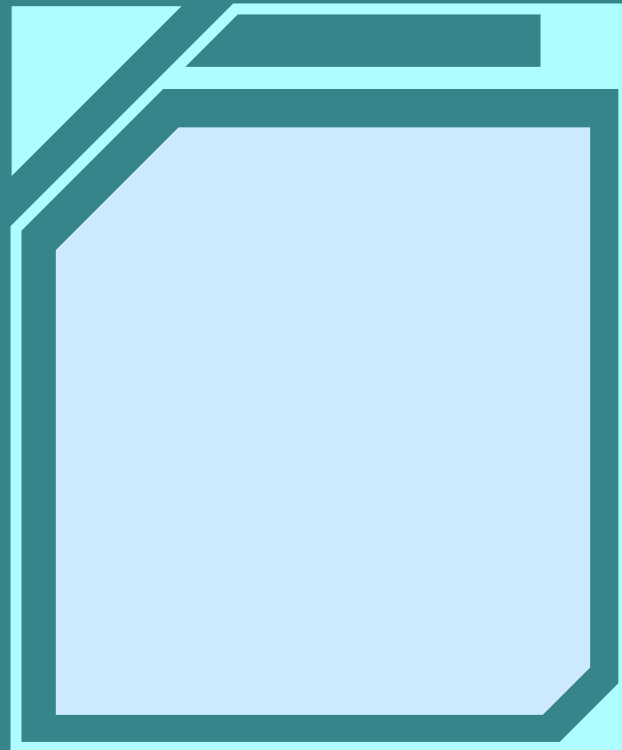




ENHANCING ROAD SAFETY THROUGH DRIVER DROWSINESS DETECTION

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Abstract

This project aims to enhance road safety by developing a comprehensive system for detecting driver drowsiness. The system utilizes advanced technologies to monitor driver alertness in real time and provides timely alerts to prevent accidents caused by drowsy driving. The system aims to reduce accidents.



Introduction

Importance of road safety and the need for drowsiness detection system

Road safety is a paramount concern worldwide, with thousands of lives lost each year due to road accidents. Among the leading causes are driver drowsiness incidents.

To address these issues, this project focuses on developing a system for enhancing road safety through driver drowsiness detection. The system aims to detect and mitigate the risks associated with drowsy driving by monitoring real-time driver alertness and providing timely alerts.



ADAS Features

Some vehicles come equipped with integrated ADAS that include features such as lane departure warning, forward collision warning, and pedestrian detection. These systems use a combination of cameras, radar, and sensors to monitor the surroundings and provide alerts to the driver.

Drawbacks



No Driver Drowsiness Detection

Problem Statement

Increasing instances of road accidents caused by drowsy driving highlight the pressing need for innovative solutions to enhance road safety. Current systems often lack comprehensive integration, leaving gaps in real-time monitoring of driver alertness. Addressing this challenge requires the development of a unified system capable of efficiently detecting driver drowsiness ultimately reducing the risk of accidents.

Motivation



The decision to pursue this problem statement stems from a combination of statistical trends and a personal experience. With road accidents attributed to drowsy driving and on the rise, statistical data underscore the urgent need for effective solutions. Additionally, a personal encounter with a near-miss accident involving a drowsy driver and a pedestrian served as a poignant reminder of the potential consequences of inadequate road safety measures. This firsthand experience further fueled our determination to address these challenges comprehensively. By focusing on integrated driver drowsiness detection and pedestrian road crossing assistance, we aim to bridge the gaps in existing systems and make meaningful contributions to the improvement of road safety. Our ultimate goal is to prevent accidents, save lives, and create safer road environments for all.

Features



Real-time Monitoring



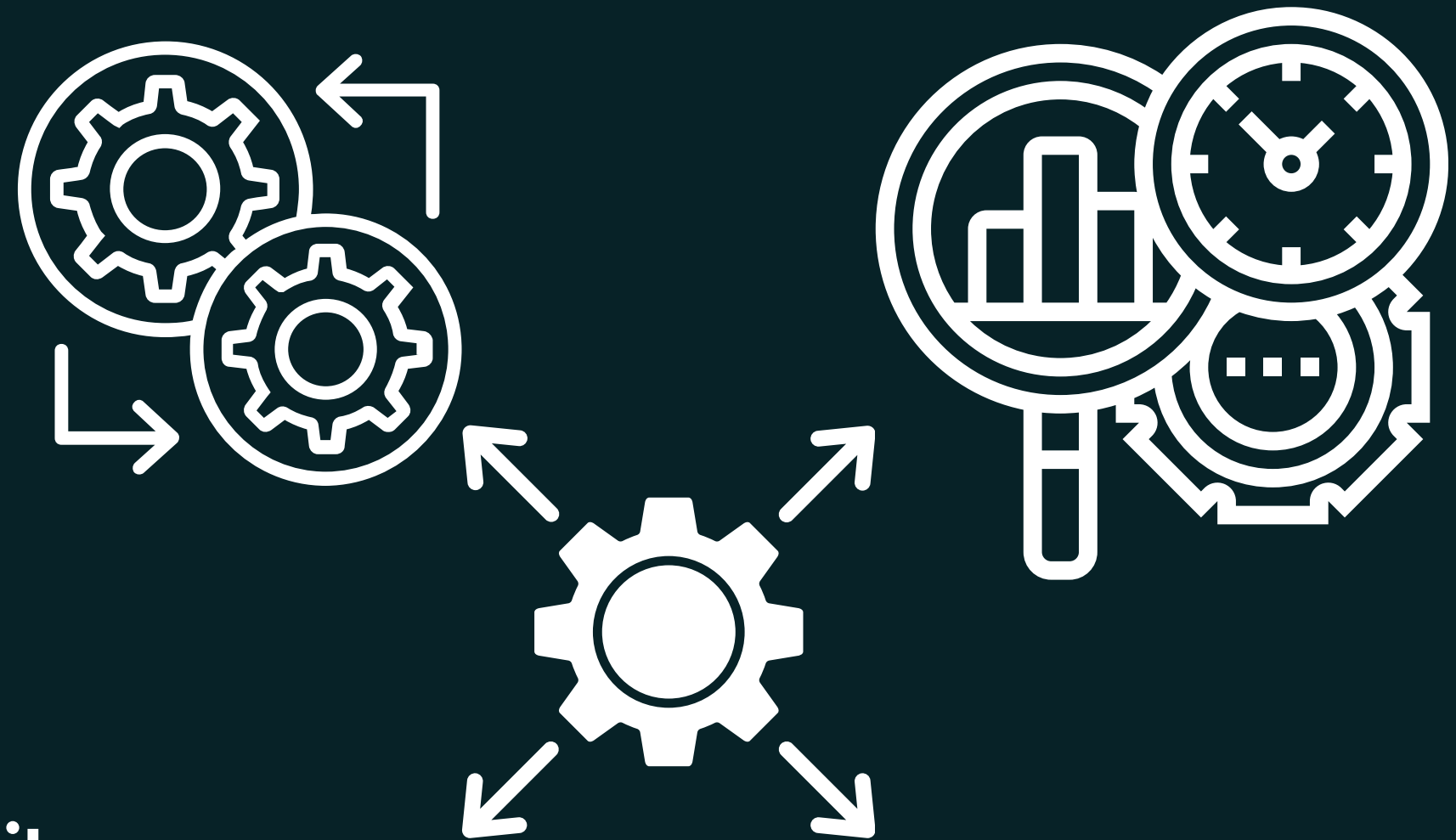
Seamless Integration



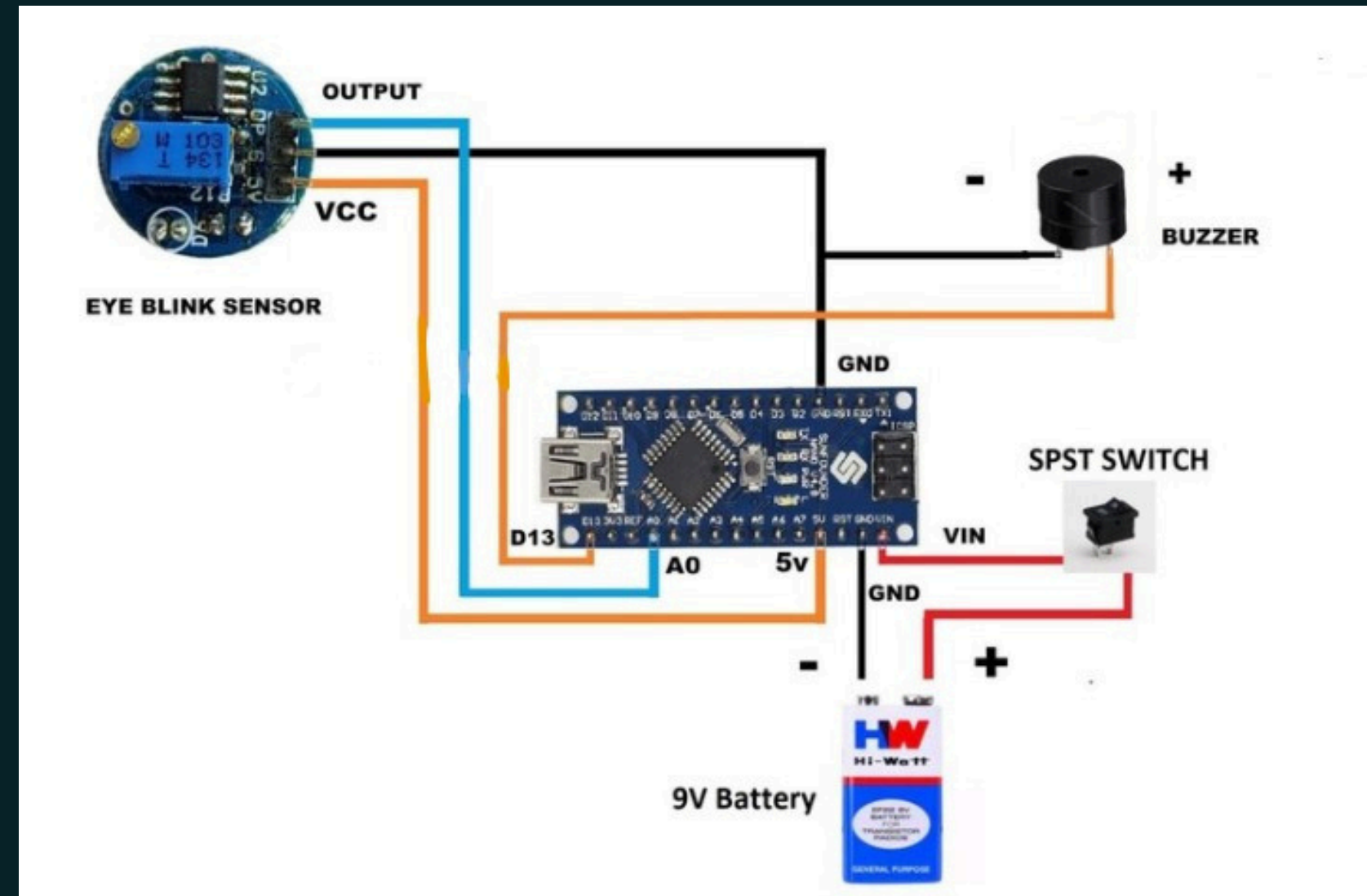
Automated Alerts



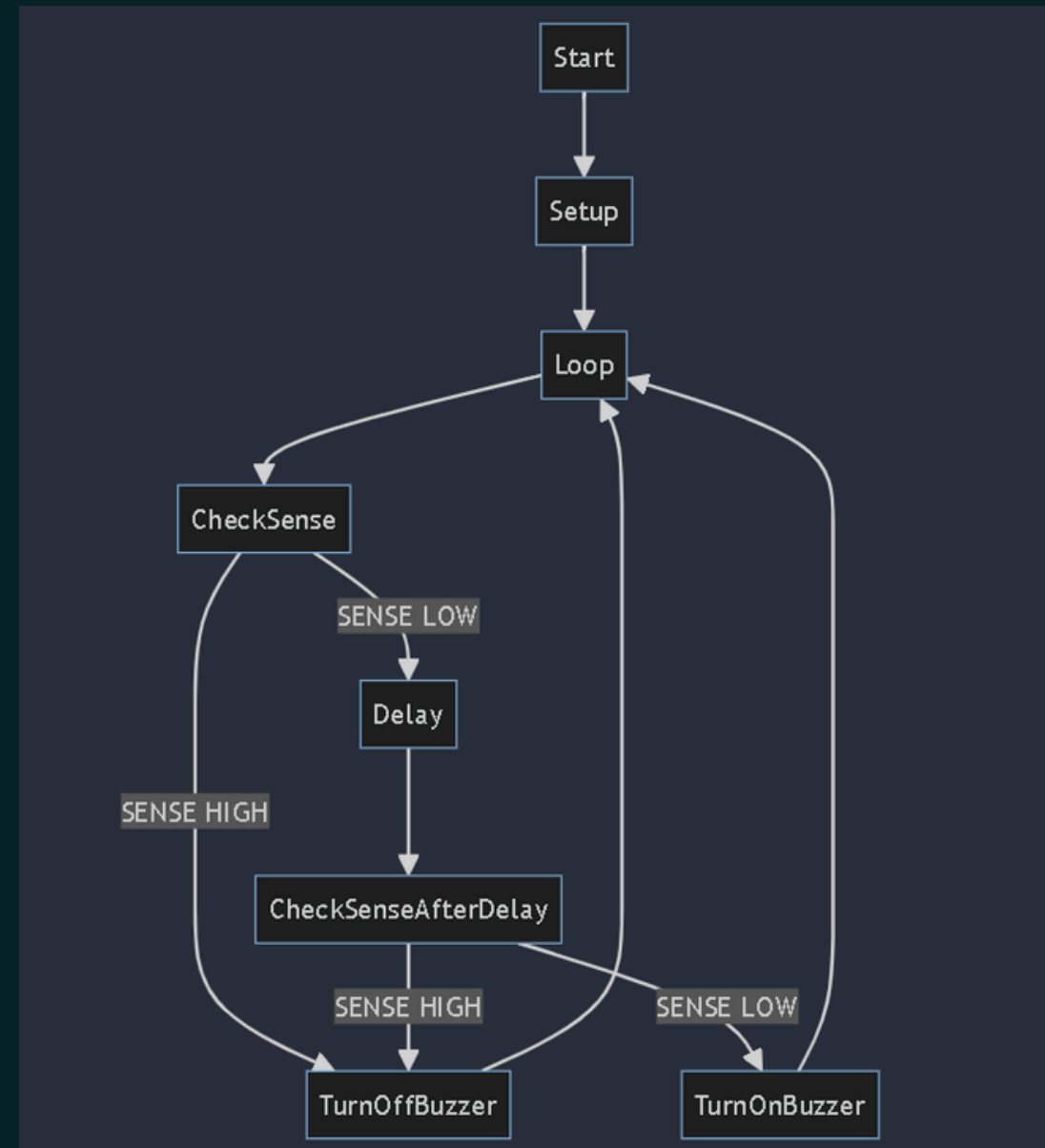
Scalability and Compatibility



Circuit Diagram



Flow Diagram



Hardware and Software Requirements



Arduino Nano Microcontroller



IR Sensor



Buzzer



Battery for Power



Jumper Wires



Ardunio IDE



Conclusion

Our system will incorporate steering wheel angle and speed data in future iterations for more accurate drowsiness detection. By analyzing these additional parameters alongside existing inputs, we aim to provide even timelier alerts to drivers, reducing the risk of accidents caused by fatigue or distraction. Through ongoing refinement and integration of emerging technologies, we remain dedicated to advancing road safety and creating smarter transportation systems for the future.

References



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THANK YOU

Better Late than Never!

