



## Artificial Intelligence Based Accident Detection and Alert System

M. Sumithra<sup>1,\*</sup>, B. Buvaneswari<sup>1</sup>, Sangeetha, Shalini<sup>1</sup>, Sundareswari<sup>1</sup>, Vishnu Priya<sup>1</sup>

<sup>1</sup>Department of Information Technology, Panimalar Engineering College, Chennai, India

Emails: [sumithram.id@gmail.com](mailto:sumithram.id@gmail.com), [buvanraj77@gamil.com](mailto:buvanraj77@gamil.com), [sangeethsarsha26@gmail.com](mailto:sangeethsarsha26@gmail.com), [selvi01051977@gmail.com](mailto:selvi01051977@gmail.com), [sundareswari2307@gmail.com](mailto:sundareswari2307@gmail.com), [priyanarayana2002@gmail.com](mailto:priyanarayana2002@gmail.com)

### Abstract

Lost time is never found again is a great sounding slogan which signifies that how every single moment is valuable for a victim striving for life in an road accident. So there is a need for right medical care at the right time. The goal of our system is to detect an accident and rescue the victim as early as possible. The system uses GPS map camera with artificial intelligence to detect the accident and an android application in which the public, police and the hospitals can connect and collaborate with each other in a best possible way in case of an emergency or accident thereby reducing the number of deaths caused by accidents.

**Keywords:** Accident detection; Artificial Intelligence; GPS camera; Android application

### 1. Introduction

India recorded 4,86,476 cases of road accidents during 2021 in which 1,37,572 people died due to delay caused in providing medical care. In this modern era it is highly impossible to stop accidents completely until every individual follows the traffic rules and understands their own responsibilities. But at least we can take a step towards reducing the number of deaths due to lack of immediate medical care. And this can be achieved by our system.

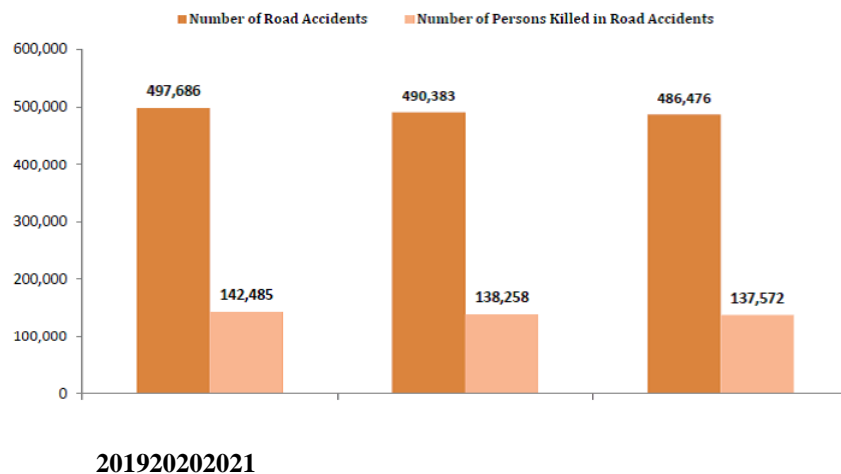


Figure 1: Number of Road Accidents and Deaths from (2019-2021)

When an accident occurs the camera detects that an accident has occurred and identifies the vehicle number with the help of AI and passes the information such as location of accident, date, time and vehicle number to the android application. The application alerts or notifies the nearby hospitals, police control room and blood banks. The victim is recognized by using the vehicle number and his details are retrieved from the app which is then used to contact the relatives of the victim and the victim's blood group is made available in advance from the blood bank to avoid further delays, which is an added advantage here. Such a system can help reduce the loss of lives.

## 2. Literature Review

Table1: Various list of frameworks for Accident Detection

TITLE & AUTHOR	YEAR	TECHNIQUE	FINDINGS
<b>A novel approach for road accident detection using DETR algorithm.</b> Aparajith Srinivasan, Anirudh Srikanth, Haresh Indrajit, Venkateswaran Narasimhan.	2020	DETR Algorithm	Uses CCTV cameras to detect accidents. The drawback is difficulty in localizing diminished objects.
<b>A deep learning based accident detection system.</b> Gokul Rajesh, Amitha Rosy Benny, Harikrishnanan A, James Jacob Abraham and Nithin Prince John.	2020	Deep Learning	Uses convolution neural networks for detecting accidents.
<b>Accident detection from dashboard camera video.</b> Dr.Earnest Paul Ijjina, Mr.Sanjay Kumar Sharma.	2019	Computer Vision based	Detecting accidents from dashboard camera video.
<b>Cloud based intelligent traffic system to implement traffic rules violation detection and accident detection units.</b> Siddharth Tripathi, Uthsav Shetty, Asif Hasnain, Rohini Halikar.	2019	Cloud based	Accelerometer and force-resistive sensors are used to detect.

### 3. Proposed System

This system mainly comprises of a camera with a built-in GPS in it and an android application. The purpose of the camera is to detect the accidents accurately and the app plays the role of conveying information to the concerned people.

- **Camera**

The camera used in this system is a GPS camera which automatically pastes the location, date and time on the pictures or video taken. Artificial Intelligence is the key concept used by these cameras to detect whether an accident has occurred or not. If the camera finds that it is an accident then it retrieves the vehicle number involved in that accident and sends the information to the application either in the form of a text message or as pictures.

- **Application**

This app has been designed in such a way that the public , hospitals and the blood banks can interact with each other and work together for solving a problem. This app has various sections one for public and the remaining for hospitals, police and the blood banks. The user has to register himself in the application with his name, contact number, blood group, vehicle number and relatives contact number. The vehicle number is useful for identifying each user uniquely. After receiving the accident alert from the camera, the app sends the information to the nearby hospital, police control room and the blood banks. This way we can eliminate the number of deaths caused due to road accidents.

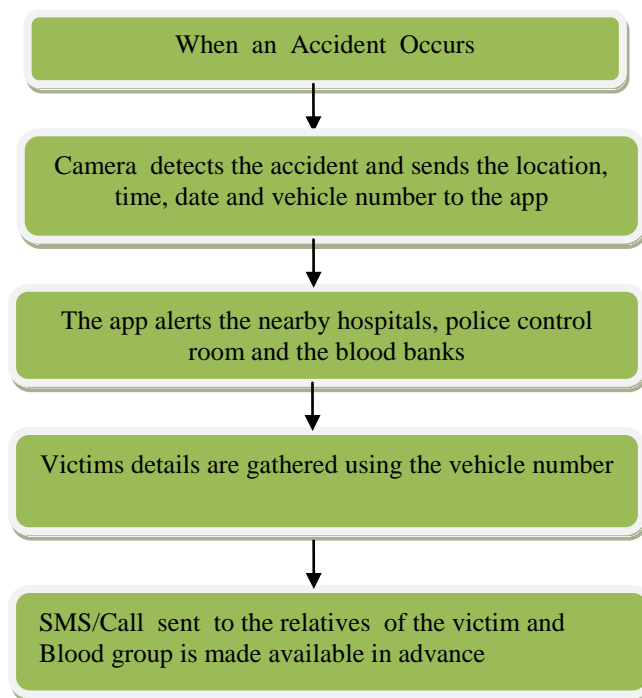


Figure 3:Steps involved in the proposed approach

### 4. Conclusion

The proposed system is reliable and cost efficient since we have minimized the use of sensors and installation difficulties. The camera used in our system can work well both during day and night time irrespective of the weather conditions. Thus the system can save a number of people from death as it eliminates the delays in providing medical attention to the victim. In future, the system can be enhanced further to become more efficient and effective.

## 5. Acknowledgment

The authors would like to thank Prof. Sumithra M and members of PECTEAM for their valuable guidance and assistance with the paper presentation.

## References

- [1] Mr.Sanjay Kumar Sharma, Dr.Earrest Paul Ijina, “Accident detection from dashboard camera video”, in IEEE, no-45670, 10th ICCNT July 2019.
- [2] Siddharth Tripathi, Uthsav Shetty, Asif Hasnain, Rohini Hallikar, “Cloud based traffic system to implement traffic rules violation detection and accident detection units”, IEEE Xplore, 2019.
- [3] Sanjay Rana, Shounak Sengupta, Mahamuda Sultaner, “ Prototype proposal for quick accident detection and response system”, IEEE Xplore, 2020.
- [4] Aparjith Srinivasan, Anirudh Srikanth, Harish Indrajith, Venkateshwaran Narashiman, “ A Novel approach for road accident detection using DETR algorithm”, IEEE on Dec 2021.
- [5] M. Sumithra and Dr. S. Malathi, ” Modified Global Flower Pollination Algorithm-based image fusion for medical diagnosis using computed tomography and magnetic resonance imaging”, International Journal of Imaging Systems and Technology, Vol. 31, Issue No.1, pp. 223-235, 2021
- [6] B.Buvanswari and T.Kalpalatha Reddy, “A Review of EEG Based Human Facial Expression Recognition Systems in Cognitive Sciences” International Conference on Energy, Communication, Data analytics and Soft-Computing (ICECDS), CFP17M55-PRJ:978-1-5386-1886-8”, August 2017.
- [7] M. Sumithra and Dr. S. Malathi, “3D DenseNet Model with Back Propagation for Brain Tumor Segmentation”, International Journal Of Current Research and Review, Vol. 13, Issue 12, 2021.
- [8] K. Sridharan , and Dr. M. Chitra "SBPE: A paradigm Approach for proficient Information Retrieval , Jokull Journal" , Vol 63, No. 7; Jul 2013
- [9] M. Sumithra and Dr. S. Malathi, “Segmentation Of Different Modalities Using Fuzzy K-Means And Wavelet ROI”, International Journal Of Scientific & Technology Research, Vol. 8, Issue 11, pp. 996-1002, November 2019.
- [10] B.Buvaneswari and Dr.T. Kalpalatha Reddy, “EEG signal classification using soft computing techniques for brain disease diagnosis”, Journal of International Pharmaceutical Research , ISSN : 1674-0440, Vol.46, No.1, Pp.525-528, 2019.
- [11] M. Sumithra and S. Malathi, “ A Survey of Brain Tumor Segmentation Methods with Different Image Modalities”, International Journal of Computer Science Trends and Technology (IJCT) – Vol. 5 Issue 2, Mar – Apr 2017
- [12] B.Buvaneswari and Dr.T. Kalpalatha Reddy, “High Performance Hybrid Cognitive Framework for Bio-Facial Signal Fusion Processing for the Disease Diagnosis”, Measurement, ISSN: 0263-2241, Vol. 140, Pp.89-99, 2019.
- [13] M. Sumithra and Dr. S. Malathi, “A Brief Survey on Multi Modalities Fusion”, Lecture Notes on Data Engineering and Communications Technologies, Springer, 35, pp. 1031-1041, 2020.
- [14] K. Sridharan , and Dr. M. Chitra "Web Based Agent And Assertion Passive Grading For Information Retrieval", ARPN Journal of Engineering and Applied Sciences, VOL. 10, NO. 16, September 2015 pp:7043-7048
- [15] M. Sumithra and S. Malathi, “A survey on Medical Image Segmentation Methods with Different Modalities”, International Journal of Engineering Research and Technology (IJERT) – Vol. 6 Issue 2, Mar 2018.
- [16] B.Buvaneswari and Dr.T. Kalpalatha Reddy, “ELSA- A Novel Technique to Predict Parkinson's Disease in Bio-Facial”, International Journal of Advanced Trends in Computer Science and Engineering, ISSN 2278-3091, Vol.8, No.1, Pp. 12-17, 2019
- [17] K. Sridharan , and Dr. M. Chitra , Proficient Information Retrieval Using Trust Based Search On Expert And Knowledge Users Query Formulation System, Australian Journal of Basic and Applied Sciences, 9(23) July 2015, Pages: 755-765.
- [18] B.Buvaneswari and Dr.T. Kalpalatha Reddy, “ACPT- An Intelligent Methodology for Disease Diagnosis”,

- Journal of Advanced Research in Dynamical and Control Systems, ISSN : 0974-5572,Vol.11,No.4,PP.2187-2194,2019.
- [19] Sumithra, M., Shruthi, S., Ram, S., Swathi, S., Deepika, T., "MRI image classification of brain tumor using deep neural network and deployment using web framework", *Advances in Parallel Computing*, 2021, 38, pp. 614–617.
- [20] K. Sridharan , and Dr. M. Chitra "RSSE: A Paradigm for Proficient Information Retrieval using Semantic Web" , *Life Science Journal* 2013;10(7s), pp: 418-425.
- [21] P. Kavitha , R. Subha Shini , R. Priya, "An Implementation Of Statistical Feature Algorithms For The Detection Of Brain Tumor", *Journal of Cognitive Human-Computer Interaction*, 2021, DOI: <https://doi.org/10.54216/JCHCI.010202>.
- [22] Sonia Jenifer Rayen, "Survey On Smart Cane For Visually Impaired Using IOT", *Journal of Cognitive Human-Computer Interaction*, 2021, DOI: <https://doi.org/10.54216/JCHCI.010205>.
- [23] Ajith Krishna R , Ankit Kumar , Vijay K, " An Automated Optimize Utilization of Water and Crop Monitoring in Agriculture Using IoT", *Journal of Cognitive Human-Computer Interaction*, 2021, <https://doi.org/10.54216/JCHCI.010105>.
- [24] Ashok Kumar M , Abirami A , Sindhu P , Ashok Kumar V D , Rani V, " Modern Medical Innovation on the Preferred Information about the Medicine using AI Technique", *Journal of Cognitive Human-Computer Interaction*, 2021, <https://doi.org/10.54216/JCHCI.010102>.
- [25] Mrs. K. Kiruthika , Ms. S. Gayathri , Ms. R. Hemalatha , Ms. P. Menaga, "Design and Development of Mobile Healthcare Application for “Ayurvedic” based Clinical Documents", *Journal of Cognitive Human-Computer Interaction*, 2021, <https://doi.org/10.54216/JCHCI.010103>.
- [26] Vijay K, " Collaborating The Textual Reviews Of The Merchandise and Foretelling The Rating Supported Social Sentiment", *Journal of Cognitive Human-Computer Interaction*, 2021, DOI: <https://doi.org/10.54216/JCHCI.010203>.