

Application of YOLO in Traffic Management Systems

Team ID: 5003

Team name: Wisegate

We have been investigating the opportunities, risks, and choices involved with the application of YOLO (You Only Look Once) in traffic management systems. YOLO is a real time object detection software which we believe has great potential to improve modern society through its implementation in our traffic systems.

However, the integration of YOLO in traffic management includes a multitude of pros, cons, and things in between as all new systems do. Due to this we felt the topic required further investigation. Through this presentation we shall share with you the findings from our research.

Opportunities

The key aspect in the consideration of implementing YOLO in traffic management systems are the opportunities of improvement to the current systems.

-Increasing the efficiency of traffic lights and reducing commute times. Shinde, et al. (2019) proposed a system which detected the number of cars in each lane of an intersection and then decided which lane needed priority of the green light dependent on its congestion.

-Decreasing the time, it takes for EMS (emergency medical services) to be alerted of car crashes. We could implement the ability to recognize crashes into YOLO and alert EMS of crashes as they are occurring.

-Potential for finding fugitives. The current system for finding fugitives could be greatly improved with the automation of plate checking through YOLO.

Choices

Choices

YOLO is significant in bringing predictable benefits to society, but the ensuing social problems will affect people's lives in the future

-To help social stability and crime solving rat. According to the analysis of the literature written by Menaka k and Yogameena B (2021), In the face recognition part YOLO's accuracy road is the highest reaching 87%, 16% higher than the average of other.

-Aid to economic uplift. a study by Mohammed A, et al. (2021) showed that YOLO's high load capacity, when combined with the urban transportation system, will greatly reduce the economic loss caused by traffic congestion.

-Prevention for future information security and personal safety. According to an article written by Marc D (2020), The police already can privately collect photographs of people and are experimenting with non-European ethnic identification tests for Māori, Polynesians and Irish people.

Risks

- **Creating an attack vector for hackers into traffic systems.**
- **Identity theft: data breaches, traffic violations by impersonating (Baecker, 2019)**
- **Safety: injury or loss of life (Zhang et al., 2021)**
- **Privacy: exposure of private, confidential, sensitive information (Baecker, 2019)**

Team Roles & Responsibilities

Niko Goijarts (20117663)

Team leader - Kept track of individual members progress to create group cohesion.

Researcher - Researched Opportunities in the application of YOLO in traffic management and wrote on the findings.

Chengwei Feng (15859291)

Minute taker - Recorded and stored meeting minutes.

Researcher - Researched Risks in the application of YOLO in traffic management and wrote on the findings.

Ziyi Zhang (19088416)

Web design overseer - Created the website framework and formatted research and writings that were uploaded to the site.

Researcher - Researched Choices in the application of YOLO in traffic management and wrote on the findings.

Reference List

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