ECE 511 Project – Sniffing Dog

- Team Members:
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  4. Swathi Guruduth
  5. Vignesh Ravishankar

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- Overview:

1. This project is about building a robot which behaves like a sniffing dog.
2. The direction of motion of the vehicle is based on the position of the object.
3. If the object is beyond a certain threshold distance, the robot moves towards it i.e. it takes left or right turn and moves forward.
4. If the object is at a distance less than a certain threshold, the robot moves away i.e. backwards.
5. Why ???? An opportunity to demonstrate interfacing capabilities of multiple components.

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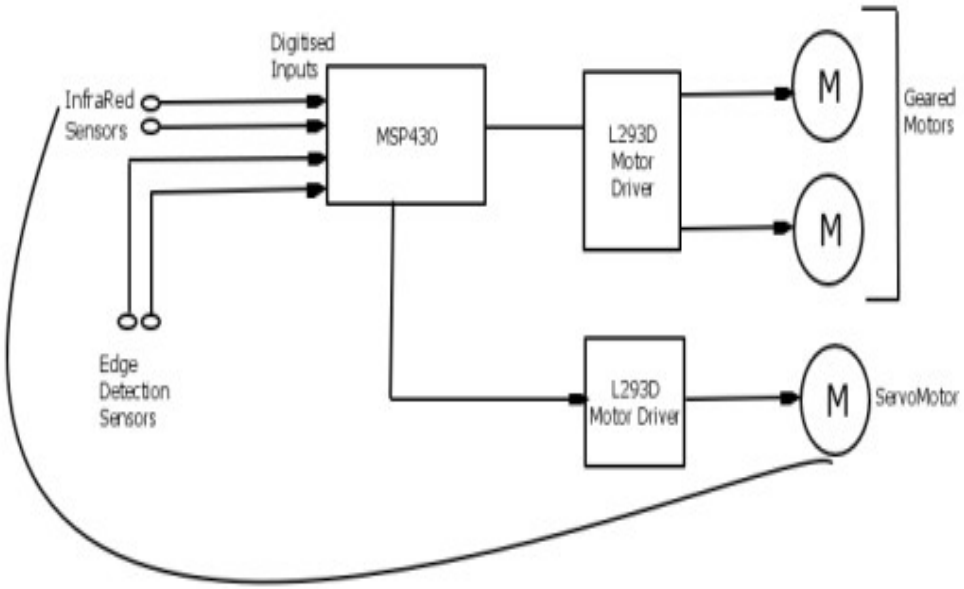
- Block Diagram



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- Components Used:

1. IR Sensors
   - 2 IR sensors for edge detection so that the robot doesn't fall off the table.
   - This is directly interfaced with the MSP430
   - Ordered

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2. Sharp Analogue Infra-Red Range Finding System (AERS)
   - This is the IR sensor used to check the proximity of the object.
   - This is mounted on the Servo motor and directly interfaced with the MSP430
   - Ordered

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3. Servo Motor: S03-N
   - This is used for pointing the IR proximity sensor towards the object based on its position.
   - Control signal from MSP430 is given to the L239D driver which in turn is given to the servo motor.
   - Directly interfaced with L293D driver.
   - Ordered.

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4. Geared Motors (GM9) with wheels:
   - This is used to control the motion of the robot as per the control signals from MSP430 given to L293D driver.
   - Directly interfaced with L293D driver.
   - Acquired.

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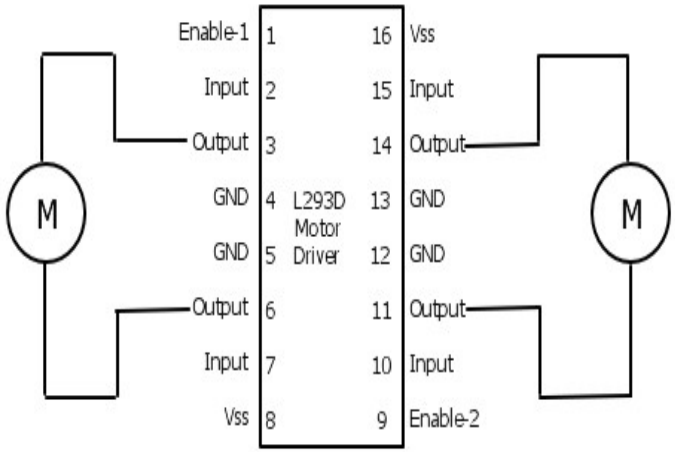
- Motor Connection Diagram



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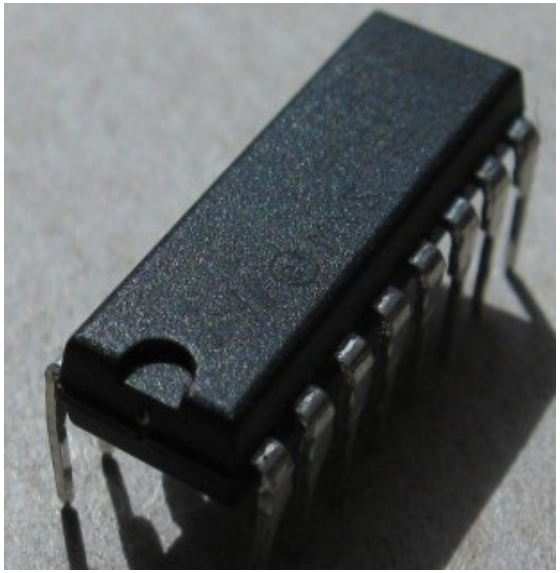
5. L293D Driver:
   - We are using 2 drivers.
   - This is the driver IC which is used to drive the Servo and Geared motors.
   - Directly interfaced with MSP430.
   - Acquired.



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Challenges faced as yet:

- MSP430 has only 2 timers. We have to interface 2 geared motors with one timer and 1 servo motor with the other timer.
- Back EMF from the motors
- Providing sufficient power to drive the entire unit.

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Project Status:

1. Task Division:
   - Geared motors working and control - Ranjith and Shashwath
   - Servo Motor working and control- Preethi and Vignesh
   - IR sensors - Swathi

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Alternative to desired Actual :

- To achieve only linear motion of the robot (front and Back)

- To achieve the overall functioning , with operation restricted only over level surface.

Thank You