toward this end, we introduce a novel, cost-efective Internetof Tings (IoT) architecture that facilitates the realization of a robust and dynamic computational core in assessing the safety of aroad network and its elements. In doing so, we introduce a new, meaningful, and scalable metric for assessing road safety. We alsoshowcase the use of machine learning in the design of the metric computation core through a novel application of Hidden MarkovModels (HMMs). Finally, the impact of the proposed architecture is demonstrated through an application to safety-based route planning.