



THIRD EYE



DRIVE. DON'T DROWSE.

Designed by Atish Sisodia

INTRODUCTION

According to the Royal Society for the Prevention of Accidents, driver fatigue may be a contributory factor in up to 20% of road accidents, and up to one quarter of fatal and serious accidents. Third Eye is a haptic bracelet which monitors driver drowsiness. It uses cutting-edge artificial intelligence technology to analyse the attentiveness of the driver and alert them if they are losing concentration, via a vibration of the wrist. Third Eye helps drivers stay alert whilst at the wheel, keeping them and other drivers safe, potentially preventing accidents and fatalities.

FUNCTIONS & TECHNOLOGIES

Materials and components:

The bracelet is made of silicone which is a flexible, breathable, and waterproof elastomer, commonly used in sports watches.

The data is monitored by a gyroscope, accelerometer and GPS module all working in tandem and is then stored and analysed by a microcomputer. If the data is concerning, a haptic motor and buzzer are activated.

As an alternative to silicone, I could have chosen to use natural rubber as they both share similar properties. However, natural rubber contains latex – a common allergen – which would make it unsuitable for many people.

I also considered using a flashing light to alert the user as opposed to the haptic motor and buzzer. However, a sudden flashing light could shock or distract the driver, or inhibit their view of the road, potentially causing more danger.

1.

Heart rate, muscle activity and skin conductance are monitored to check if they may suggest drowsiness.

2.

If physiological measurements are of concern, steering pattern is monitored using a gyroscope and accelerometer, in tandem with a GPS.

3.

If both physiological measurements and steering patterns are concerning, the vibration motor is activated, alerting the driver, and increasing attentiveness.

4.

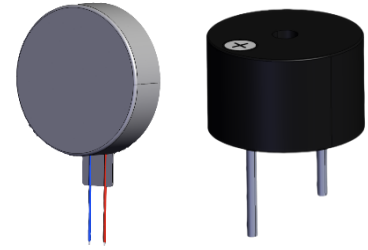
The sensors continue to take measurements and if the results continue to be of concern, the bracelet vibrates continuously and produces a beeping sound, warning the driver they should stop the car safely at the next available opportunity as they are at risk of falling asleep at the wheel.

DIAGRAM OF AESTHETICS AND COMPONENTS

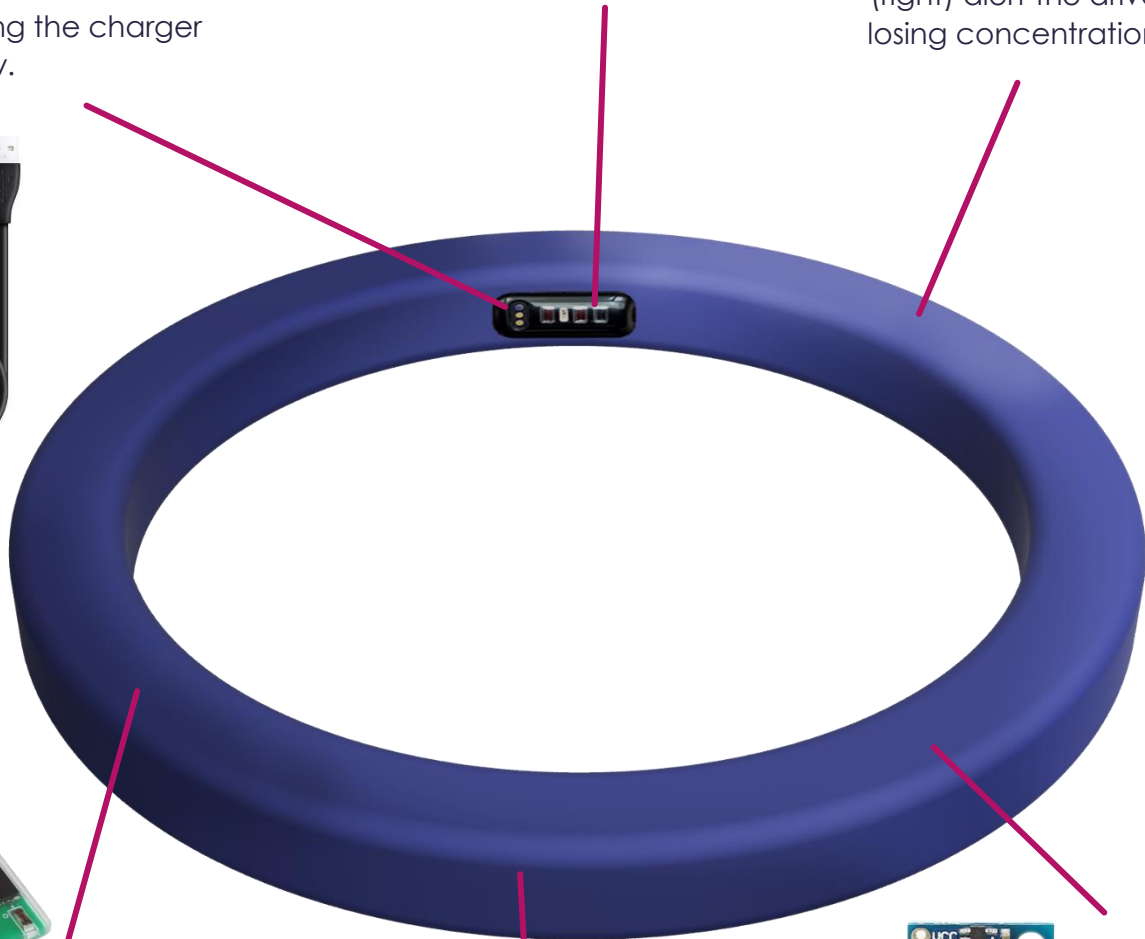
The battery is charged using this magnetic 3-pin charger, adjacent to the sensors. It is a 125mAh battery which charges fully in under an hour and can last for up to 2 weeks, allowing prolonged and constant use. It is charged using the charger shown below.



Heart rate, muscle activity and skin conductance are measured using this sensor and green LED lights. Blood flow near the wrist is measured by observing the reflections of the LED lights.



The haptic motor (left) and buzzer (right) alert the driver if they are losing concentration and falling asleep.



This microcomputer controls all the components and stores and analyses all the data it receives. If the data is concerning, it sends a signal to the haptic motor and buzzer.

The wristband is available in many colours so clients can pick which style suits them best. The edges are filleted to give a more comfortable fit and smooth finish. The design is suitable for all adults who drive as it is very minimalist and simple.



These are the gyroscope/accelerometer (left) and GPS module (right) which measure the steering wheel movements in order to determine whether not they are within the acceptable range.

