

# FATIGUE MONITORING USING ARDUINO

20MIS1177 – ENUGURU AKSHAY

VELLORE INSTITUTE OF TECHNOLOGY CHENNAI,SCOPE

## ABSTRACT

- ❑ Driver fatigue is a significant contributing factor to road accidents, particularly during long journeys. This paper presents a comprehensive overview of fatigue monitoring technologies and strategies for long road journeys. Physiological monitoring techniques, such as electroencephalography (EEG) and electrooculography (EOG), provide insights into driver alertness and fatigue levels.
- ❑ Behavioral monitoring methods, including steering wheel monitoring and lane departure warning (LDW) systems, detect fatigue-related patterns in driver actions and vehicle behavior. Vehicle-based fatigue monitoring utilizes vehicle sensors and data, such as speed, acceleration, and time behind the wheel, to infer driver fatigue. In addition to monitoring systems, various fatigue mitigation strategies can be employed, such as adaptive cruise control (ACC), lane keeping assistance (LKA), fatigue-detection alerts, and rest area recommendations. Promoting healthy lifestyle habits, such as adequate sleep and regular exercise, can also significantly reduce fatigue risk.

## OBJECTIVES

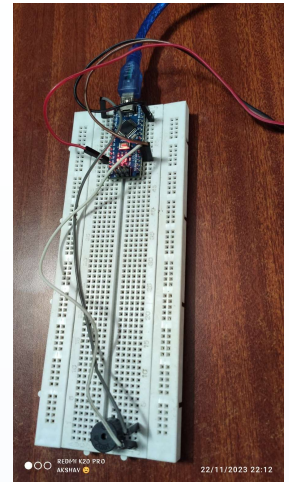
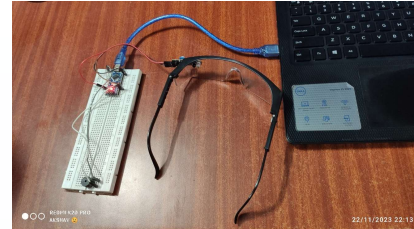
- ❑ **Real-time Fatigue Assessment:** Continuously track and analyze physiological signals to estimate fatigue levels in real time. This allows for timely interventions to prevent fatigue-related incidents or performance declines.
- ❑ **Fatigue Prediction and Early Warning:** Predict potential fatigue episodes based on trends in physiological data and individual fatigue patterns. Provide early warnings to users to encourage preventive measures, such as rest or breaks.
- ❑ **User-Friendly and Accessible Fatigue Monitoring Tools:** Develop user-friendly and accessible fatigue monitoring tools that can be integrated into daily routines and seamlessly provide personalized fatigue insights.
- ❑ **Continuous Improvement and Innovation:** Continuously improve the accuracy, reliability, and interpretability of fatigue monitoring algorithms and user interfaces to enhance the effectiveness of Arduino-based fatigue monitoring systems.
- ❑ **Fatigue-Related Performance Optimization:** Utilize fatigue monitoring data to optimize performance in various settings, such as transportation. This can help maintain safety

## MATERIALS AND COMPONENTS

### HARDWARE COMPONENTS:

- ❑ Arduino Nano
- ❑ Eyeblink Sensor
- ❑ RF Transceiver Module
- ❑ HD12E & HD12D IC
- ❑ Buzzer

## RESULTS



## CONCLUSION

Arduino-based fatigue monitoring systems offer a promising solution to address the challenges of fatigue management in the transportation industry. By continuously monitoring physiological signals and providing timely feedback, these systems can empower drivers to make informed decisions about their driving behavior, promoting safer roads for everyone. The implementation of such systems can significantly reduce fatigue-related accidents and contribute to a more vigilant and responsible driving community.

## REFERENCES

- ❑ <https://ieeexplore.ieee.org/document/9734801>
- ❑ <https://www.nhtsa.gov/book/countermeasures/countermeasures-work/drowsy-driving>
- ❑ <https://pubmed.ncbi.nlm.nih.gov/29031926/>
- ❑ <https://ieeexplore.ieee.org/document/8482470>
- ❑ <https://pubmed.ncbi.nlm.nih.gov/32199560/>

## CONTACTS

- ❑ NAME: E AKSHAY
- PHONE NO: 9959905305
- MAILID: [enuguru.akshay2020@vitstudent.ac.in](mailto:enuguru.akshay2020@vitstudent.ac.in)