P K M Educational Trust ®

R.R. INSTITUTE OF TECHNOLOGY

(Affiliated to VTU, Belagavi I Approved by AICTE , New Delhi & Government of Karnataka)

Project Phase II Presentation

On

"Obstacle Avoiding Robot Using CNN"

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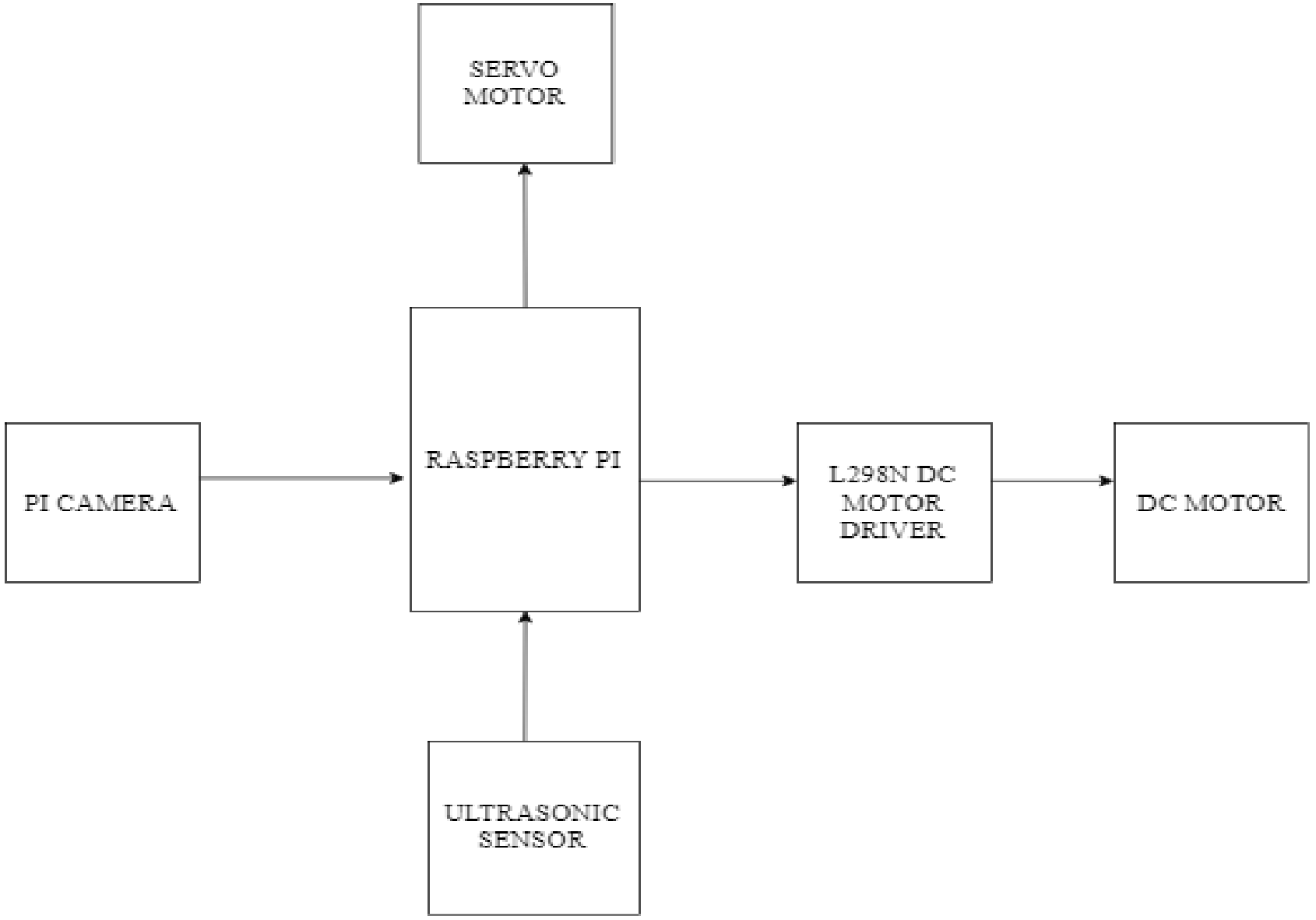
PROBLEM STATEMENT

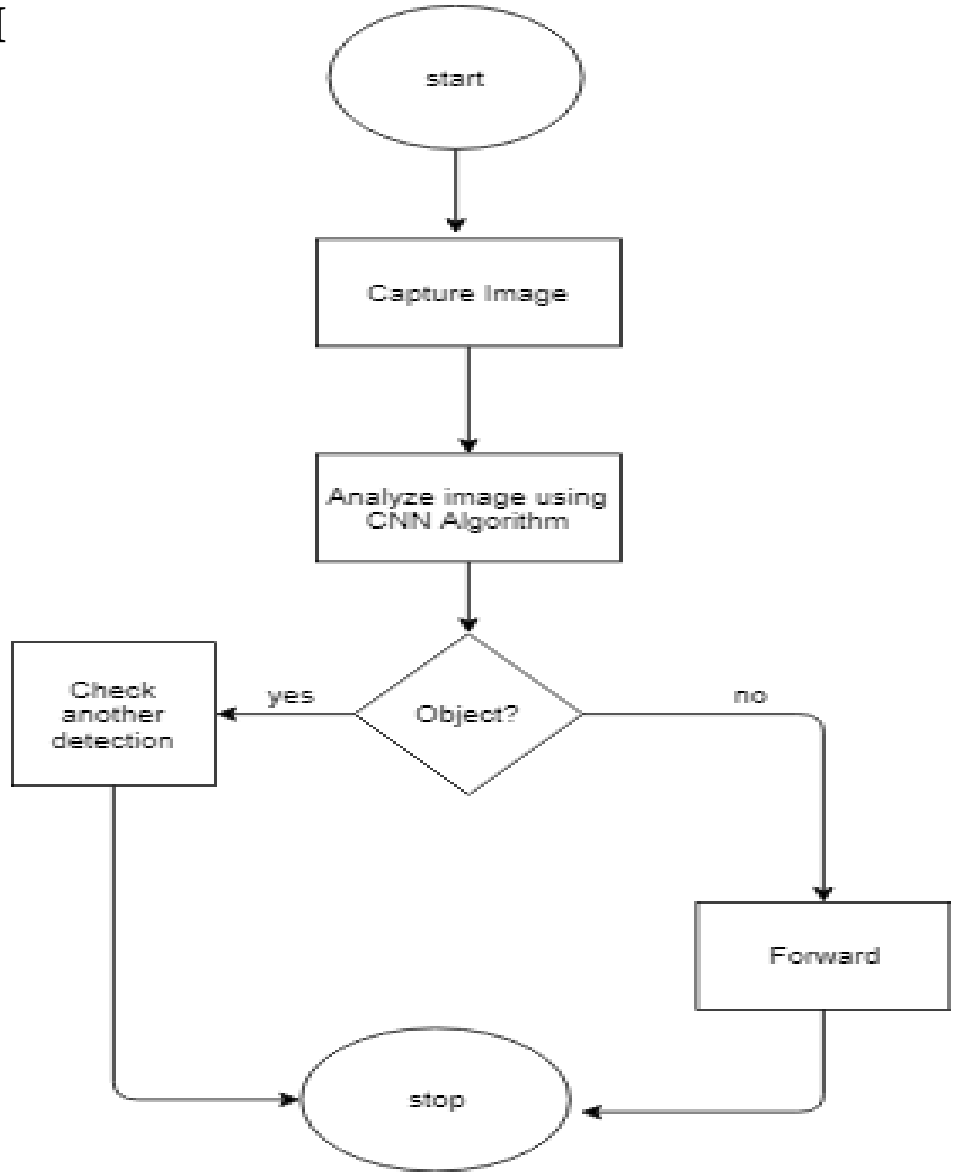
- Robotic technologies are important to improve industry machinery weapons.
- A simple collision avoidance machines to explore a rough environment.
- By using this simple collision avoidance system, new and variety robot with multiple functions can be invented.
- Its features ranging from detect an obstacle and steer the robot short it in order to avoid a collision that enable the robot to detour obstacles.
- The algorithm are complex, not only the detection of an obstacle, but also quantitative measurements concerning the obstacle's dimensions.
- The obstacle avoidance algorithm needs to steer the robot around the obstacle and resume motion toward the original target.

HIGH LEVEL DESIGN

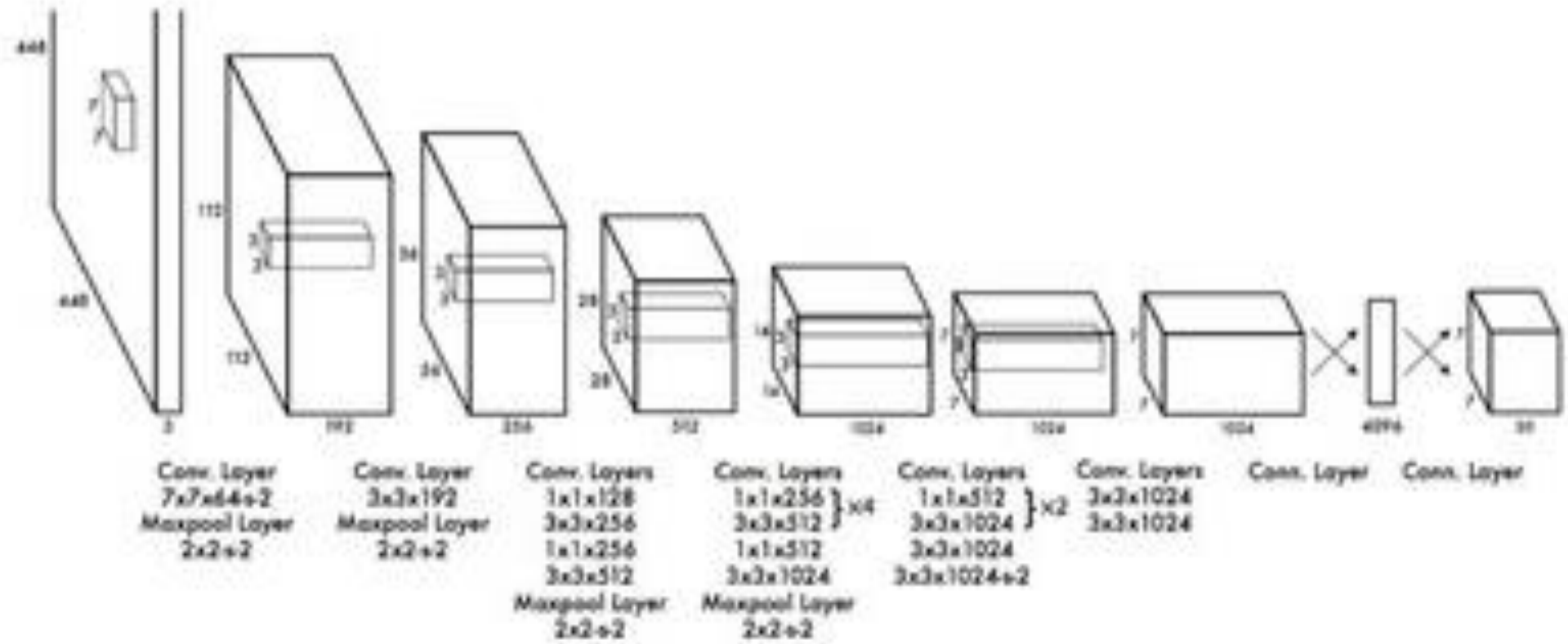
SYSTEM ARCHITECTURE



DATAFLOW DIAGRAM

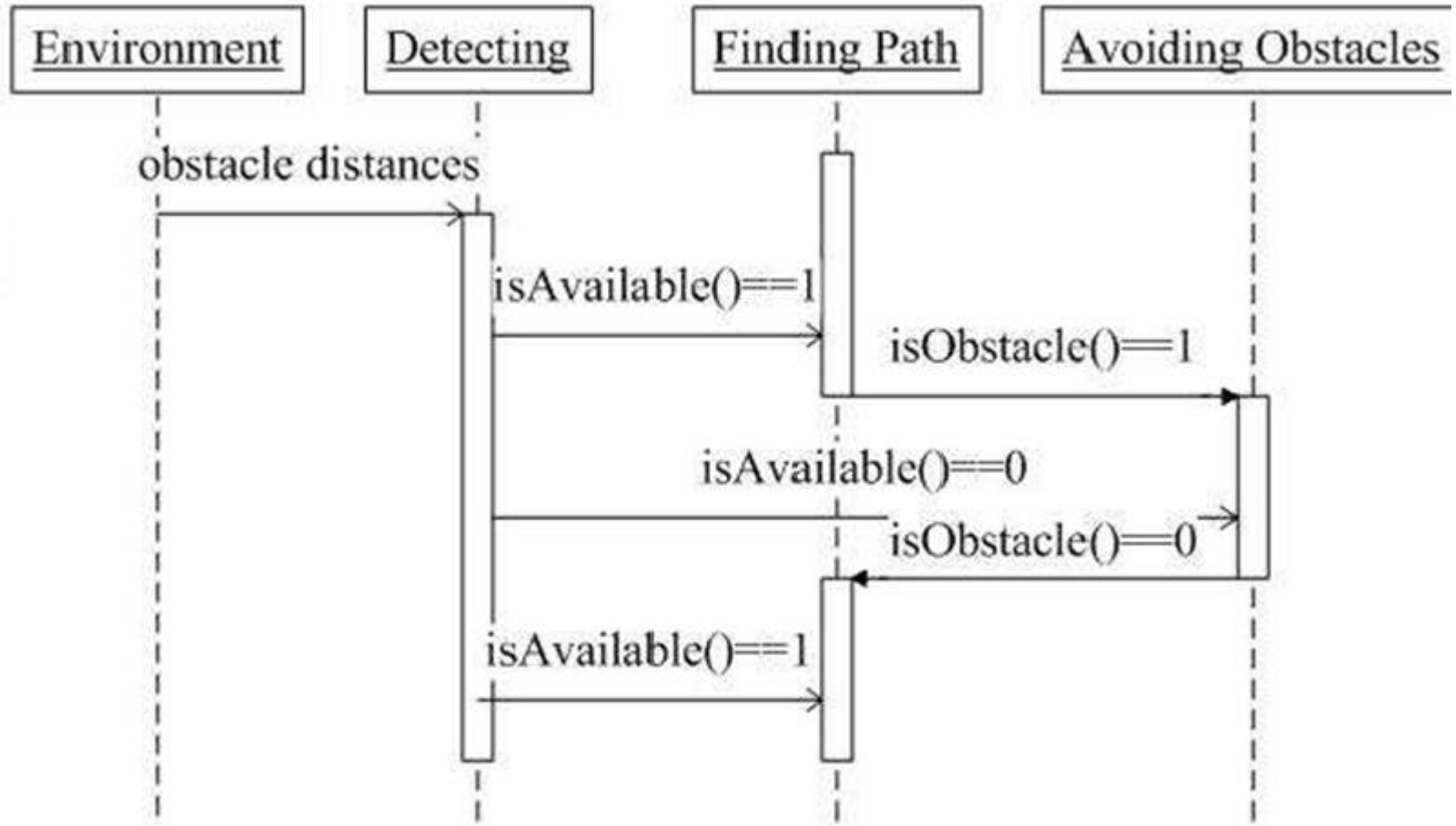


CNN Architecture



DETAILED DESIGN

SEQUENCE DIAGRAM



STATE TRANSITION DIAGRAM

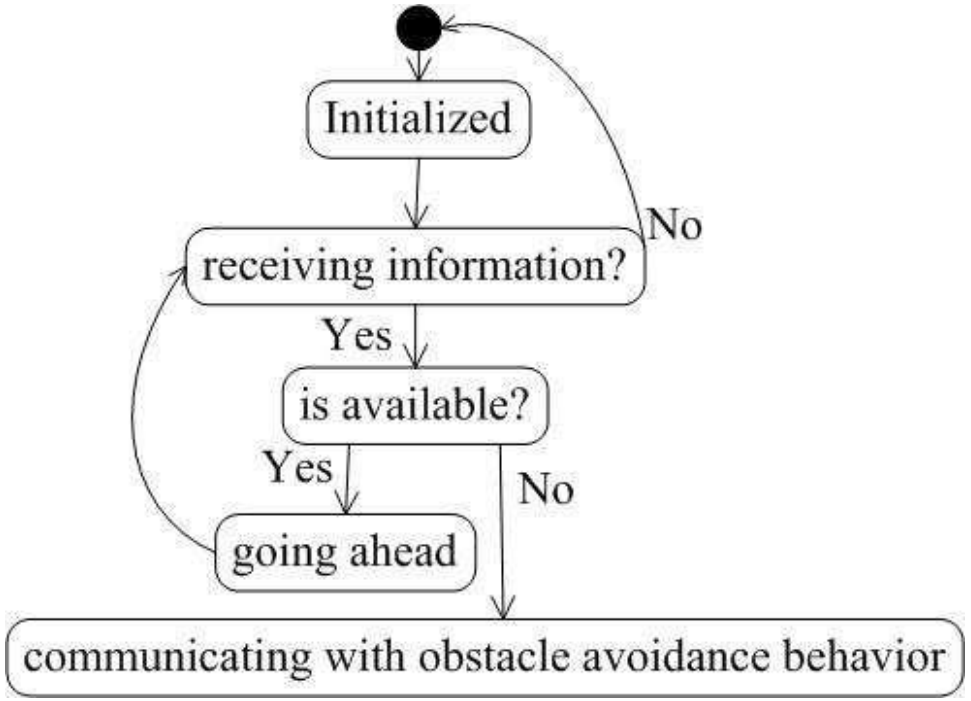


Fig: for finding path behavior

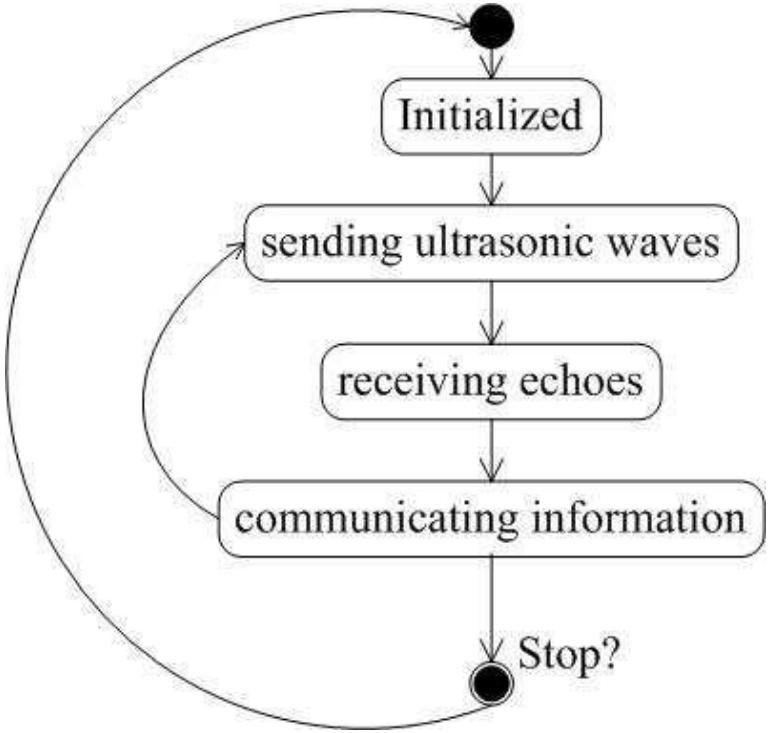


Fig: for the detecting behavior

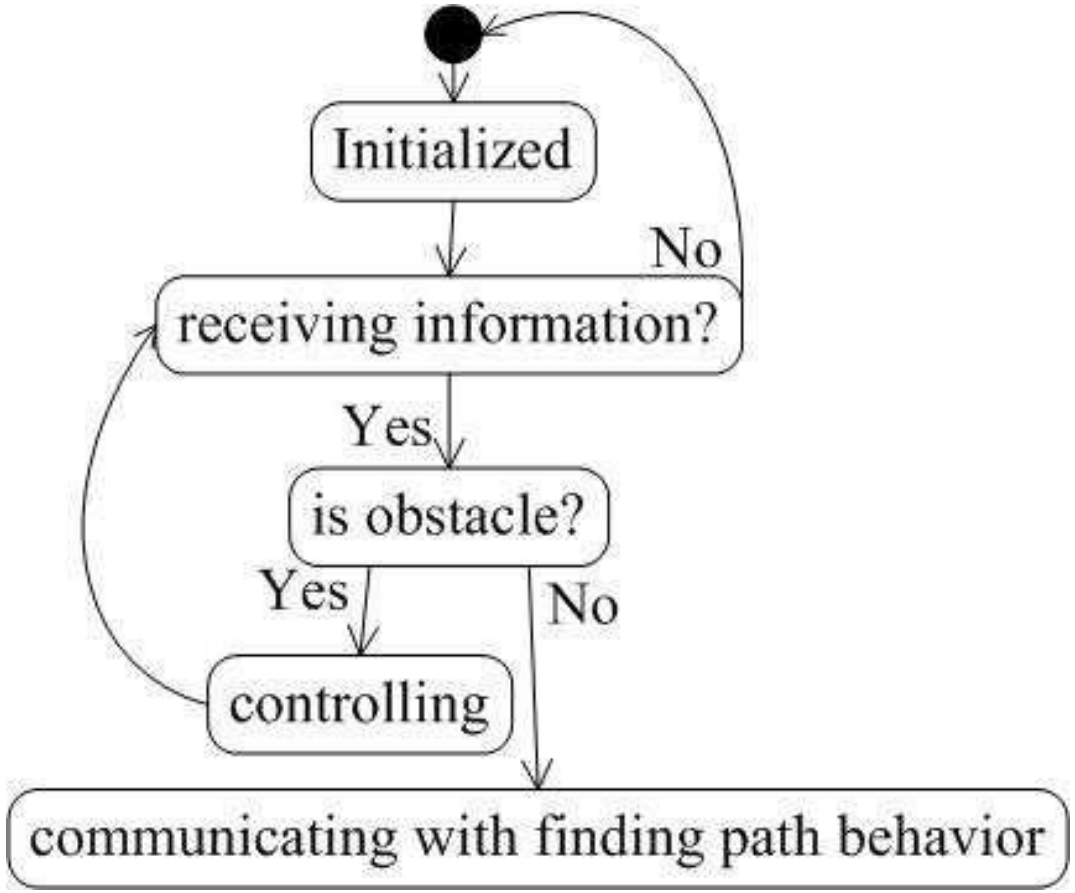


Fig: for the obstacle avoidance behavior

IMPLEMENTATION

MODULAR DESIGN

- **Ultrasonic sensor**

  An Ultrasonic sensor is used to sense the obstacles in the path by calculating the distance between the robot and obstacle.

- **Servo motor**

  Obstacle Avoiding Robot With Servo Motors. Obstacle avoider robot detects obstacles while it is moving. When it detects an obstacle, the robot gives buzzer signal and make the passes by the obstacles.

- **L298N DC MOTOR**

The L298N is a dual H-Bridge motor driver which allows speed and direction control of two DC motorsat the same time.

CONTD....

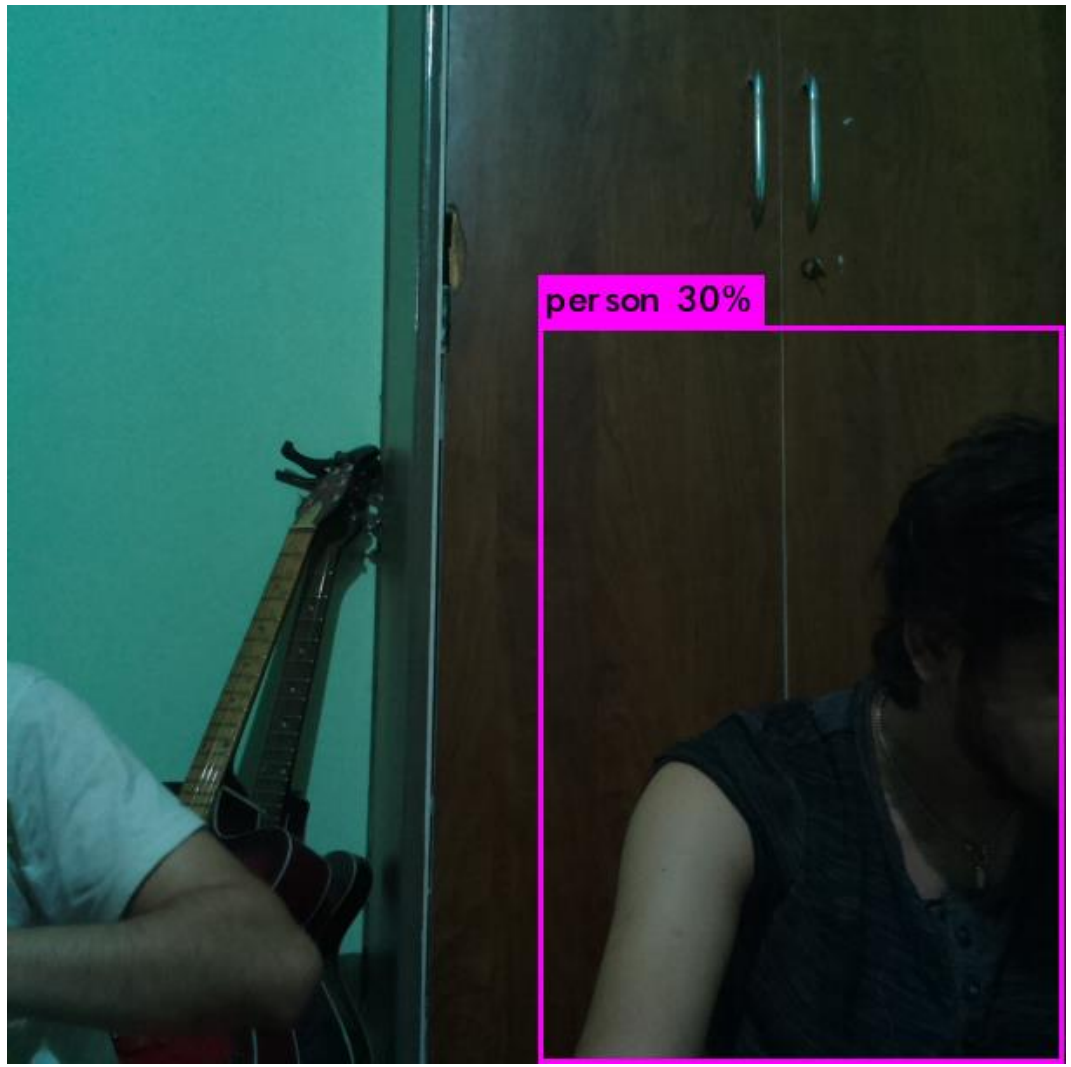
- **Pi Camera**

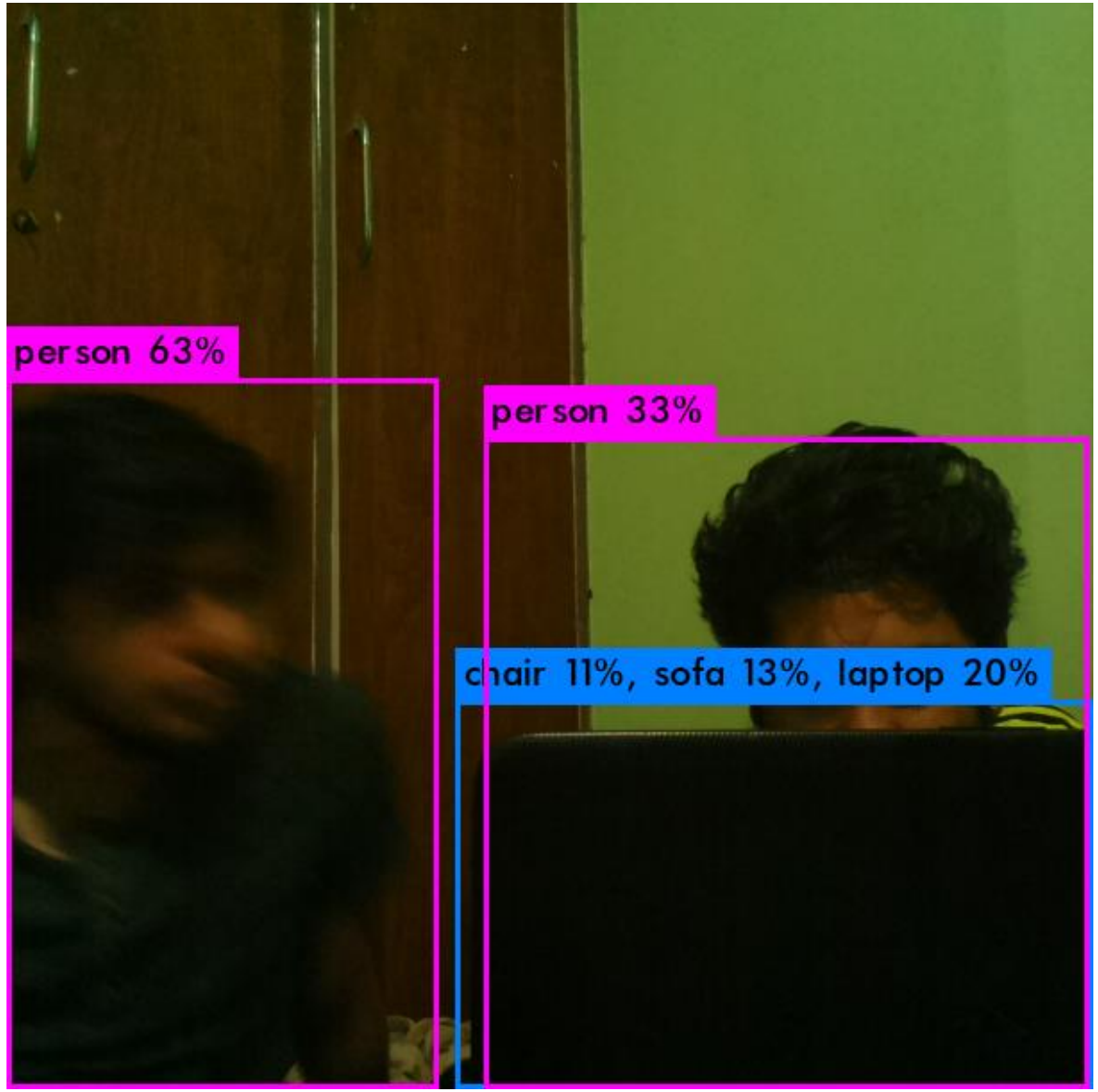
The Pi camera module is a portable light weight camera that supports Raspberry Pi. It communicates with Pi using the MIPI camera serial interface protocol. It is normally used in image processing, machine learning or in surveillance projects.

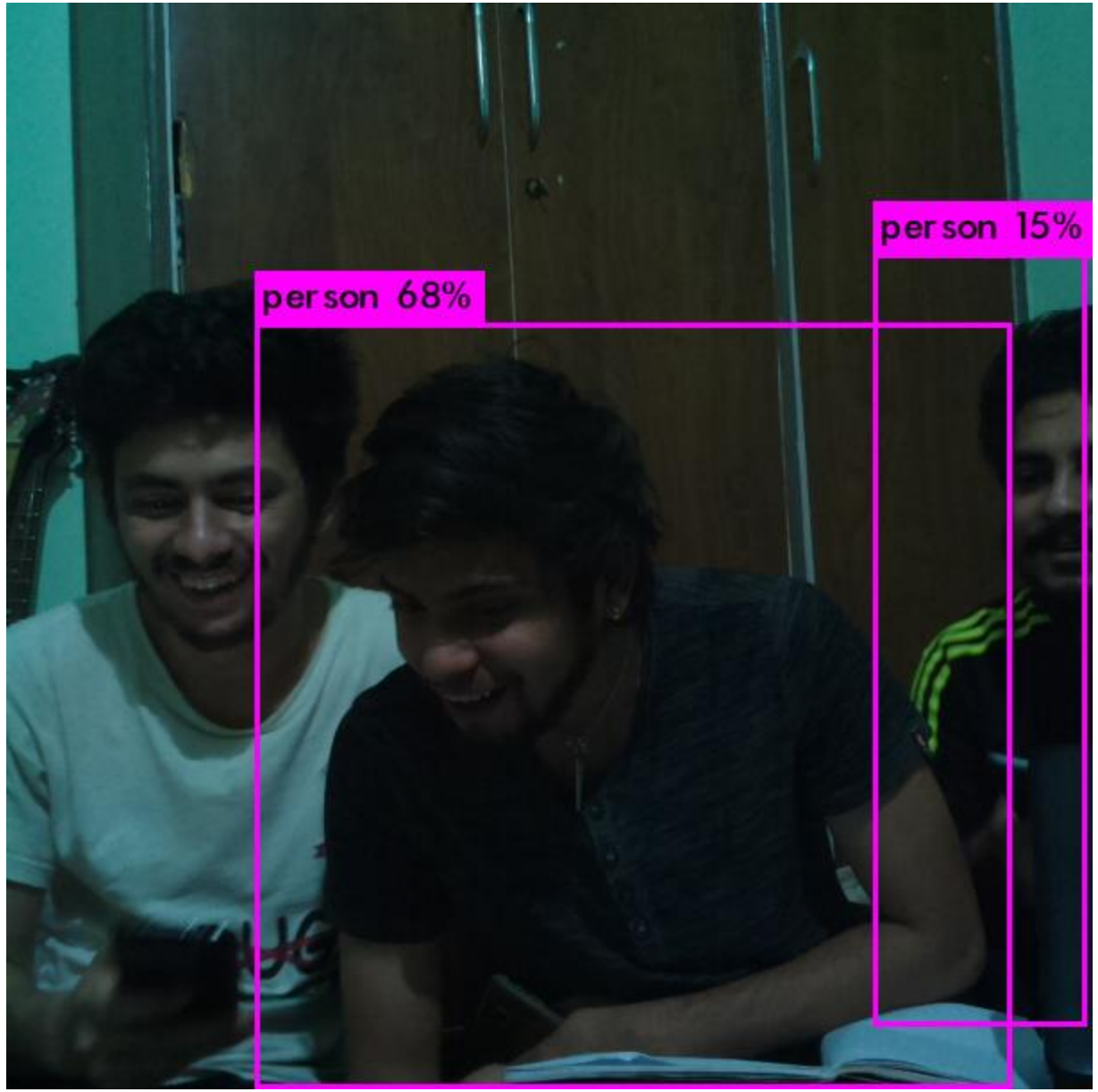
OPERATIONS

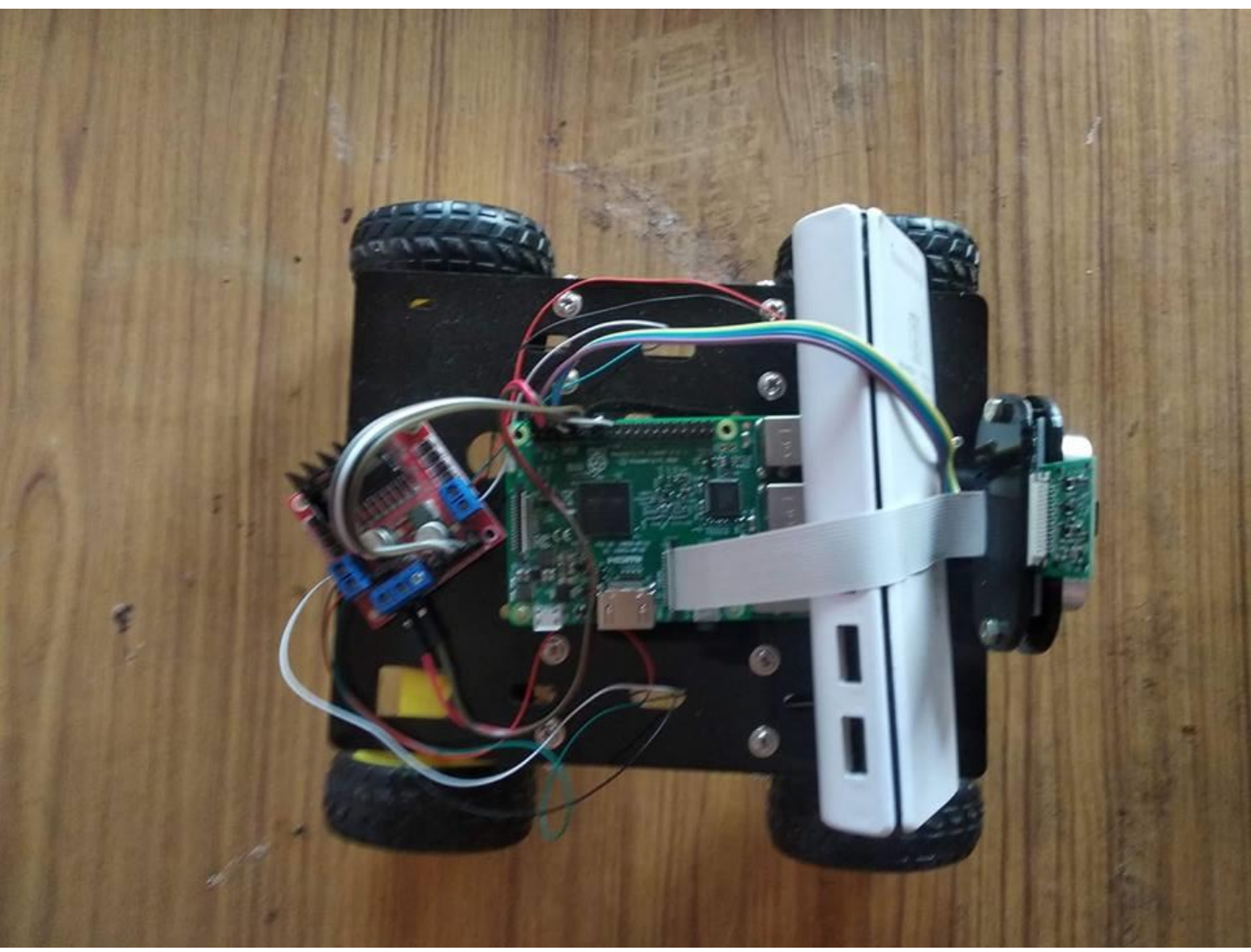
- **Mutiple Object Detection**
- **Object Localization**
- **Distance Measurement**
- **Motor Control**

SCREENSHOTS


person 30%


person 63%
person 33%
chair 11%, sofa 13%, laptop 20%


person 15%
person 68%



THANK YOU