



# DRIVER'S ANTI-SLEEP DEVICE

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**Abstract :** There has been a very large increase in road accidents due to the drowsiness of drivers while driving which leads to enormous fatal accidents. The driver loses control when he falls asleep which leads to an accident. This is because when the driver is not able to control his vehicle at a very high speed on the road. This project can generate a model which can prevent such accidents. Therefore, we came up with an idea and successfully developed a sleepy detection and alarming system, which could effectively meet this demand.

**Keywords —** *Tilt Sensor, Buzzer*

## I. INTRODUCTION

In modern-times, owing to hectic schedules it becomes very difficult to remain active all the time. Imagine a situation where a person is driving home from work, dead tired after facing all the challenges of the day. His hands are on the wheel and foot on the pedal but suddenly he starts feeling drowsy, his eyes start shutting and his vision blurs and before he knows it, he's asleep. Falling asleep on the wheel can lead to serious consequences, there may be accidents and people may even lose their lives. This situation is much more common than we notice and hence, it is very important to counter this problem. So to address this issue, we have come up with a Driver Anti-sleep Device. This system alerts the user if he/she falls asleep at the wheel thereby, avoiding accidents and saving lives. This system is useful especially for people who travel long distances and people who are driving late at night. The circuit is built using SW 520D tilt sensor. Whenever the driver feels sleepy and bends his neck down the tilt sensor detects and the buzzer sounds an intermediate beep... When driver comes back to his normal position tilt sensor senses that and buzzer gets switched off[1].

Hardware required for this project as follows

- Sw 520d Tilt Sensor
- A23 Batteries
- Buzzer
- Cables
- Switch On/Off

- S1, S2 = Tilt Sensors
- Sw = Switch on/Off
- B = Buzzer

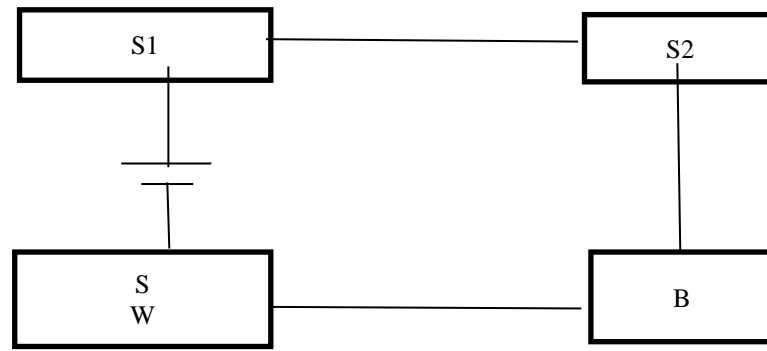


Figure 2 Circuit Diagram

## II. CIRCUITDESIGNOF DRIVER'S ANTISLEEPDEVICE

The circuit consists of Tilt Sensors, which is the brain of the project, it also consists of Batteries, Switch and Buzzer. The design of the circuit is very simple and is explained below.

Two Sensors are used, where both the Sensors are interconnected to each other. One end of the Sensors are connected to the Battery and the other end is connected to the Buzzer. One end of the Switch is connected to the battery and the other end is connected to the Buzzer.

SW520D Tilt Sensor is the main module in the anti-sleep circuit. It contains the metallic ball inside which will commute the two pins of the device. Its diameter is 5.2mm and the height is 11.5mm (excluding leads).

## III. PROJECT MOTIVATION AND PURPOSE

The goal of this project is to develop a device that can accurately detect sleepy driving and make alarms accordingly, which aims to prevent the drivers from drowsy driving and create a safer driving environment. The project was accomplished by a tilt sensor whenever a driver tilts his/her head due to drowsiness buzzer continuously starts beeping unless a driver gets back to it's normal position.

## IV. WORKING

Tilt Sensor is the main module in this device. If a driver bends his/her head due to drowsiness caused by busy hectic schedules automatically metallic ball moves which is present in the sensor. When a metallic ball moves it sends a signal to buzzer through cable as shown in Figure (2).



Figure 2 the device

One end of the Buzzer is connected to the Sensor and the other end is connected to the Switch due to which it beeps when it finds a movement. Along with that it also consist of a Tuner (Switch) from which we can save battery getting disposed easily.

#### V. Uses of Anti-Sleep Device

It can be used by the students while studying late at night. It is a universal phenomenon where students sleep while studying. Whereas this device helps students to be awake during their exams. Long distance lorry drivers can fall asleep by driving too long for hours together (as shown in the fig.3) due to the pressures put on them to get the goods to their destination at certain times. This item has the potential to keep them awake or at least to tell them when they are exhausted and need to stop driving!. As well as security guards and others they have to sit on one place for long periods of time without any stimulating interaction. This device has the potential to keep them awake. People who go for night jobs, who opts overtime work they have to work at night time where a human feels tired, drowsy and also may get sleep. To overcome this issue this device can be used.



Figure 3 use of device

## VI. LITERATURE REVIEW

### Commercial Products

Driver fatigue has been intensively studied during the last two decades. Few commercial products are already available in markets. For example, Lumeway Product: Eye Alert (EyeAlert, 2015) uses infrared camera/sensors to monitor driver's eye closure rate and duration. When the driver starts exhibiting unsafe patterns, it sounds an alarm. Driver Attention Monitor is a vehicle safety system first introduced by Toyota in 2006 for Toyota and Lexus latest models with closed-eye detection (Wikipedia, 2015a; Lexus, 2015).

The system is designed to detect if the driver is not looking forward and will signal an alert if it detects an object ahead. SMI's InSight system (InSight, 2015) has been conceived to detect driver fatigue and inattention using cameras monitoring the driver's face. DADSTM (Driver Alertness Detection System™) (DADS, 2015) is a cloud based service that monitors a driver's state of alertness in real-time to reduce the risk of road accidents caused by drowsiness and fatigue. To use the system, a driver needs a smartphone and a certified Bluetooth camera. The camera captures information from a driver's face, and then software analyses this information to monitor the state of alertness while driving.

If a threshold of risk is reached, driver will receive an alert on the phone. The producers claim that the system warns the driver up to two hours before reaching a critical state. Other in-vehicle integrated products such as Volvo's Driver Alert Control system (M. V. Car, 2015), Ford's Driver Alert (F. D. Alert, 2015), Volkswagen's Fatigue Detection system (Volkswagen, 2015) and Subaru EyeSight Driver Assist (Wikipedia, 2015b), are based on road monitoring and steering wheel movements to detect fatigue. "Vigo" is another similar fatigue system (Wikipedia, 2015b). It is a smart Bluetooth headset that detects signs of drowsiness through the eyes and head motion, and uses a combination of light, sound and vibration to alert the user.

In 2009, Mercedes-Benz unveiled a system called "Attention Assist" (Wikipedia, 2015). The system monitors the driver's fatigue level and issues a visual and audible alarm. The significant feature in this system is the linking with the car's navigation system. This allows the system to tell the driver where coffee is available. The practical use and efficiency of these devices in preventing accidents are still under inspection. UK Royal society for the prevention of accidents published a literature review on driver fatigue and road accidents (RoSPA, 2001).

The study investigated number of technical devices to detect when drivers are feeling sleepy and provide warnings to them, or even to take control of the vehicle. The study concluded that such devices may prove beneficial, but there are concerns that drivers would rely on them instead of managing themselves for safety. The study raised the question: "Drivers are normally well aware that they are sleepy, so why is a device necessary to tell them so?"

As a conclusion, more efficient actions should take place to achieve the main goal of preventing and reducing accidents[4].

## VII. CONCLUSION

This type of sensors are so important that use to identify the motion of an object in very easy method. The design is simple and the cost is very low so everyone can use it. Also we can carry it, so we can use it whenever it is needed and at any time. It is not just a device it is a trusty device which can save someone's life. It is apparent that the overall project success is not derived from one team member's mind but the keen coloration within our group. Each part is indispensable and every team member made the great dedication on the completion of this design project. By using our Driver Sleep Detection and Alarming System, customers would be warned when his/her physical condition is not good enough for driving and thus prevents dangerous behaviors from happening. It is consistent with the safety and welfare of the public. to avoid injuring others, their property, reputation, or employment by false or malicious action;

We design our product using qualified components and follow proper safety rules, avoid wrong actions happening to other people because life is quite often and nothing is better than being alive.

## VIII. REFERENCES

- [1] <https://nevonprojects.com/driver-anti-sleep-device/>
- [2] <https://youtu.be/OJRTLPR-dcE>
- [3] <https://images.app.goo.gl/T6zcRbWQ4igyZ6kd6>
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