

Automobile Pick and Place Robot

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<https://github.com/tioluwanimofe/Robot>



<A.P.P.R.>



- Our robot was created for competing at the Trevecca Nazarene University Engineering Design Class Project Competition.

Requirements for Trevecca Nazarene University Engineering Design Class Project Competition.

- Robot should have a mechanism for placing blocks into dimensionally marked area
- Robot should be enabled with wireless communication between a remote control transmitter and robot's wireless receiver
- Robots should have a mechanism for locomotion
- Two bonus points were awarded per stacked blocks



Invention Materials

Materials used for final invention build

- The three main components of our robot are:
 - Robot shield
 - Controller shield
 - Robotic structure

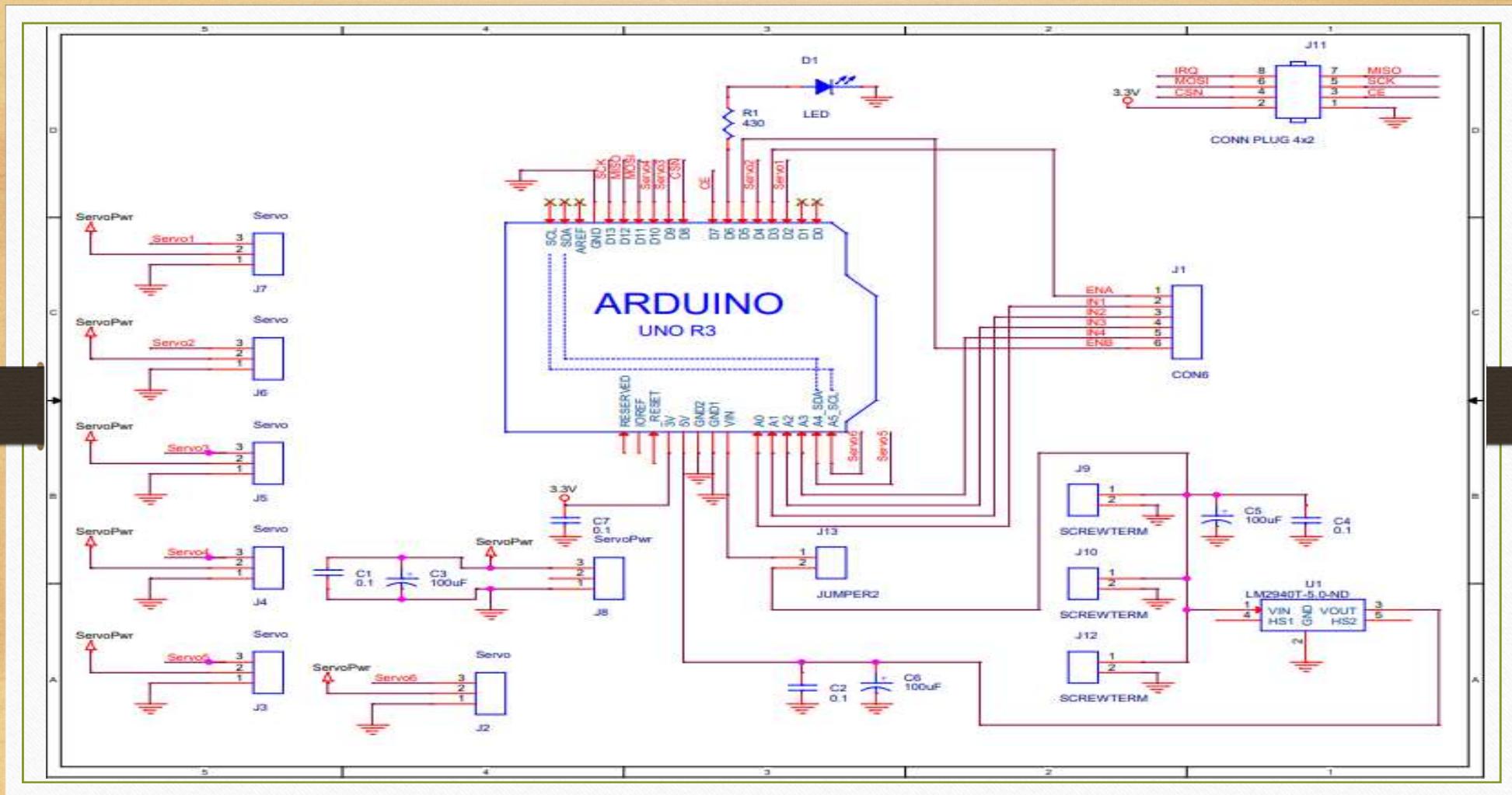


Robot shield

The robot shield consists of the electronic wiring and components of the robot.

- Elements of the robot shield include:
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- An Arduino UNO R3
- Two Servos
- A pack of multicolored LEDs
- Several Resistors, Transistors
- Two DC Motors
- A H-bridge
- A pack of Female Jumper wire
- One RF24 wireless communicator(receiver)
- 5 Volts Battery Pack



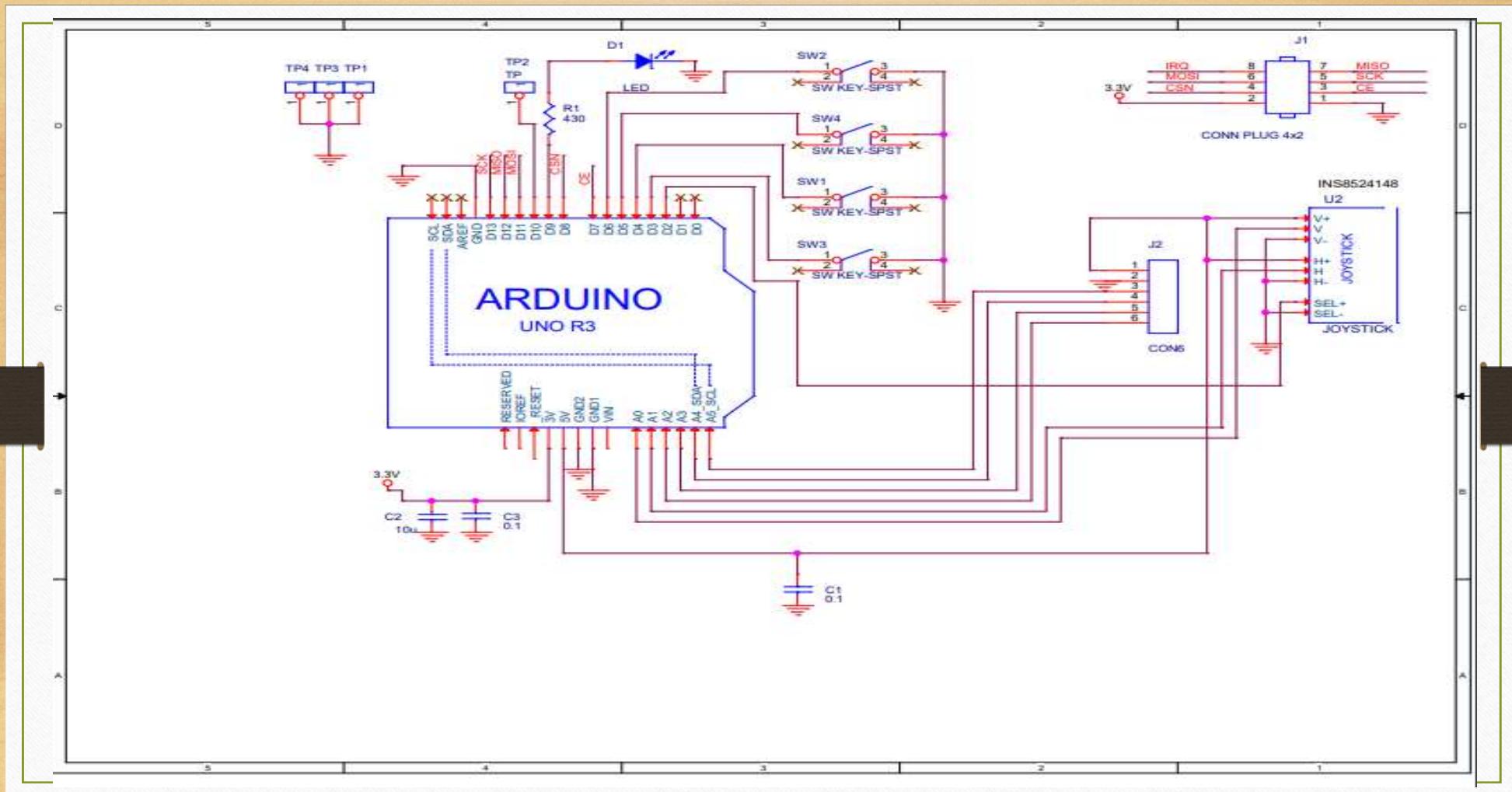


Controller shield

The robot also includes its remote control which comprises the joystick, and the controller shield. The controller shield consists of the electronics design of this control system.

- Elements of the controller shield
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- Arduino UNO R3
- LEDs
- Several Resistors, Transistors
- Six multi-colored push buttons
- A Joystick
- 5 Volts battery pack
- A pack of Female Jumper wires
- One RF24 wireless communicator(transmitter)





Robotic Structure

- Our project was designed with the computer aided design software AutoCAD.
- Using several design concepts to attain a perfect model of the robot including producing small scale modular constructs and prototypes. We perfected our entrée robot allowing us to attain the first place prize.
- Imploring 3D printing, Soldering and some subtractive MODs like CNC milling, cutting, and drilling we manipulated the prototypes in order to make adjustments to the final design.

Invention design process

- Our ideation process was two weeks during which we contemplated optimal designs for completing the preliminary tasks of the competition. This yielded our design for the robot
- Following up was our design and prototyping phase where we troubleshooted the robot shield and controller shield ensuring the electronic wiring was done appropriately
- Alongside we programmed both Arduino Uno R3, also uploading the program file's and calibrating the speed and direction functions for our automobile

