

ITSP ABSTRACT :

Autonomous Sudoku solver bot.

Team members:

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Idea:

We plan to make our bot a complete Sudoku wizard. Our idea is that our bot sees a piece of unsolved Sudoku(in a paper) ,analyses it and completely solves it with the algorithm provided.It can solve any legitimate 'sudoku' puzzle.We also plan to build such a bot which can actually complete the puzzle by filling the empty numbers itself.

<https://www.youtube.com/watch?v=Mp8Y2yjV4fU>

A video link which inspired us is attached.

The bot scans the sudoku puzzle using a web cam. It calculates the solution to the puzzle and then writes the digits.

You really don't need to ape the video exactly. There are easier ways to get it done and you can simply use a webcam to click a snap of the sudoku and then use image processing using MATLAB which has good libraries for such purposes . Have a look at this link :

<http://in.mathworks.com/videos/solving-a-sudoku-puzzle-using-a-webcam-68773.html?requestedDomain=www.mathworks.com>

This will be much more easier than using a light sensor which only goes over a certain portion of the sudoku at a single time

The basic things we need to work on are image processing and solving the sudoku using backtracking algorithm and then the bot writing the digits.

MOTIVATION AND WHAT WE EXPECT TO LEARN FROM THIS:

We all have played sudoku and it is a great puzzle to solve and it takes a lot of time for solving the hard puzzles so we plan to make an autonomous Bot that solves the sudoku easily and quickly and we plan to make a pen plotter which writes down the numbers on sudoku grid itself and we could also extend further uses of the pen plotter.

With the help of this project we would be able to learn **IMAGE PROCESSING** ,**ALGORITHM PROGRAMMING** and a lot of **MECHANICAL STUFF** .

COST ESTIMATION : 8 k

Timeline

WEEK 1 (1JUNE-7JUNE): We plan to learn Image processing using MATLAB or Open CV Python during this week and write the code for solving the Sudoku . We also plan to study about the motors required in the bot and plan the mechanical body of the bot.

WEEK 2(8 JUNE-14 JUNE): Implementing Image processing and testing it with the Sudoku and working to display the solved sudoku on the LCD as well as start the mechanical work involved in the bot.

WEEK 3(15 JUNE-21 JUNE): We plan to complete the mechanical work involved with the bot in this week and start making the pen plotter during this week.

WEEK 4 (22 JUNE-29 JUNE): We plan to complete the pen plotter and Assembling the parts and making the final Bot ready.

COMPONENTS REQUIRED:

1. Web cam
2. Stepper motors

3. Arduino UNO
4. Lead screws
5. Servo motors
6. Tyres
7. Motors
8. Raspberry pi
9. Gears
10. Battery
11. L298N Stepper motor drivers
12. MC33030 Servo motor driver