

# Smart Transportation in Digital Cities

## "Car Accident Detection"

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### 1. Introduction

Transportation is a critical sector to any country as it acts as the vessel for all other activities including individuals, enterprises, governmental, and commercial services.



### 2. Methods

we first trained the **YOLO v8** model on a custom dataset of car accident videos that we collected from YouTube and surveillance cameras on the streets. We manually labeled each frame in the videos.

We then used the labeled dataset to train the YOLO v8 model using the **Ultralytics Module**.

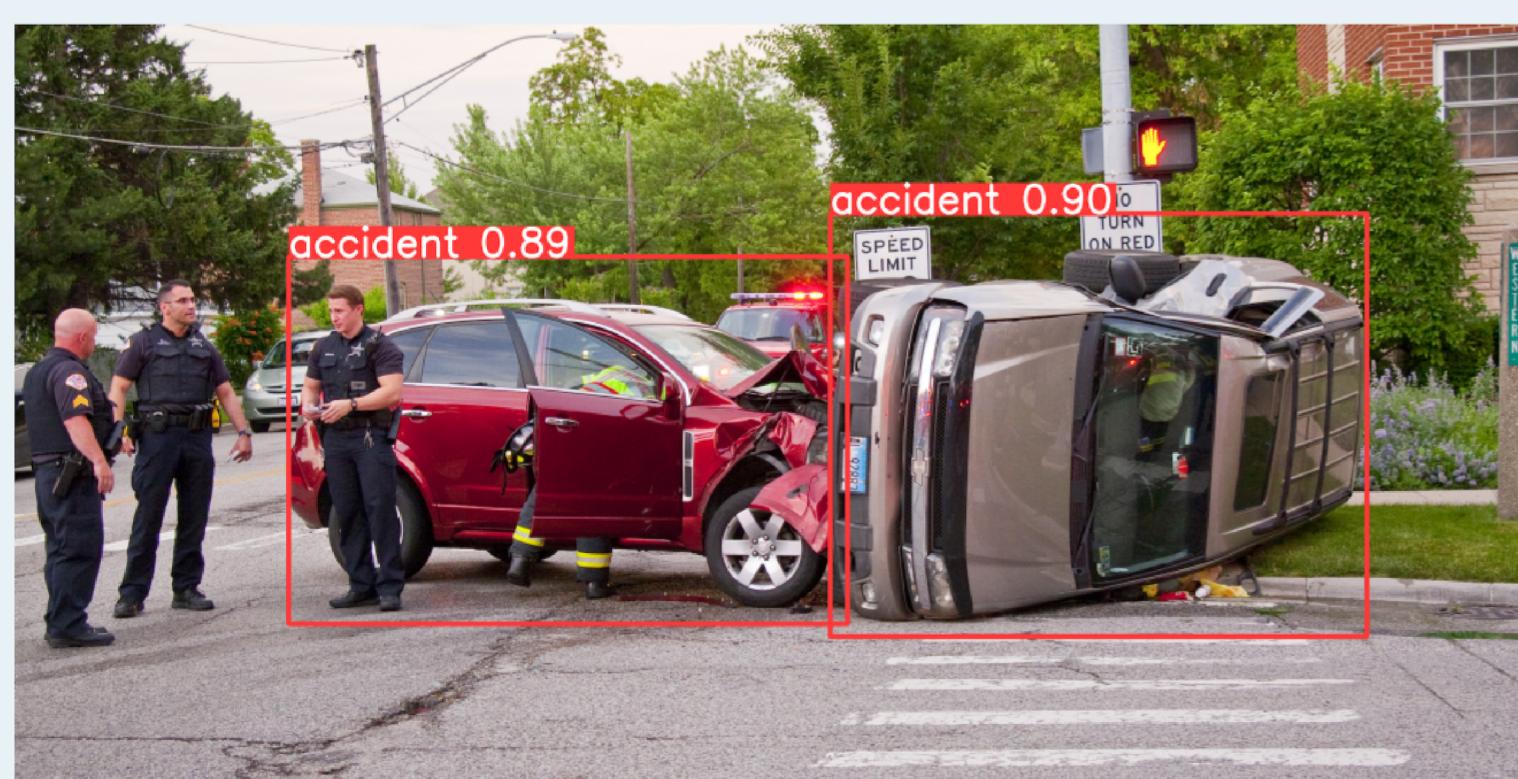
Next, we integrated the YOLO v8 model with a website using **Streamlit** which can take videos as input and detect car accidents in real time. We used OpenCV to read the video frames and applied the YOLO v8 model to each frame to detect the presence of cars and other objects.

### 3. Results

we designed a real-time website that takes video as input and the model achieved a high accuracy rate in detecting car accidents in real-time.

The system is also able to detect car accidents with a high degree of accuracy.

The system is able to detect car accidents in various scenarios, including low light conditions, varying weather conditions, and different types of roads.



### 4. Conclusion

The car accident detection system developed in this project using the YOLO v8 model has been successful in detecting road accidents. The use of a custom dataset and system architecture provides a reliable and efficient system that can detect accidents quickly. while the disadvantages are the potential for false positives or negatives. Further testing and validation can help address these issues and improve the overall reliability of the system.



### 5. References

- SALIL SRIVASTAVA, PRIYANSHU KUMAR ,JAGMOHAN DAS BAIRAGI ;TUSHAR AGARWAL ;GAURAV MEHROTRA ; Car Crash Detection using YOLOv3. May 18, 2020. [Google Scholar]
- <https://github.com/Cogito2012/CarCrashDataset>
- <https://ijcsmc.com/docs/papers/May2022/V11I5202216.pdf>
- <https://www.youtube.com/watch?v=KrJTpYsWe3w>
- <https://www.youtube.com/watch?v=wuZtUMEiKWy&start=774>
- <https://www.youtube.com/watch?v=gKTYMfwPo4M>
- <https://www.youtube.com/watch?v=PSpO9PM8NS4>

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