

# TASK-3

## Traffic Analysis Model

### I. INTRODUCTION

The control of traffic is essential to both safety and urban planning. The traffic at a signal is to be analysed by the model. The model helps in detecting the number of cars along with their colour and the count of other vehicles, as well as the presence of both male and female pedestrians.

### II. BACKGROUND

For the purpose of traffic management and safety, traffic monitoring and analysis are essential. This concept aids in streamlining traffic and enhancing mobility in general.

### III. LEARNING OBJECTIVES

- Develop a model for multi-task traffic analysis
- To develop a model for accurately predicting the colour of vehicle
- To count the pedestrians and identifying their gender
- Understand the challenges of real-world data processing and model deployment

### IV. ACTIVITIES AND TASKS

- Data Collection and Preprocessing
- Object detection (vehicle, person)
- Model Training
- Colour recognition
- Gender classification

### V. SKILLS AND COMPETENCIES

- Deep learning
- Machine learning libraries (TensorFlow, PyTorch)
- Image processing
- Optimize model performance

## **VI. FEEDBACK AND EVIDENCE**

- Model accuracy and performance metrics
- Use techniques like bounding boxes to visualize model predictions

## **VII. CHALLENGES AND SOLUTIONS**

Cars or people might be impacted by lighting conditions. The usage of robust object detection models and advanced lighting correction techniques can overcome this.

## **VIII. OUTCOME AND IMPACT**

- Improved Traffic Analysis
- Enhanced urban planning
- Efficiency in traffic management

## **IX. CONCLUSION**

In conclusion, by using the machine learning and deep learning approaches the model helps in traffic management and thereby reducing the problems faced in traffic management. By addressing complex requirements such as vehicle colour transformation, human demographic analysis, and multi-vehicle detection, this project has pushed the boundaries of current traffic monitoring capabilities.