Chess Playing Robot(a.k.a 'The Turk')

Abstract

Chess playing robot is a semi automated robot.It consists of a mechanical arm to pick and drop chess

pieces.The arm is controlled using microcontroller Arduino uno and various motors.The robot uses camera to detect opponent's move and play according to the chess engine code that is fed through arduino.

Acknowledgement

We would like to express our special thanks of gratitude to our mentors Sushant Samuel (EE 3rd year),Animesh (GPT 4th year)and Anmol Popli (EE 3rd Year) as well as our guide and senior mentor Prashant Shekhar (EE 4th year & secretary, Models and Robotics Section) and Sparsh Gupta (EE 4th Year) who gave us the golden opportunity to do this wonderful project which helped us in doing a lot of research and we came to know about so many new things.

THANKS AGAIN TO ALL WHO HELPED US.

Motivation

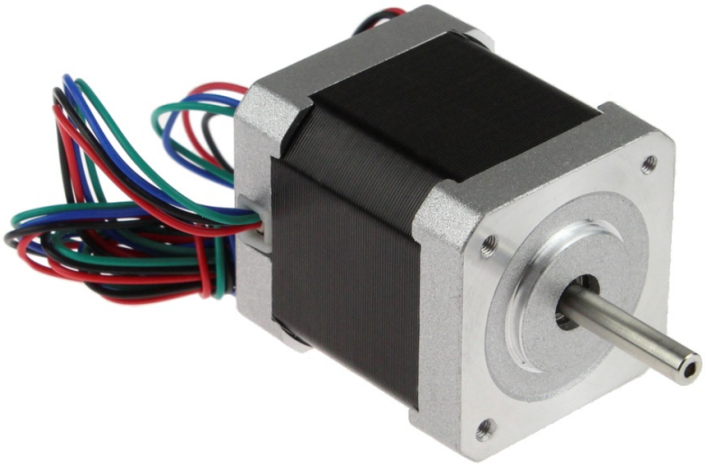
Garry Kasparov VS Deep Blue

Deep Blue was a chess-playing computer developed by IBM. Deep Blue won its first game against a world champion on February 10, 1996, when it defeated Garry Kasparov in game one of a six-game match.This game is a living example what a machine is capable of.To explore it ourselves we built the chess playing robot.

Hardware

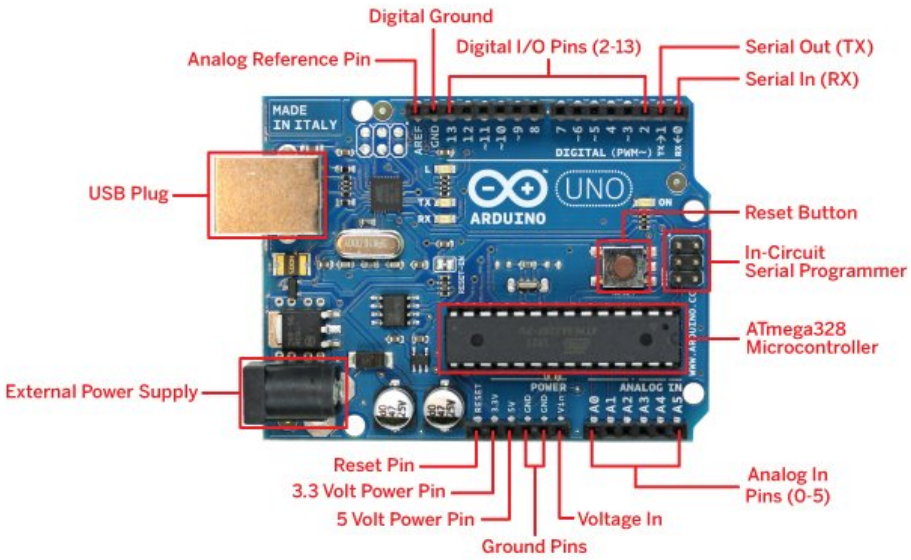
The mechanical design of the bot includes mounting of:

1) Stepper Motor (12 volt)(1):



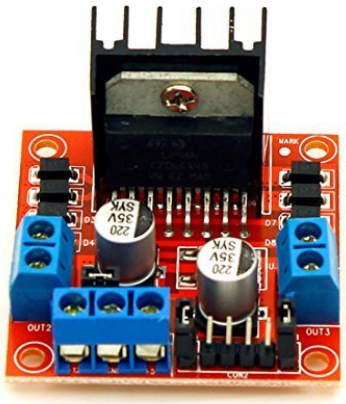
2)Servo Motor (6 volt)(x3):

2) Arduino Uno(x1):



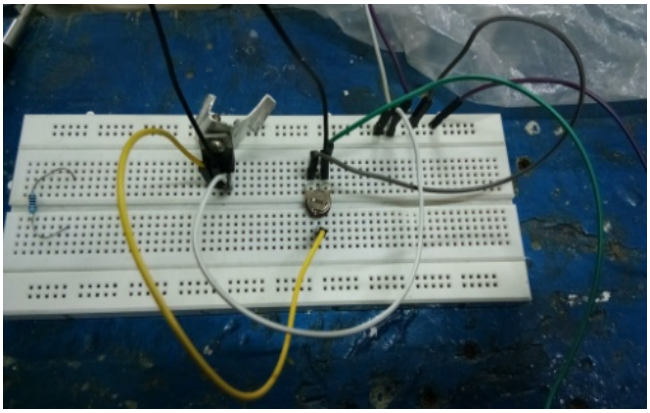
3) Adapter(12V,5A)(x2)

4) L298 Motor Drivers(1):



5) Gears(x3):

6) Combination of LM317 and potentiometer for voltage regulation:



8)Castor Wheels(3):

Work

The bot consists of Stepper motor mounted at the base which provides angular movement.The mechanical arm picks and drops pieces with the help of gripper.The arm movement is controlled by using 3 servo motors.The motors are synced by using microcontroller Arduino Uno.Camera is mounted at top to detect opponent's move and and following code is used to control the robot.We have developed two version of chess engine ,one is in Java and other is in C++.

Application

a) Our bot can be used for AI research.
b) It can be used to develop advance chess engine.

Team members:

1)Prashant Singh(EE 4th year, Mentor& secretary of Models and Robotics Section)

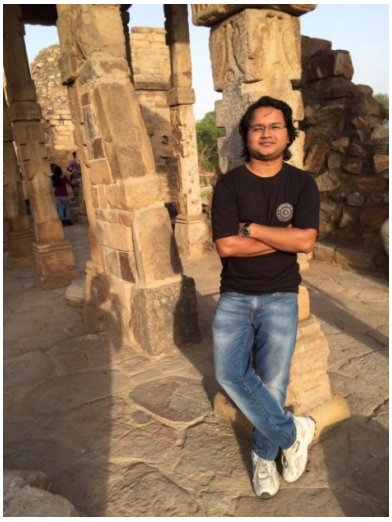
2)Sparsh Gupta (EE 4th year)

2)Sushant (EE 3rd year,Mentor)

3)Animesh (GPT 4th year,Mentor)

4)Anmol Popli (EE 3rd year,Mentor)

5)Ashwani Srivastava(EE 2nd Year)



6)Vipin Kumar (ME 2nd year)

7)Abhijeetsinh Vansia (BT 2nd Year)

8)Satyam Singh (EE 2nd Year)

9)Subramania Siva (ME 1st Year)

Thank You!!!!