

Artificial Intelligence Project

AutoSecure

New Era New Technology

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Our Mission

Our mission is to promote road safety by developing a sensor and program that can detect approaching vehicles and prevent accidents caused by sudden opening of car doors. We aim to make a positive impact and reduce the number of preventable accidents, ultimately saving lives and promoting safer roads.

Problem Statement

The problem addressed by this project is :

The risk of accidents caused by sudden opening of car doors, particularly in situations where a vehicle is approaching from behind. This is a common scenario on busy roads and parking lots, and can result in serious injuries and even fatalities.

Sample Clip

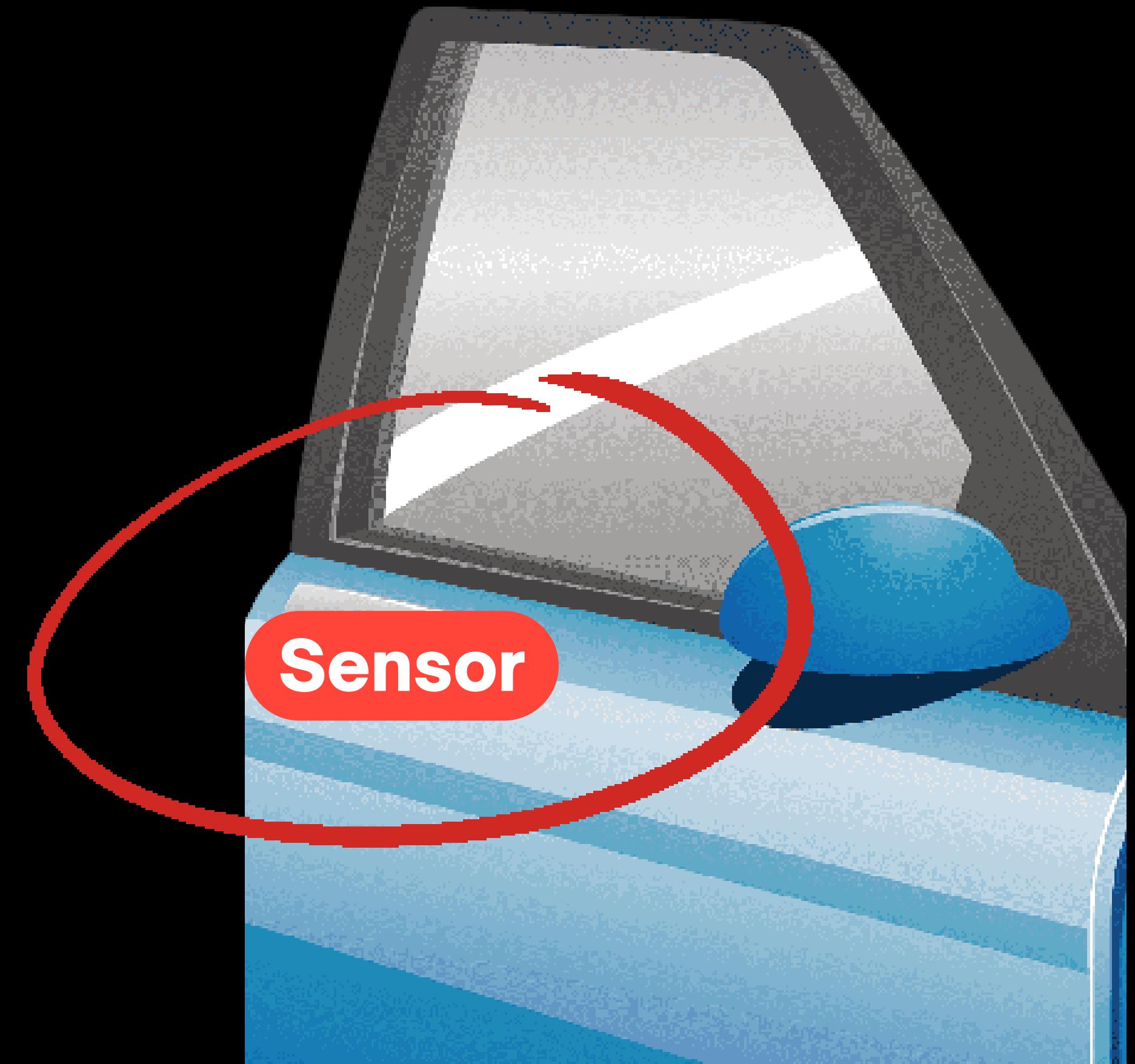


About

Our project is a sensor and program designed to help prevent car accidents by detecting approaching vehicles and preventing the car door from opening when a vehicle is detected. This safety feature is particularly useful in situations where a driver or passenger may be unaware of a vehicle approaching from behind, such as in a busy street or parking lot.

Working

Our sensor uses advanced technology to detect the presence and proximity of nearby vehicles, and our program is designed to analyze this data and determine when it is safe to open the car door. If an approaching vehicle is detected, the program will prevent the door from opening until it is safe to do so.



Algorithm behind the project

The OpenCV python library and Haar Cascade algorithm are integrated into a sensor program in this project to detect approaching vehicles and prevent potential accidents caused by the sudden opening of car doors. By analyzing images captured by a camera on the car door, the Haar Cascade algorithm detects specific features of a vehicle and sends an alert signal to the person in the car, warning them not to open the door until it is safe. This innovative technology has the potential to significantly improve road safety and reduce the number of preventable accidents on our roads, ultimately saving lives and promoting safer driving habits.

Samples from the project

```
akshay jain\Desktop\program 4

    1 usage
5     def detect_cars(frame):
6         cars = cars_cascade.detectMultiScale(frame, 1.15, 4)
7         if len(cars) > 0:
8             for (x, y, w, h) in cars:
9                 cv2.rectangle(frame, (x, y), (x + w, y + h), color=(0, 255, 0), thickness=2)
10            return True
11        else:
12            return False
13
14    1 usage
15    def main():
16        CarVideo = cv2.VideoCapture('Sample4.mp4')
17        while CarVideo.isOpened():
18            ret, frame = CarVideo.read()
19
20            detect_cars()
21
22            if detect_cars(frame):
23                cv2.imshow('frame', frame)
24
25                if cv2.waitKey(1) & 0xFF == ord('q'):
26                    break
27
28        CarVideo.release()
29        cv2.destroyAllWindows()

  File "C:\Users\Lakshay Jain\Desktop\programmes\CodePlayground\Ai Final Project\Main.py", line 6, in detect_cars
    cars = cars_cascade.detectMultiScale(frame, 1.15, 4)
          ^
SyntaxError: invalid syntax
```

Future Scope An Possibilities

- **Expansion to other vehicles:** The current project can be expanded to other types of vehicles, such as buses, trucks, and motorcycles, to enhance their safety features.
- **Integration with other technologies:** The sensor program can be integrated with other advanced technologies, such as machine learning algorithms and radar sensors, to improve the accuracy of vehicle detection and enhance safety features.

Future Scope An Possibilities

- Real-time communication: The sensor program can be linked to a cloud-based system to enable real-time communication between the car and other vehicles on the road, enabling safer driving and preventing accidents.
- Emergency services integration: The sensor program can be integrated with emergency services, such as ambulance, police, and fire department, to provide timely assistance in case of an accident.

Overall, the future possibilities of this project are vast, and with further development and innovation, it has the potential to greatly enhance road safety and revolutionize the way we drive on our roads.



References:

<https://opencv.org/>

<https://www.analyticsvidhya.com/blog/2022/04/object-detection-using-haar-cascade-opencv/#:~:text=Haar%20cascade%20is%20an%20algorithm,%2C%20buildings%2C%20fruits%2C%20etc.>

https://twitter.com/KSRSA_GoK/status/1579342152043491329

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Thank You!