



DENSITY BASED TRAFFIC CONTROL SYSTEM

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ABSTRACT

- Traffic congestion becoming one of the critical issues with the increasing population and automobiles in cities.
- Traffic jams not only cause extra delay and stress for the drivers but also increase fuel consumption and air pollution.
- Our proposed system aims to utilize digital image processing and ML technique to make the traffic system smart.

INTRODUCTION

- Focuses on switching the traffic light based on the vehicle density.
- Uses the image processing technique to monitor the vehicles.
- Implementing separate traffic control systems for day and night.
- Developing traffic control mechanism on rainy days

SOCIAL RELEVENCE

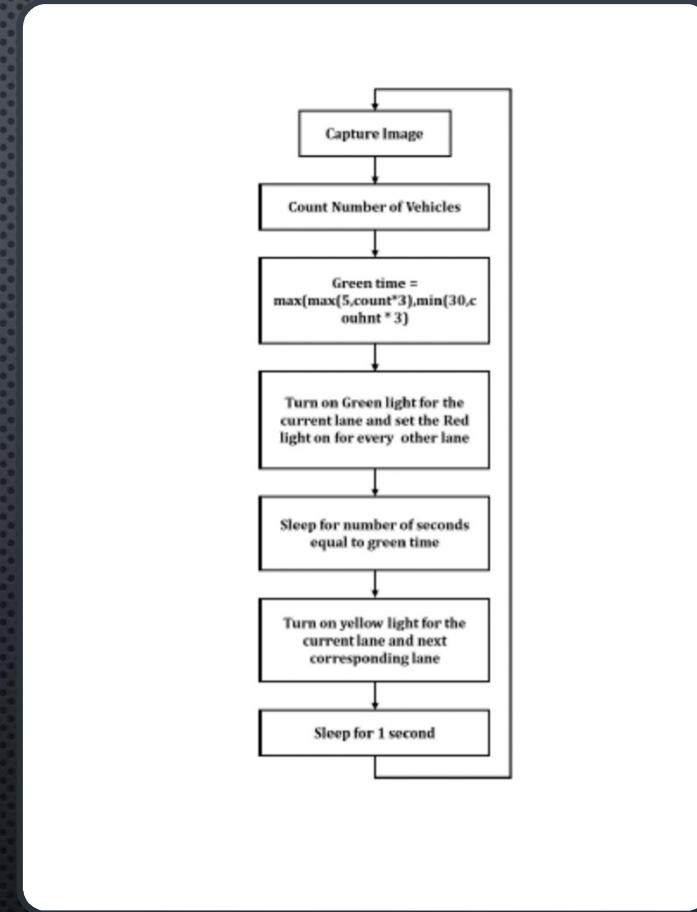
- Reduces the extra delay.
- Reduces fuel consumption.
- Reducing air pollution.
- Replacing man power with thechnology

OBJECTIVES

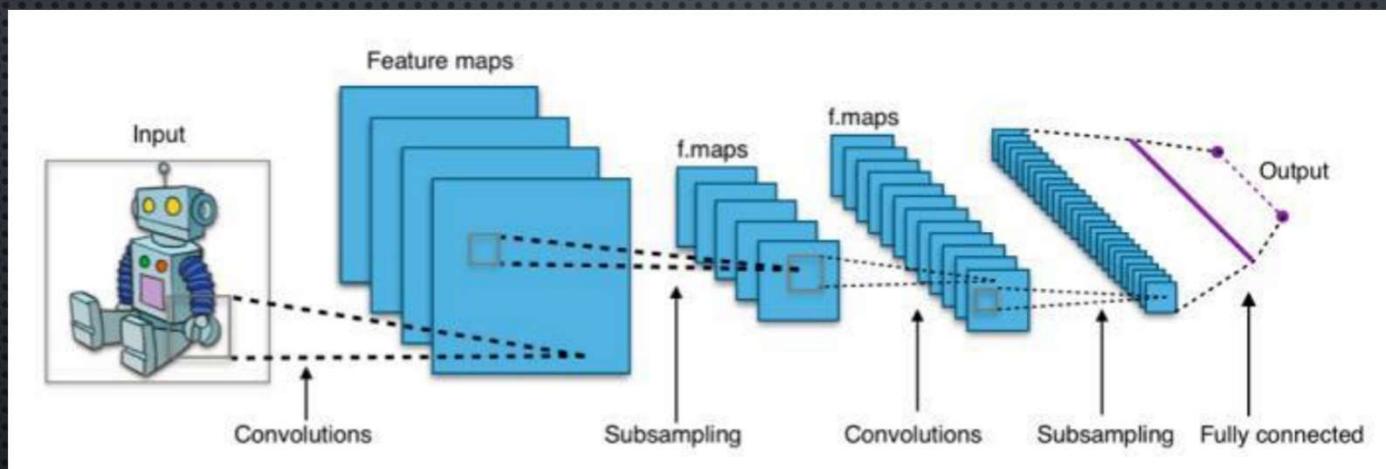
- Traffic light controller based on computer vision.
- Identification of traffic intensity.
- Detection of vehicles based on size.
- Live video feed from the camera at the traffic junction for real-time traffic density calculation.

METHODOLOGY

- IMAGE PREPROCESSING AND PROCESSING
- YOLO ALGORITHM FOR COUNTING THE NUMBER OF VEHICLES.



METHODOLOGY



STEPS INVOLVED IN YOLO ALGORITHM

EXPECTED RESULT

- Controlling the traffic lights based on the no of vehicles on a particular road.
- Automatic time shifting the control of traffic lights during day and night time.
- Change in the controlling time of traffic signals in rainy times.

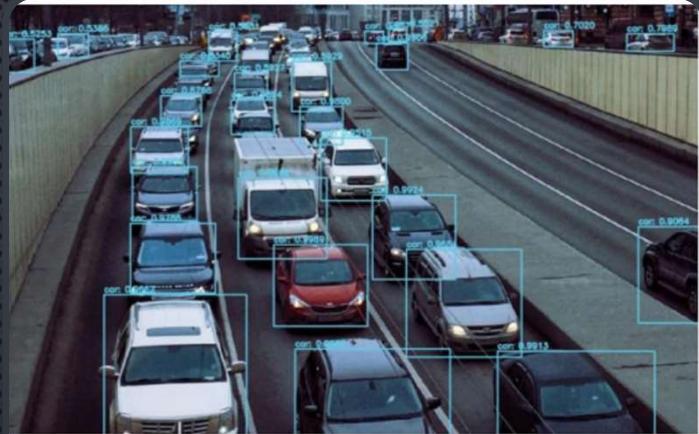
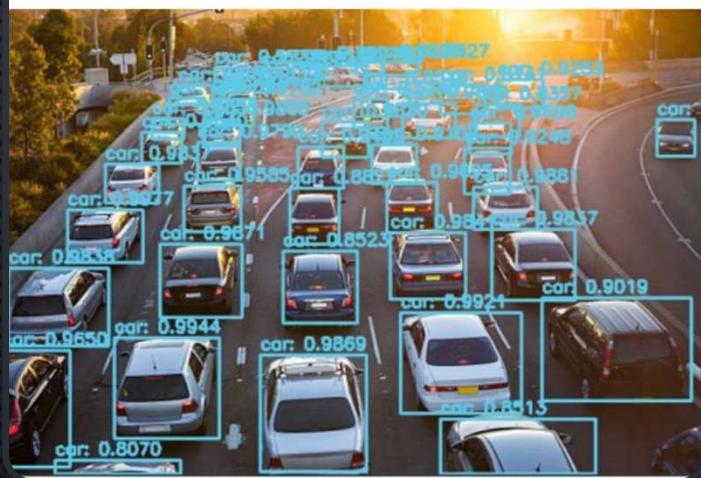


Fig 4: Vehicle Detection Results in CV – trial 1



EXPECTED RESULT

UNIQUENESS OF THE PROJECT

- Low-cost intervention.
- Doesn't need human support, Fully automated by the machine.
- Updation can be done easily on the requirement.
- Machine learning tool for the self-analysis process.
- Easily diagnosable procedure

PROPOSED TOOLS FOR THE PROJECT

SOFTWARE TOOLS

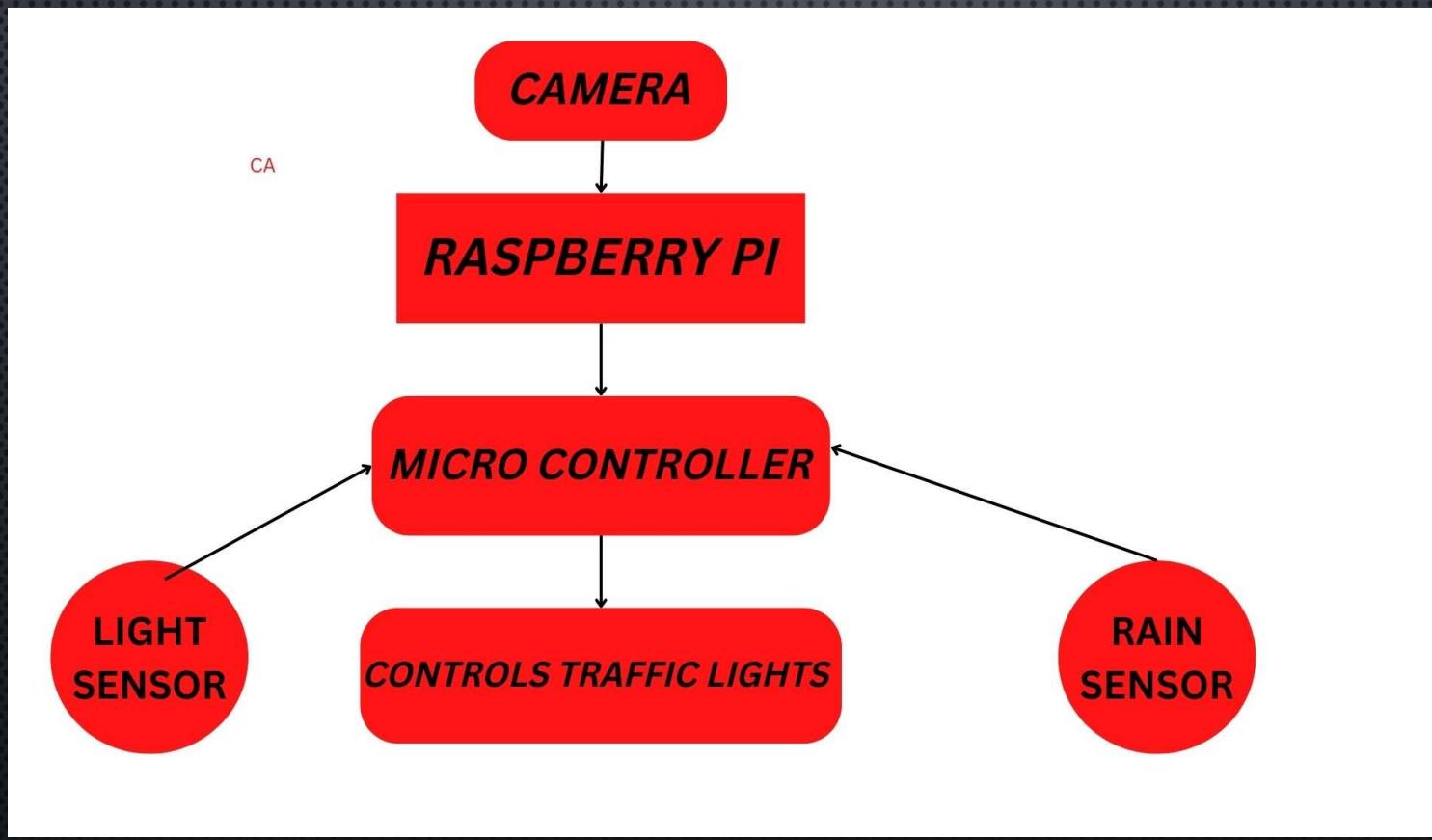
- PYTHON
- OPENCV
- KERAS
- TENSORFLOW
- ALTIUM
- ARDUINO IDE

PROPOSED TOOLS FOR THE PROJECT

HARDWARE COMPONENTS

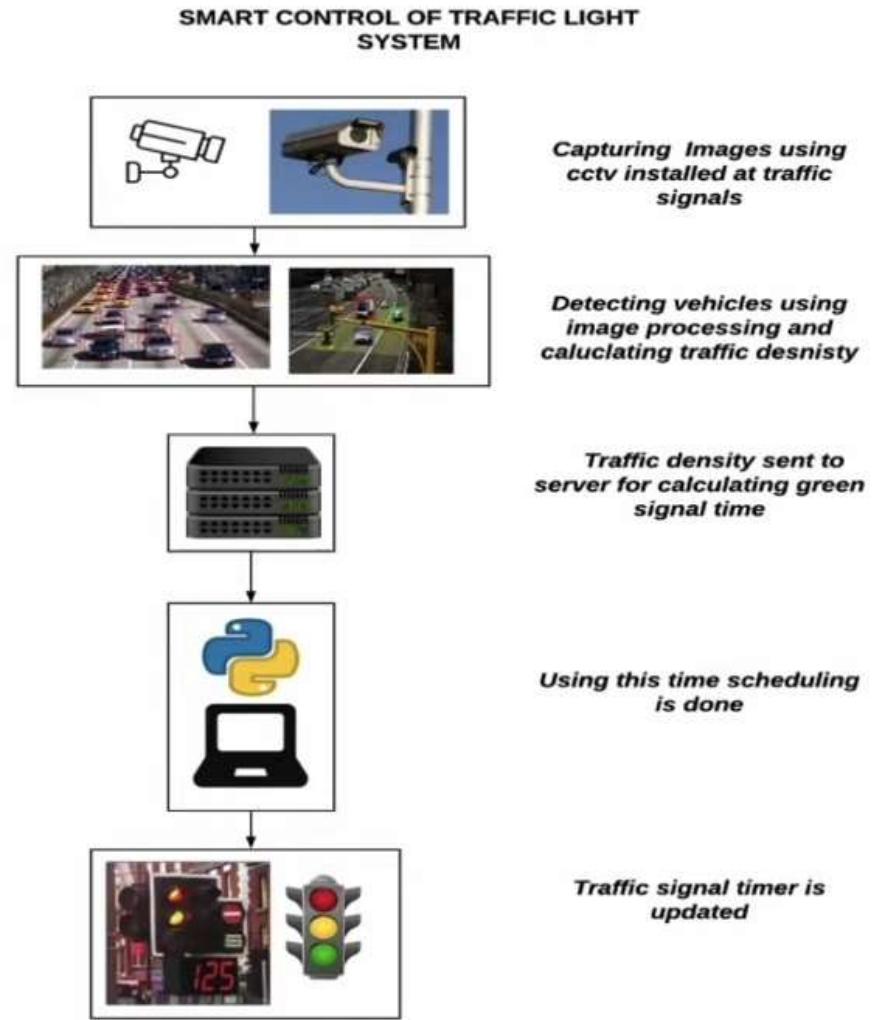
- RASPBERRY PI
- LDR SENSOR
- MICRO CONTROLLER (STM32F301)
- RAIN SENSOR
- CAMERA MODULE

BLOCK DIAGRAM



Flow Diagram

1. Image capturing using CCTV.
2. Vehicle Detection and Calculation of Traffic Density
3. Calculation of Green Signal Time
4. Scheduling Algorithm using parameters defined
5. Updating traffic signal times



PLAN OF ACTION

- OCTOBER -Literature Survey
- NOVEMBER -Design and Planning
- December -Software Simulation
- JANUARY -Implementation of Hardware
- FEBRUARY -Completion of Project
- MARCH -Report and Documentation

REFERENCES

BASE PAPER

1.Smart Control of Traffic Light Using Artificial Intelligence(5 th IEEE International Conference on Recent Advances and Innovations in Engineering- ICRAIE 2020 (IEEE Record#51050))

LITERATURE SURVEY AND REFERENCES

Real Time Traffic Management Using Machine Learning(2020 International Conference on Emerging Trends in Information Technology and Engineering (ic-ETITE))

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THANK YOU