REPORT ON

PROBLEM BASED LEARNING

Carried out on

AutoAuto self-driving car

Submitted to

NMAM INSTITUTE OF TECHNOLOGY, NITTE

(An Autonomous Institution under VTU, Belagavi)

In partial fulfilment of the requirements for the award of the

Degree Bachelor of Engineering in

ROBOTICS AND ARTIFICIAL INTELLIGENCE

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1. INTRODUCTION

AutoAuto car is a self-driving car developed by Master AI to help students learn skill related to Artificial Intelligence and Computer Science interactively. AutoAuto is a Raspberry pi-based car model with Autonomous/self-driving capability which helps students/technology enthusiasts to learn and practically implement concepts of self-driving cars using Python and AI.

The car has many built in functions to operate the car like moving forward, reverse, turning left/right, to display on console, to capture images, to detect face/pedestrians, to detect stop sign etc by importing the car library the functions can be used as the library is already installed in the Master AI board. Car can be programmed by accessing AutoAuto labs terminal or through jupyter notebook terminal given for the car.
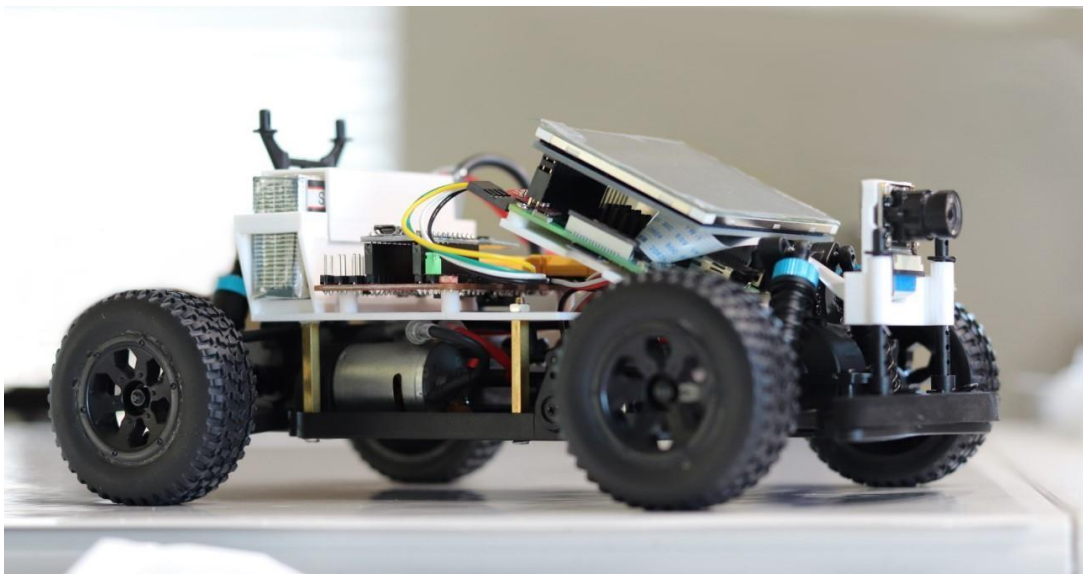
2. Problem statement

To classify the frame center colour and take defined action based on the colour detected

If detected colour is Red--- car should horn and display on console that 'Can not move'

If detected colour is Green---car should move forward and display 'moving forward'

3. Python code for the problem statement

Code for colour classifier class: https://github.com/MasterAI-Inc/libauto/blob/v2.x/auto/models.py

```python
1  import car
2
3  frame = car.capture()
4  color = car.classify_color(frame)
5  car.stream(frame, to_labs=True)
6  car.print("The detected color is", color)
```

```python
1  if color=='green':
2      car.print("safe to move")
3      car.forward(2)
4  elif color=="red":
5      car.print("cant move")
6      car.honk
7  elif color=='yellow':
8      car.turn_left(1)
9  elif color=='blue':
10     car.turn_right(1)
11 else:
12     exit()
```

4. CONCLUSION

In this project we have utilized colour detection feature to instruct the car. In real world Autonomous driving or navigation gaining importance day by day. It is important to navigate safely avoiding obstacles and coping up with real world environment like traffic signs, road regulations, etc. To meet these requirements lots of sensor's integration and computational power is needed. In this AutoAuto car by Master AI.inc raspberry pi an entry level computer used for computation. Colour detection in self-driving mainly used for traffic light detection and lane detection. Overall colour detection enhances the perception capabilities of self-driving vehicles, enabling them to better understand and interact with their environment, ultimately contributing to safer and more efficient autonomous driving.

5. REFERENCES

- https://www.autoauto.ai/
- https://github.com/MasterAI-Inc/libauto