

DS3001 | Design and fabrication project

# Alcohol Detection and Prevention System

A responsible protection for our driver workforce

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# Introduction

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Driver drowsiness and alcohol consumption contribute significantly to vehicle accidents, causing injuries and fatalities. Our project aims to develop a prototype system for detecting drowsiness and alcohol consumption using advanced technology. By accurately monitoring the state of the driver's eyes and analysing facial images, eye movements, and blink patterns, we can detect early signs of drowsiness and prevent accidents.

# We are desperate to launch in the whole country.

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# Why?

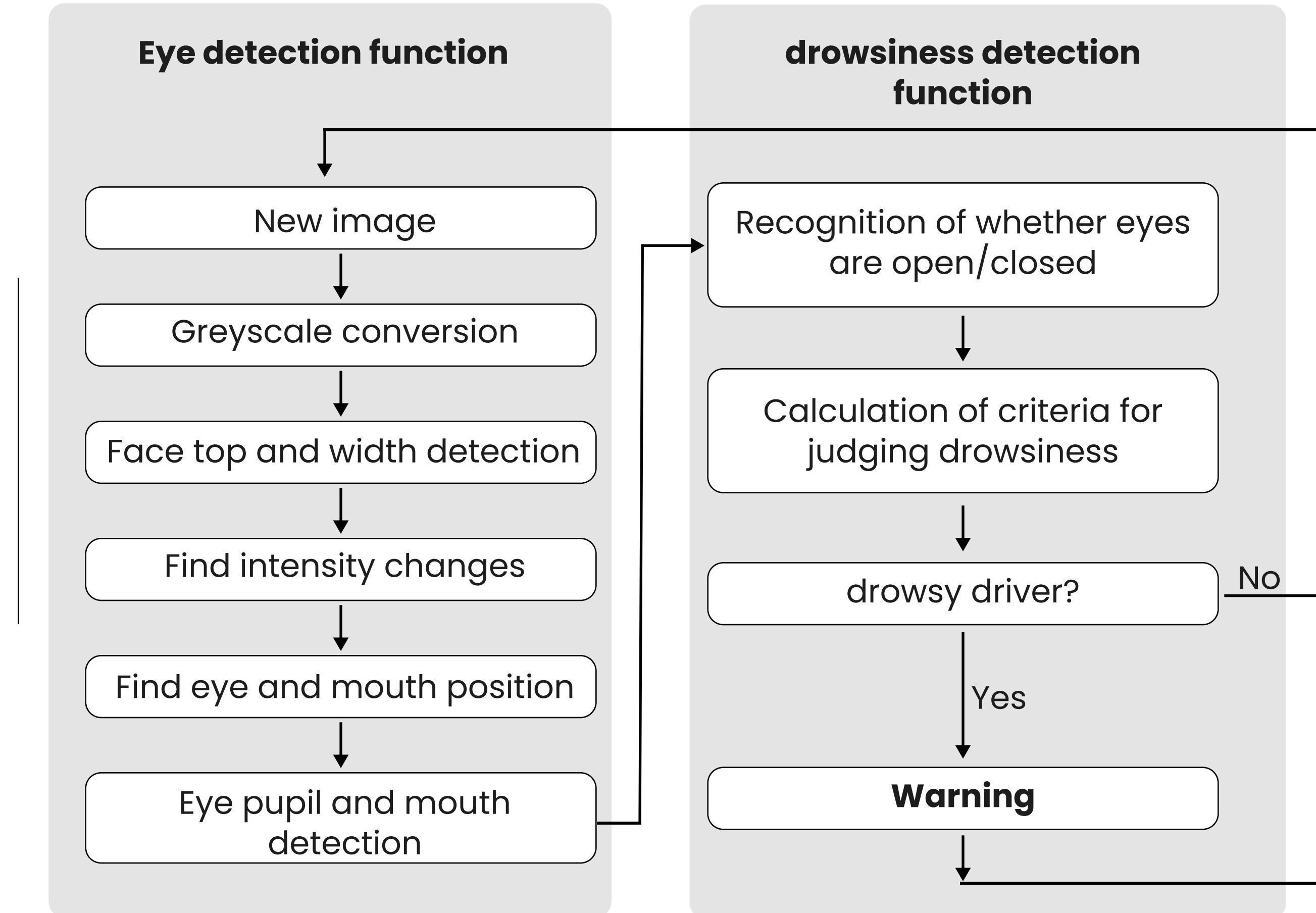
In India, our project addresses a pressing issue: 70% of survey respondents prioritize safety in transport services. With an innovative alcohol detection system, we not only fulfill this demand but also contribute to a 30% reduction in alcohol-related accidents, fostering a safer and more reliable transportation ecosystem.

# What does it do?

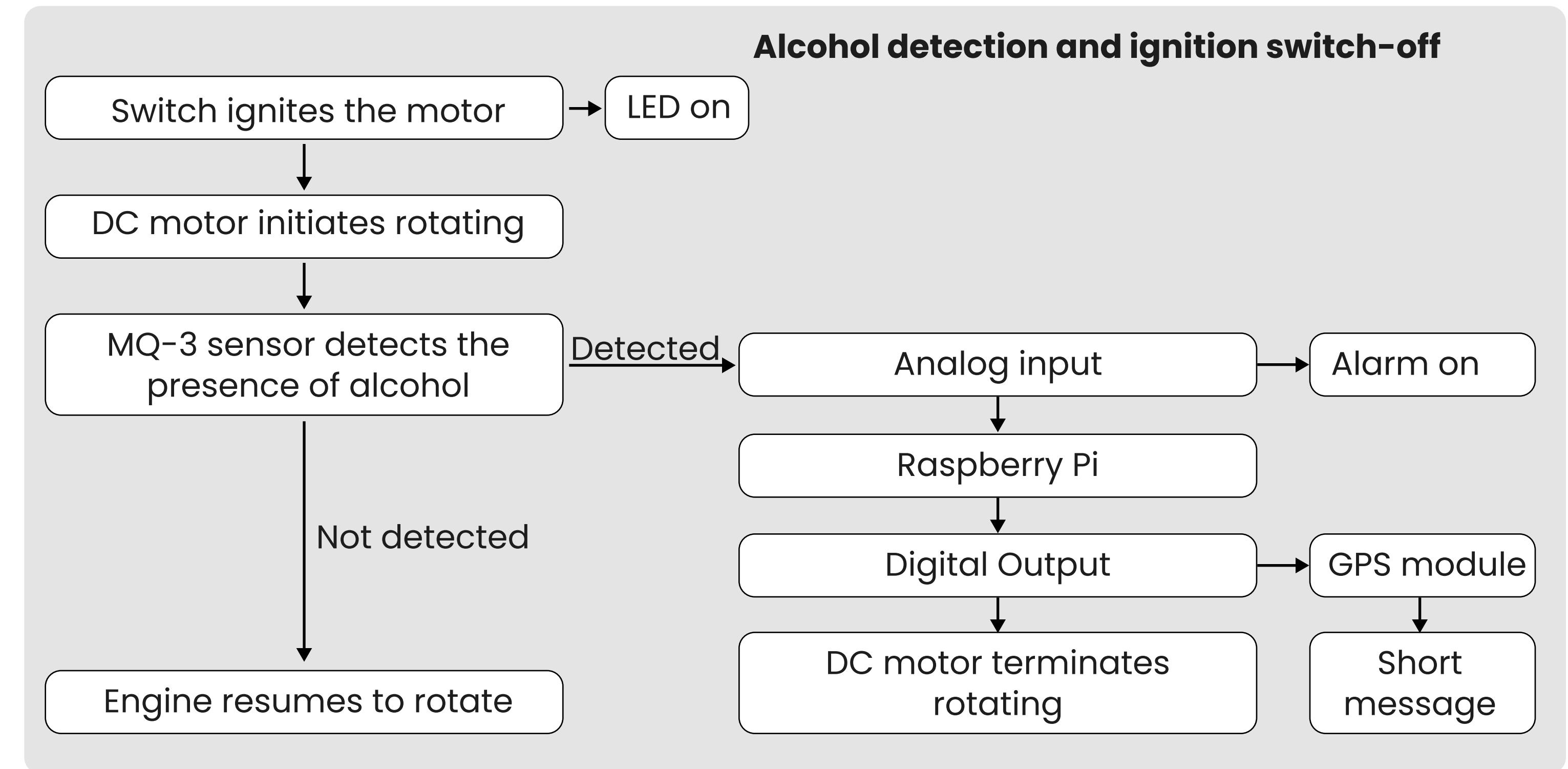
- Eye Tracking and Monitoring
- Alcohol detection

A non-invasive system has been developed to monitor driver drowsiness and alcohol detection using self-developed algorithms. It alerts drivers about head and eye position, detects eye localisation errors, and uses an alcoholic gas sensor. An embedded kit controls the vehicle.

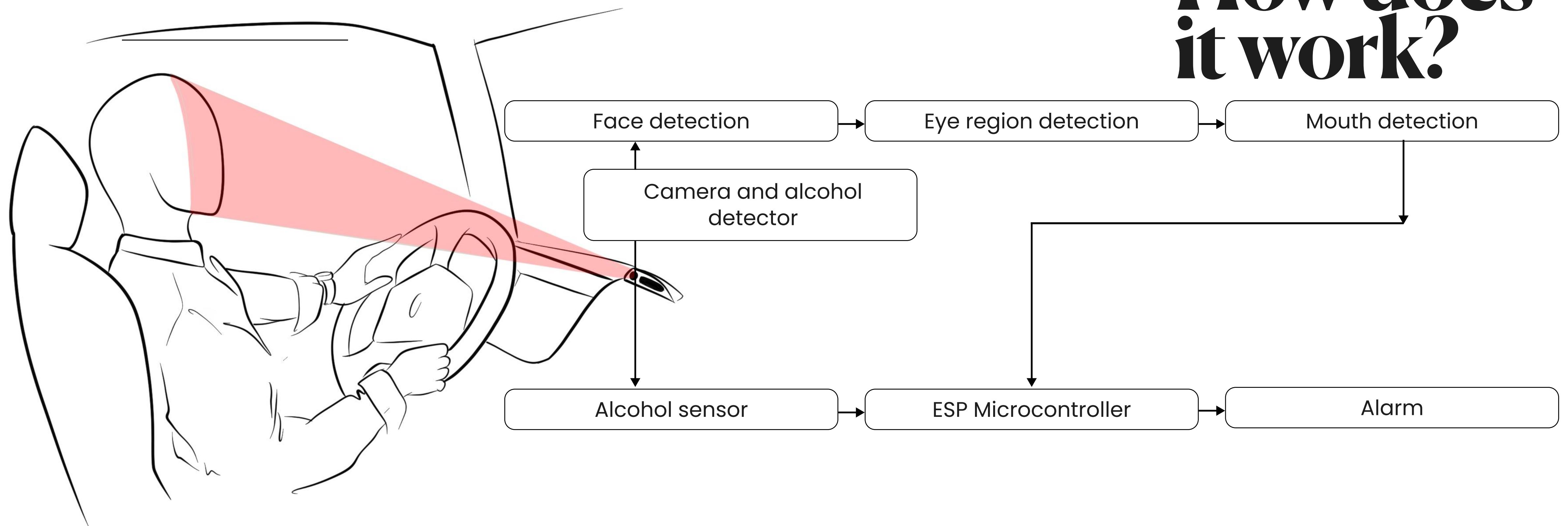
# How does it work?



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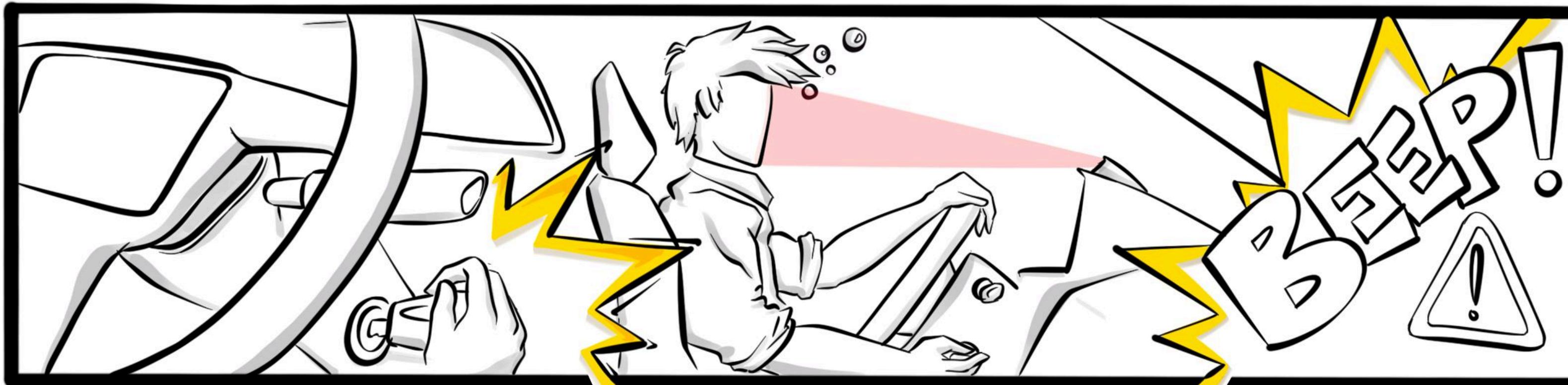


# How does it work?



# How does it work?

Case 1: The drunk driver gets in the car



# How does it work?

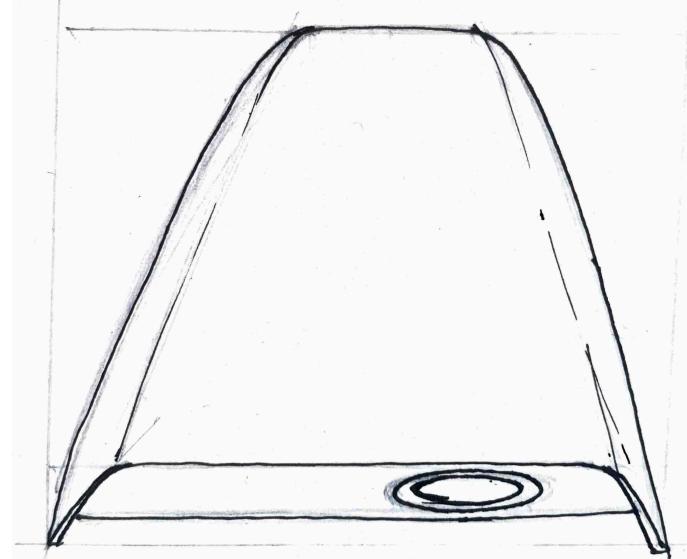
Case 2: The driver is sleepy/ drowsy



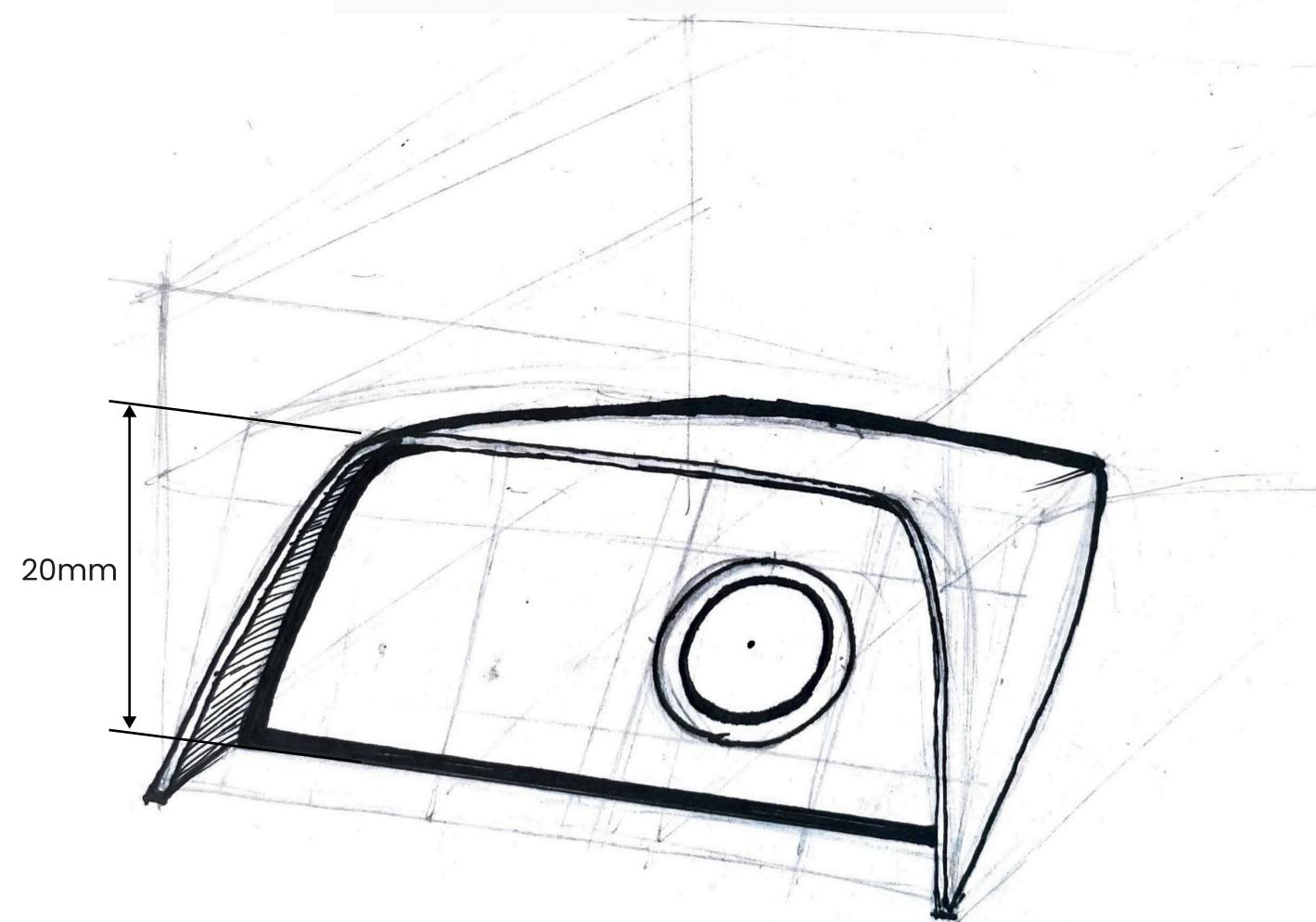
# The design that we made

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Concept sketches



3D renders



# **Is it enough for the passengers to feel safe? Why not?**

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Survey results reveal that 80% of passengers express concern about safety solely relying on technology.

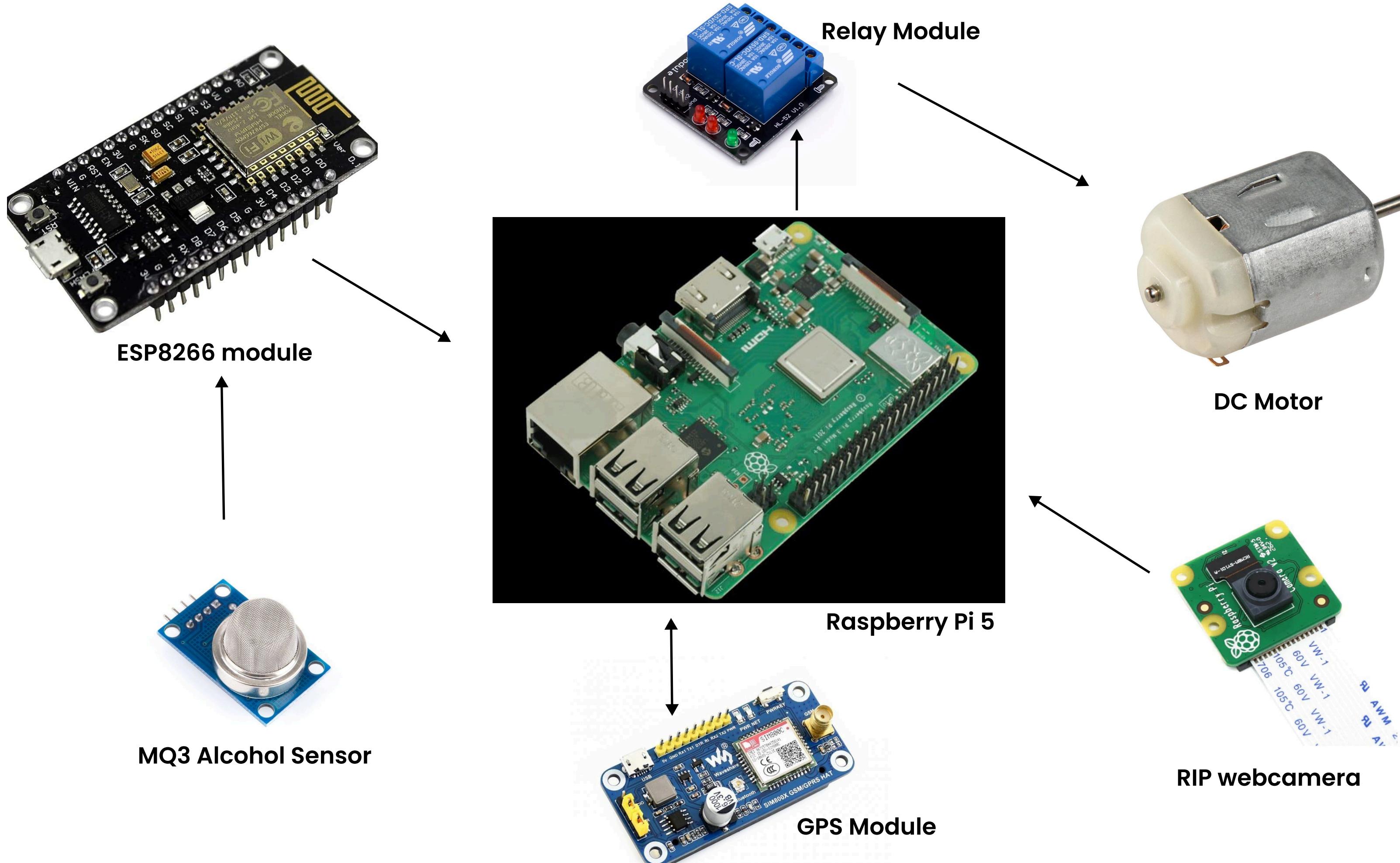
# What are we going to do about it?

Our survey reveals 80% of passengers express a heightened sense of security with visible safety measures. Our custom stickers, strategically placed within the vehicle, enhance passenger confidence, providing a visible reassurance that their safety is a top priority.



# The components we are using

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# Functionality

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The system employs advanced alcohol detection sensors integrated with the vehicle's ignition. Upon detecting alcohol, it triggers an immediate ignition lock. Real-time alerts are sent to the central server for remote monitoring. The system also features a panic button for passenger safety, ensuring a comprehensive and proactive approach. Also along with the feature of drowsiness detection which will automatically detect the eye position of the observer and will immediately switch off the ignition.

# Novelty

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The novelty lies in our comprehensive approach: an innovative alcohol detection system seamlessly integrated with Real-time alerts which are sent to the central server for remote monitoring. This dual functionality ensures not only prevention of drunk driving but also immediate support for passengers, setting our solution apart in enhancing safety and peace of mind.

# Bill of Materials

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Name of the materials	Total cost
1. Raspberry Pi	Issued
2. ESP8266 module	500
3. LCD Display	500
4. MQ3 Alcohol sensor	400
5. Camera Module	2000
6. Relay Module	250
7. DC Motor	250
8. Power supply unit	500
9. GPS module	500

# Thank you

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Drive responsibly.

## References:

1. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8914892/>
2. [https://www.researchgate.net/publication/352116070\\_Driver\\_Drowsiness\\_Detection\\_and\\_Alert\\_System\\_using\\_Python\\_and\\_OpenCV](https://www.researchgate.net/publication/352116070_Driver_Drowsiness_Detection_and_Alert_System_using_Python_and_OpenCV)
3. [https://www.researchgate.net/publication/321068300\\_An\\_empirical\\_characterization\\_ofIFTTTecosystem\\_usage\\_and\\_performance](https://www.researchgate.net/publication/321068300_An_empirical_characterization_ofIFTTTecosystem_usage_and_performance)
4. [https://www.researchgate.net/figure/MQ-3-sensor-for-alcohol-detection-Breath-detector-for-Alcohol-Consumption-Sensor-used\\_fig1\\_352431088](https://www.researchgate.net/figure/MQ-3-sensor-for-alcohol-detection-Breath-detector-for-Alcohol-Consumption-Sensor-used_fig1_352431088)