**Raspberry Pi Based Driver Drowsiness Detection System Using CNN**

**Alternative Title:**

 Application of IoT and Artificial Intelligence in Road Safety

**Aim:**

 The aim of the project is will develop the Internet of Things (IoT) and deep Learning in the field of Road Safety and accident prevention.

**Abstract**

 This paper presents the implementation of a drowsiness driving detection system using Maixdock. Drowsy driving can be defined as a behavioral decline in driving skills. In this work, Deep learning has been used to classify drowsiness symptoms such as blinking and yawning. The sample images were used to train the yolo architecture. A 4 -layer convolution filter has been added as a layer in this yolo architecture. Adam optimization algorithm was then used to train the yolo. A real time study on the effectiveness of this prototype was conducted on 10 individuals. This proposed system successfully demonstrates a classification accuracy rate between 80% Other factors that can affect the rate of classification accuracy, such as camera distance from the driver and lighting factors, are also studied in this paper. If the driver is drunk, then vehicle ignition will not start until the driver is not changed. In case the car is already in driving condition, then the system alerts the driver using a buzzer and pulse sensor also detecting the readings and alert driver, if rick is presence or not. It collects information using a variety of sensors and an onboard camera. The collected data can then be uploaded to a central server

**Existing System:**

The existing system monitoring the vehicles manual alcoholic checking are done by the manual process, traffic cameras are streaming the live video and finding the accident location using manual process.

**Proposed System:**

 In this proposed system we use Ai camera and Maixdock controller to detect the driver drowsiness by using Machine Learning. In addition to it we use GPS to track the location and alcohol sensor to detect the drunk and drive scenario. We use heart beat sensor to find the driver health.Esp8266 is connected with IoT to update the status from the sensors.

**Advantages:**

* IoT and Machine Learning can greatly assist people in preventing road accidents. These technologies will help develop a smart, efficient, and intelligent traffic system
* One of the major reasons that contribute to fatal accidents is human behavior and their negligence to follow the traffic rules. IoT can play a proactive role in helping drivers adopt safety rules. With the help of IoT, the traffic management system gets updated with real-time data, thus increasing the efficiency of the safety system. With the help of Machine Learning and IoT, we can judge the driver's behavior

**Block Diagram:**

 Esp8266

 IoT Cloud

 Max30102

 Power supply

 Alcohol sensor

 Arduino nano

 Ai camera

 Maixdock

 Ai controller

 LCD display

 GPS

**Requirements:**

**Hardware Requirements:**

* **Maixdock**
* **Arduino nano**
* **Buzzer**
* **Alcohol sensor**
* **Push button**
* **Max30102**
* **Esp 8266**
* **Gps**
* **Power supply board**

**Software Requirements:**

* **Language: c, c++**
* **Compiler: arduino IDE, K-flash , Maixpy IDE**