(12) PATENT APPLICATION PUBLICATION

(21) Application No.202341008088 A

(19) INDIA

(22) Date of filing of Application :08/02/2023

(43) Publication Date : 17/02/2023

(54) Title of the invention : IoT-driven design system using machine learning estimates autonomous vehicle states based on projected vehicle behavior

(51) International classification	:B60W0050000000, G01S0013860000, B60W0030140000, G01S0019470000, B60W0040090000
(86) International Application No Filing Date	:PCT// / :01/01/1900
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

(71)**Name of Applicant :**

1)Dr. Pon Harshavardhanan, VIT Bhopal University

Address of Applicant :Associate Professor, School of Computing Science and Engineering, VIT Bhopal University, Kotri Kalan, Ashta, Near, Indore Road, Bhopal, Madhya Pradesh 466114 Bhopal ---------- ----------

2)Dr.I.Sudha, Saveetha School of Engineering, (SIMATS)

3)Dr V Sheeja Kumari, Saveetha School of Engineering, (SIMATS)

4)Mrs.A Sangeerani Devi, Sri Sairam Engineering College

5)Dr.S.Sivakumar Lakshmi Bangaru Arts and Science College

6)Dr.S.Premkumar, Galgotias University

7)Mrs A.Vineela, GMR Institute of Technology

8)Dr. C.Rohith Bhat, Saveetha School of Engineering, (SIMATS)

9)Dr.M.Ayyadurai, SRM Institute of Science and Technology,Ramapuram

10)Mrs.Soumya.T.R, Prathyusha Engineering College

Name of Applicant : NA

Address of Applicant : NA

(72)**Name of Inventor :**

1)Dr. Pon Harshavardhanan, VIT Bhopal University
Address of Applicant :Associate Professor, School of Computing Science and Engineering, VIT Bhopal University, Kotri Kalan, Ashta, Near, Indore Road, Bhopal, Madhya Pradesh 466114 Bhopal ---------- ----------

2)Dr.I.Sudha, Saveetha School of Engineering, (SIMATS)
Address of Applicant :Professor, Department of CSE, Saveetha School of Engineering, SIMATS, Chennai Chennai ---------- ----------

3)Dr V Sheeja Kumari, Saveetha School of Engineering, (SIMATS)
Address of Applicant :Professor, Department of Computational Intelligence, SIMATS School of Engineering, SIMATS, Chennai Chennai ---------- ----------

4)Mrs.A Sangeerani Devi, Sri Sairam Engineering College
Address of Applicant :Associate Professor, Department of Computer Science and Engineering Sri Sairam Engineering College, Sai Leo Nagar, West Tambaram, Chennai – 600 044. Tamil Nadu. India Chennai ---------- ----------

5)Dr.S.Sivakumar Lakshmi Bangaru Arts and Science College
Address of Applicant :Assistant Professor, Department of Computer Applications, Lakshmi Bangaru Arts and Science College, Melmaruvathur, Chengalpet District. Tamil Nadu– 603 319 Melmaruvathur ---------- ----------

6)Dr.S.Premkumar, Galgotias University
Address of Applicant :Assistant Professor, School of Computing Science and Engineering, Department of Computer Science and Engineering, Galgotias University, Greater Noida, Uttar Pradesh Greater Noida ---------- ----------

7)Mrs A.Vineela, GMR Institute of Technology
Address of Applicant :Assistant Professor, Department of Computer Science and Engineering GMR Institute of Technology, Rajam, Andhra Pradesh, India- 532127 Rajam ---------- ----------

8)Dr. C.Rohith Bhat, Saveetha School of Engineering, (SIMATS)
Address of Applicant :Professor, Institute of Computer Science and Engineering, Saveetha School of Engineering, (SIMATS), Chennai Chennai ---------- ----------

9)Dr.M.Ayyadurai, SRM Institute of Science and Technology,Ramapuram
Address of Applicant :Assistant Professor, Department of CSE, SRM Institute of Science and Technology,Ramapuram Chennai -89 Chennai ---------- ----------

10)Mrs.Soumya.T.R, Prathyusha Engineering College
Address of Applicant :Assistant Professor, Prathyusha Engineering College, Aranvoyalkuppam, Poonaamallee-Tiruvallur Road, Thiruvallur, Tamil Nadu 602025 Chennai ---------- ----------

(57) Abstract :

Through the use of electronic control unit identification analysis and data interpretation, we describe a method for automatically extracting proprietary in-vehicle data utilizing sensor data linked with the required information. As a first step, the suggested system uses an inertial measurement unit and global positioning system readings to ascertain the current driving situation of the vehicle via threshold, random forest, and long short-term memory-based algorithms. Improvements in vehicle technology have led to the installation of sensors in automobiles for retrieving standard information, such as engine speed and vehicle speed, from the onboard controller area network (CAN) system. However, it can be challenging to extract confidential data from CAN frames, such as the brake and steering functions that are essential to studying driver behavior. Next, the system uses the estimation to divide CAN frames from within the car and then uses our scoring method to rank each segment in order to select promising prospects based on a comparison between their estimated and actual distances. An estimating method is coupled to a nonlinear model-predictive control (NMPC) system, which is in charge of vehicle control. We tested the suggested method in a city environment with actual vehicles. The performance evaluation shows that the provided methods are effective at predicting driving conditions, indicating that they can be used for the autonomous extraction of confidential information stored in the car.

No. of Pages : 11 No. of Claims : 3