# *QUADRUPED SPIDER*

# Manual for the Robot

Group Number: 05


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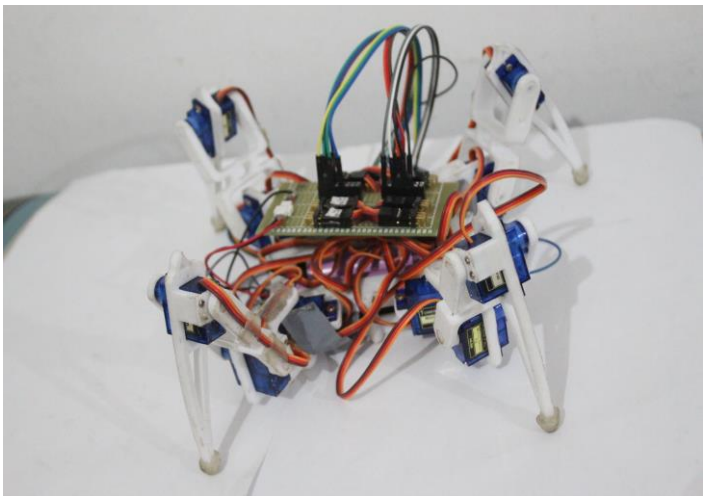


# Status Explanation

## What this robot can do?

1. Does every movement function.
2. Detect a specific object through Pi camera.
3. Real time image processing to identify a specific object.
4. Navigate towards that object using image processing and sonar sensor distance calculation.

## What this robot can do with the technology it already has?

1. Navigating through a surrounding of obstacles using the sonar sensors around.
2. After including a Pathing algorithm to navigate in an unknown simulation environment.

## Future work for the bot

1. Using reinforcement learning to find a best solution for a given path to an object in an unknown surrounding.
2. Navigating in a rough surface by detecting the plain.
3. Self awareness (ultimate goal).

# Manual for the continuation of the robot

I've included both full codes for raspberry Pi and arduino.

In raspberry pi code(finalRobot.py):

- Object tracking
- Sonar sensor control
- Serial communication with the arduino

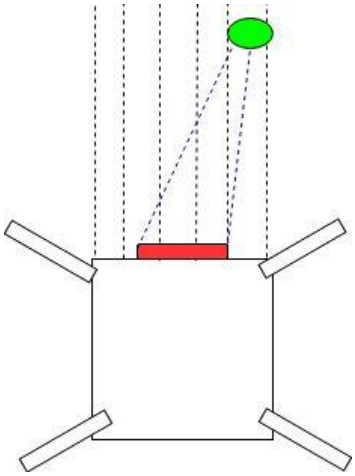
In Arduino(spider.ino):

- Controlling the servo motors

Presently we've developed it to detect a specific object in the surrounding of it and then navigating towards that specified object(as for now its a green object, but can be specified through the code).

## Object detection(Image processing through OpenCV)

I have explained it extensively in the code how this process works. (Full report also included in the repo to refer)



*Object detection method*

## System Architecture