

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202341007193 A

(19) INDIA

(22) Date of filing of Application :04/02/2023

(43) Publication Date : 10/02/2023

(54) Title of the invention : Personalized Driver Behavior Analysis and Alert Message Dissemination System Design Using Cloud Environment

(51) International classification :G08G0001010000, G06K0009620000, B60W0040090000, B60W0050140000, G06Q0040080000

(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)Ms.Suniti Purbey, GMR Institute of Technology
Address of Applicant :Assistant Professor, Department of CSE, GMR Institute of Technology, Rajam, Andhra Pradesh, India-532127 Rajam ---

2)Dr. Saurabh Saoji, Nutan Maharashtra Institute of Engineering & Technology

3)Dr. Brijendra Krishna Singh, Sharda University

4)Ms.Shweta P Palaskar, SIPNA College of Engineering and Technology

5)Mr.Ashutosh Kumar Choudhary, GMR Institute of Technology

Name of Applicant : NA
Address of Applicant : NA

(72)Name of Inventor :

1)Ms.Suniti Purbey, GMR Institute of Technology
Address of Applicant :Assistant Professor, Department of CSE, GMR Institute of Technology, Rajam, Andhra Pradesh, India-532127 Rajam ---

2)Dr. Saurabh Saoji, Nutan Maharashtra Institute of Engineering & Technology
Address of Applicant :Associate Professor, Head of Dept. of Computer Engineering, Nutan Maharashtra Institute of Engineering & Technology, Talegaon, Pune, Maharashtra, India Talegaon -----

3)Dr. Brijendra Krishna Singh, Sharda University
Address of Applicant :Professor, Department of Mathematics, Sharda University, Greater Noida, India Greater Noida -----

4)Ms.Shweta P Palaskar, SIPNA College of Engineering and Technology
Address of Applicant :Assistant Professor, Department of IT, SIPNA College of Engineering and Technology, Amravati, Maharashtra, India Amravati -----

5)Mr.Ashutosh Kumar Choudhary, GMR Institute of Technology
Address of Applicant :Assistant Professor, Department of IT, GMR Institute of Technology, Rajam, Andhra Pradesh, India- 532127 Rajam ---

(57) Abstract :

Extracting the vehicle trajectory from video monitoring is vital for identifying dangerous driving behavior and ensuring the safety of highway traffic. Using a vehicle's trajectory data consistently to detect dangerous driving is currently impossible. This endeavor seeks to create a detection system that can use data collected from road scenes to identify potentially risky driving behavior. The core components of this algorithm are the identification of potentially hazardous drivers, the extraction of relevant driving behaviors, and the creation of a recognition model for unsafe driving. This idea begins by calculating the vehicle's risk index in connection to five distinct unsafe driving behaviors: forceful lane changes, rapid acceleration/deceleration, excessive lateral movement, and unsafe following. After applying numerous methods to perform anomaly detection on the drivers' risk indicators, such as K-means clustering, local factor anomaly algorithm, isolation forest, OneClassSVM, and CNN, we recommend the most effective method for identifying dangerous drivers. The characteristics of the driver's behavior are then calculated using the Fourier transform of the vehicles' velocities and accelerations. This research takes into account the imbalanced nature of the analyzed dataset, which contains just a small percentage of problematic drivers, and explores numerous unbalanced classification approaches to enhance the performance of recognizing unsafe driving behavior. Results show that unsafe driving behavior may be detected using the OneClassSVM detection method. The improved Xgboost algorithm does well with the highly imbalanced data of risky drivers.

No. of Pages : 10 No. of Claims : 3