



EAST WEST
POLYTECHNIC

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Department of Electronics & Communication Engg.
MOBILE PICK AND PLACE
ROBOT

Submitted by :

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Under the guidance of

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OUTLINE OF OUR PROJECT

- INTRODUCTION
- OBJECTIVES AND BLOCK DIAGRAM
- HARDWARE DETAILS AND PROCEDURE
- RISK ANALYSIS AND SOFTWARE DESCRIPTION
- RESULT AND INTERFACE
- ADVANTAGES AND APPLICATION
- FUTURE SCOPE AND CONCLUSION

INTRODUCTION

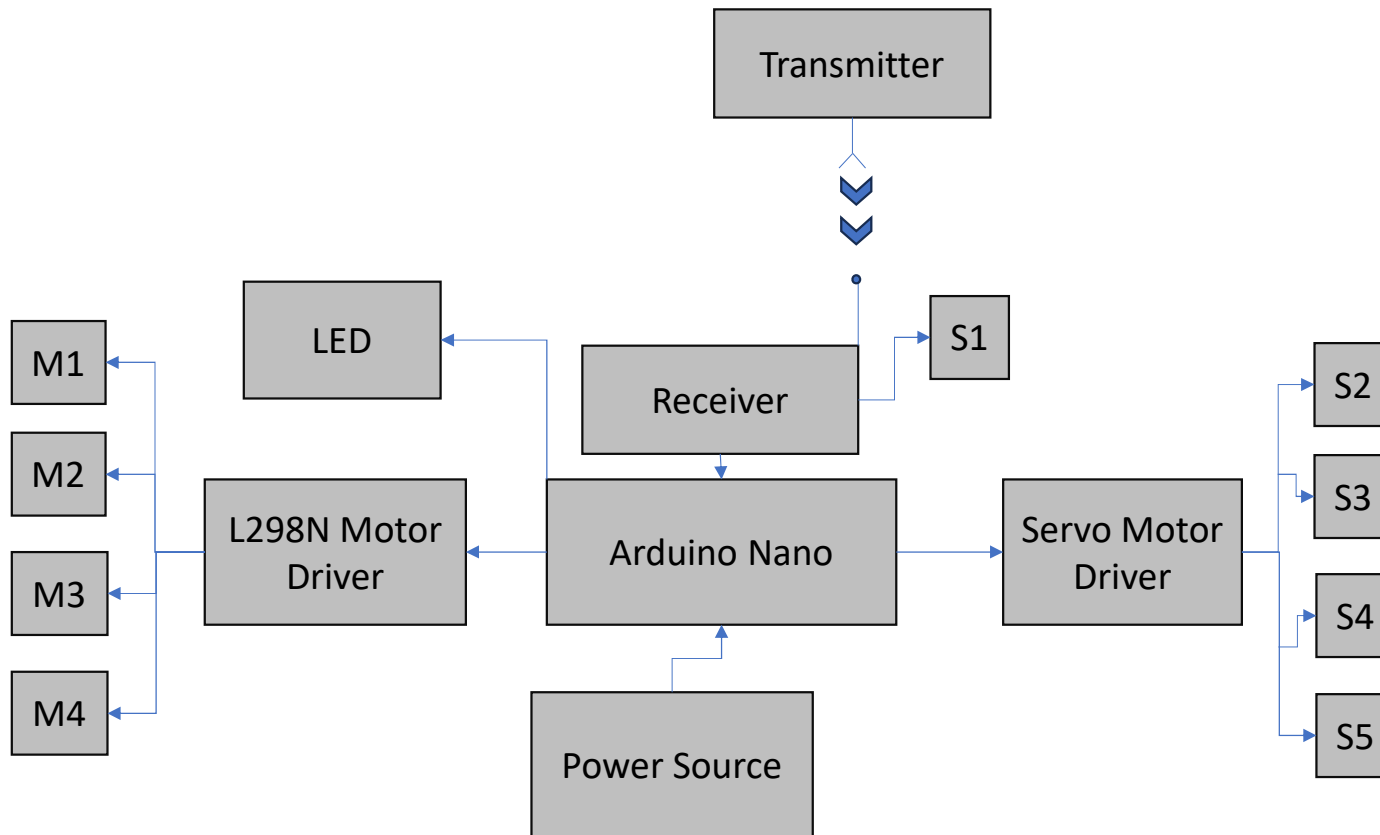
- The Mobile Pick and Place Robot or Two-functional mobile robot that include pick-and-place module.
- Our robot do material handling tasks using Remote Control based on the process environment are the key concepts of automation.



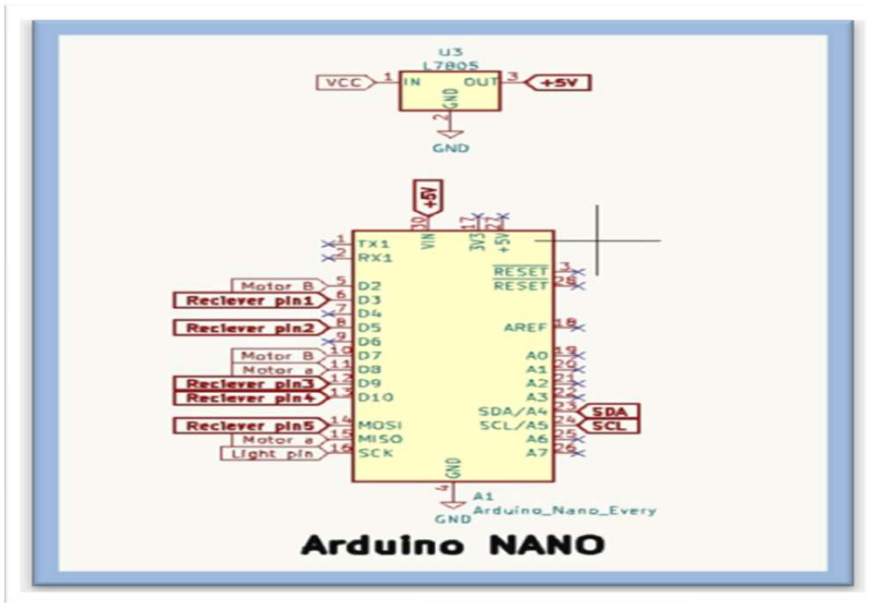
OBJECTIVE OF OUR CAPSTONE PROJECT

- Develop a non-magnetic robotic
- Create a robot capable of both mobility and object manipulation.
- Ensure the coding is error-free
- Control the robot's movements remotely

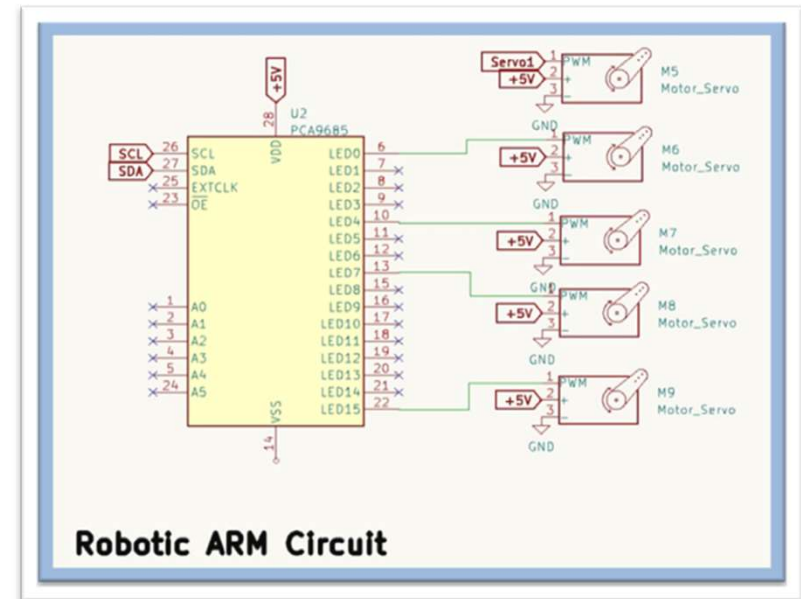
BLOCK DIAGRAM



ARDUINO AND ROBOTIC ARM SECTION

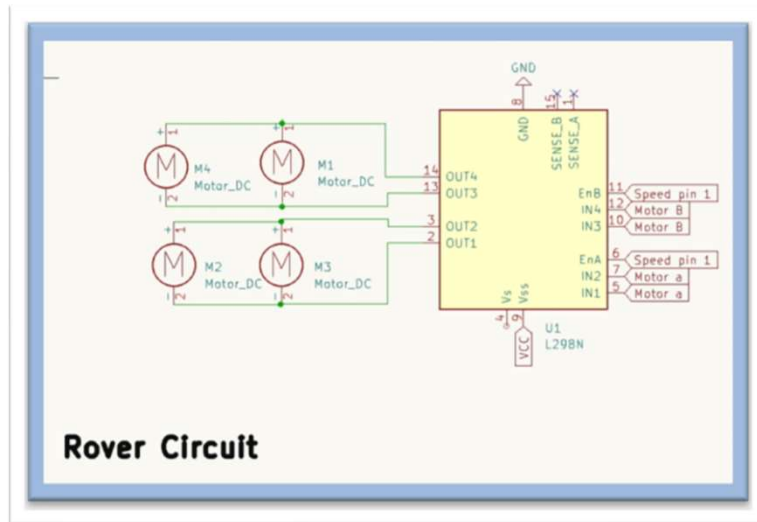


- Arduino Nano in Robotic Arm Block the SCL and SDA pin is connected to Arduino Nano. In Rover block the motor driver is powered by Arduino and the motors are powered by 12V external power supply.

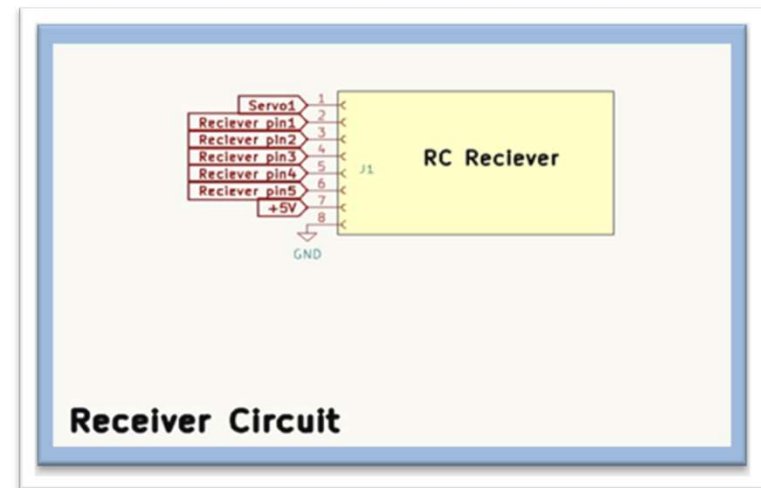


- In Robotic Arm block total of 5 Servo motors are used in the project, out of which 4 are connected to PCA 9685 servo motor driver and one servo motor is connected directly to Receiver.

ROVER AND RECEIVER SECTION

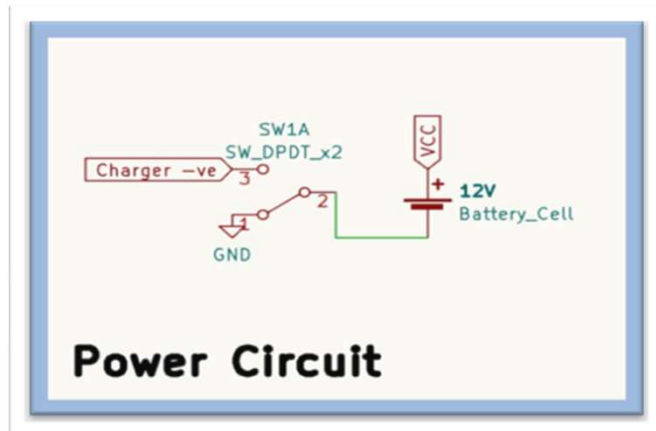


- This Rover consists of four 10 RMP Motors controlled via L298N H bridge motor driver. The Motor driver is connected to Arduino nano.

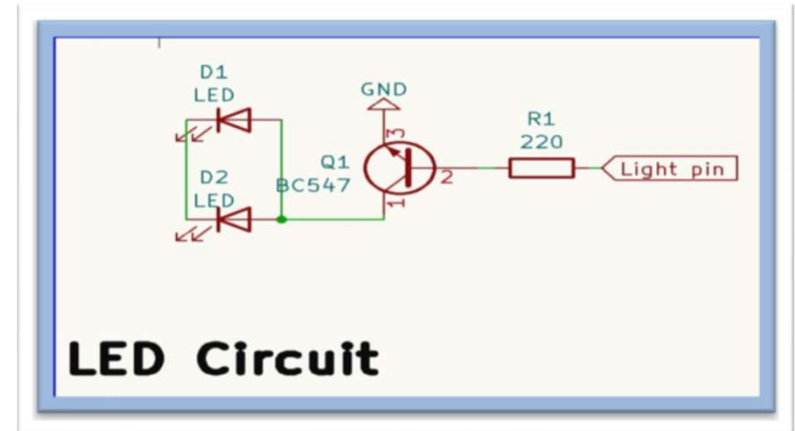


- The Receiver is connected to Digital Pins Arduino nano. One of the Servo is directly connected the receiver module. The receiver module is powered through 5V external voltage.

POWER AND LED SECTION



- The Block consist of two voltages level 5V and 12V, 5V is used to power the microcontroller, PCA9685 module, L298N motor driver, Servo motors and FSI6 receiver module. 12V is used to power the gear motor and is also connect to 5V boost converter.



- Two high power LEDs are connected in parallel to collector of BC547 Transistor, the base of BC547 is Connected to digital pin 13 of Arduino nano.

HARDWARE DETAILS

- Arduino Nano
- Servo motors (MG995, SG990)
- DC motors
- L298N Motor Driver
- 12v lead acid Battery
- Fly Sky FSI6 2.4GHz Transmitter and Receiver
- High beam LED
- BC547 Transistor
- 7805 5V Regulator IC
- Buck and Boost Convertor
- PCA 9685 Servo Motor Driver
- On/Off Selecting Switch

COST BREAKDOWN STRUCTURE

In the first stage of our project the cost breakdown structure is:

Work	Cost
Research similar website for better plan development	-
Fly Sky FSI6 2.4GHz Transmitter Receiver	-
Procuring Components	3000
Coding	1300
Preparing a report for internal assessment	200
Overhead cost	500
Total	5000

In the Second stage of our project the cost breakdown structure is:

Work	Cost
Checking errors and rectifying the faults	-
Research the prepare a report	-
Preparing Power Point Presentation	-
Final presentation	2300
Overhead cost	700
Total	3000

- **For the first 40days the total cost is 5000/.**
- **For the second 40 days the total cost is 3000/.**
- **The total cost of the project for 80days is 8000/.**

PROCEDURE

- **Designed using AutoCAD fusion.**
- This 3D model is printed and all the required components are fixed in accordance with the block diagram.
- The **FS-i6 receiver** is connected to the Arduino and then tested with the **transmitter**.
- The **values from the transmitter** are set accurately using the buttons provided.
- The **code** is dumped into the Arduino microcontroller.
- The switch in the **Transmitter** is used to switch between **the rover and robotic arm modes**.
- The Mobile Pick and Place Robot is now completed.

SOFTWARE DESCRIPTION



- An open-source platform using a programming language based on C++, with a large library of pre-written code and simplicity of syntax.
- **Procedure:** Connect Arduino board to the PC, compile the program, select the correct board, and upload the sketch to the internal memory of the MCU.

RISK ANALYSIS

- Design Risk
- Environmental Risk
- High Power Consumption
- Over Load Capacity
- Programming Risk

RESULT & INTERFERENCE

- The Mobile Pick and Place Robot Pick's the object through Robotic arm and deliver the object from one place to another through Rover Module.
- The Mobile Pick and Place Robot is controlled through wireless remote Controller.



ADVANTAGES

- Educational
- Customization Options
- Independent robotic arm
- Greater User Control



APPLICATION

- E-commerce and Retail
- Manufacturing
- Automotive Industry
- Food and Beverage Industry
- Logistics and Distribution Center.
- Healthcare and Pharmaceuticals



FUTURE SCOPE

- Future of Industrial automation
- Utilization of advanced materials for durability and reliability
- Integrating with Artificial Intelligence and Machine Learning
- Integration with Augmented Reality (AR) for remote operation and training

CONCLUSION

- Incredible achievement in the field of robotics.
- Wide range of Industries.
- Its adaptability and flexibility
- Impact on manufacturing and logistics segments
- The future of production

THANK YOU

