Drowsiness Detection Using IoT and Facial Expression

R. N. Ashlin Deepa, DontiReddy Sai Rakesh Reddy, K. Milind, Y. Vijayalata, and Kamishetty Rahul

Abstract In India, approximately 500,000 people are losing lives due to road accidents every year. With the rapid urbanization and development of big cities and towns, the graph of accidents is steadily increasing. Accidents due to driving after consuming alcohol and falling asleep behind the wheel have a share of about 8%. We have come up with a prototype to provide a solution to these crucial problems. This phenomenal rise in road accidents in cities is a matter of great concern and alarm to all of us. Drivers being drunk, sleeping, skipping signals, wrong route driving, and whatnot are the reasons for these frequent accidents. These recurring accidents have caused the citizens to fear driving around. They feel very insecure and vulnerable when stepping into their vehicles to travel in and around the city. So, we have designed a solution to detect drowsiness while driving. We are using image processing with the help of a camera to extract facial landmarks of the eye and image processing techniques that draw out the facial landmarks for detecting whether the driver is drowsy or awake. Additionally, we have planted an Arduino board with an MQ3 sensor to detect alcohol from the drivers' breath to check drivers' condition.

Keywords ATmega328 processor · MQ3 alcohol sensor · Arduino board · Facial recognition · Alcohol detection · Computer vision (CV) · Image processing · Facial landmark detection (FLD) · Drivers breath

R. N. Ashlin Deepa (✉) · D. Sai Rakesh Reddy · K. Milind · Y. Vijayalata · K. Rahul
Department of Computer Science and Engineering, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India
e-mail: deepa.ashlin@gmail.com

Y. Vijayalata
e-mail: vijaya@ieee.org

Y. Vijayalata
Department of Computer Science and Engineering, KG Reddy College of Engineering & Technology, Hyderabad, India

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