PROJECT REPORT

SRISHTI 2020

IIT ROORKEE

PROJECT NAME:WALL-ART

TEAM:

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MENTORS:

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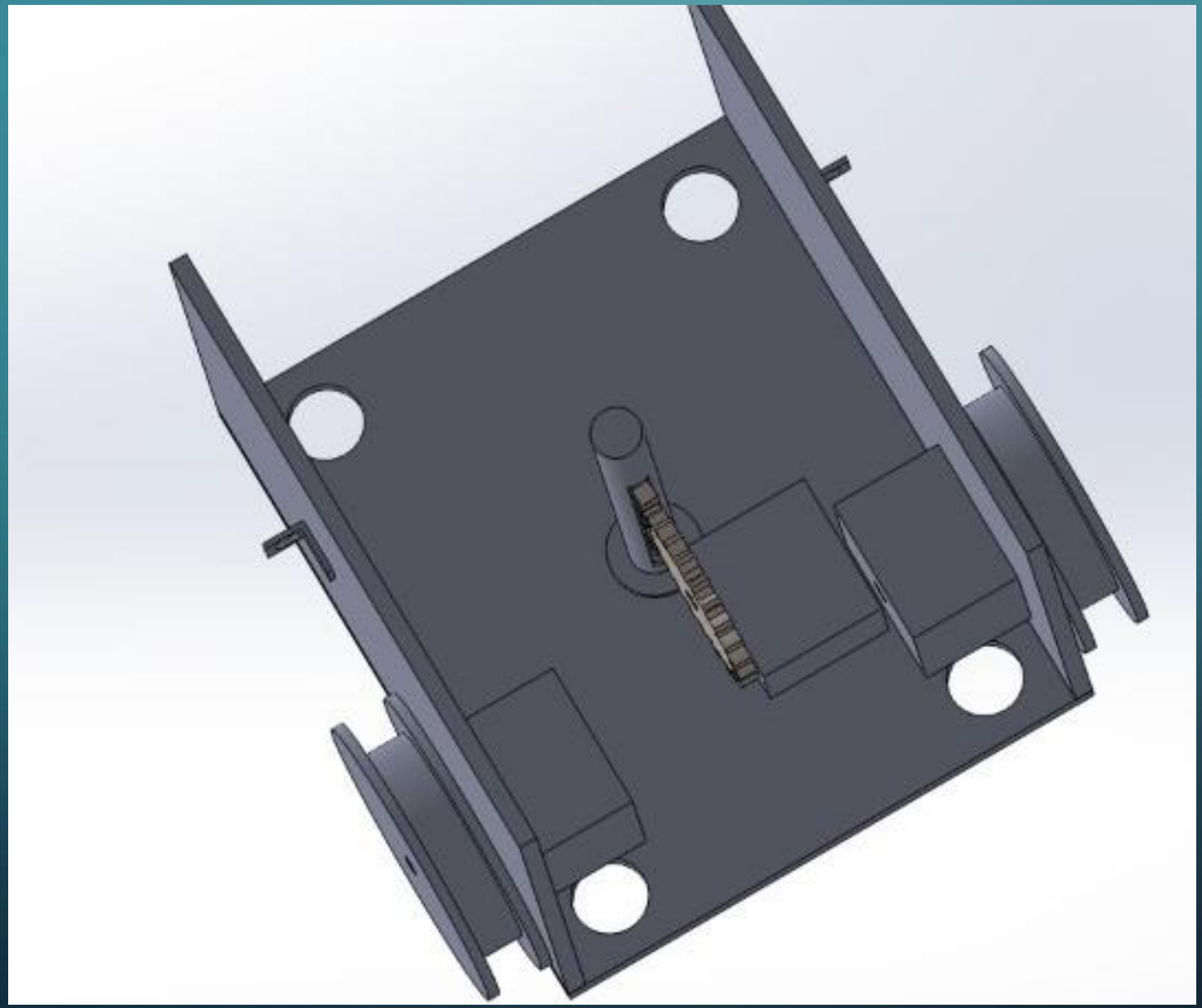
CAD MODEL



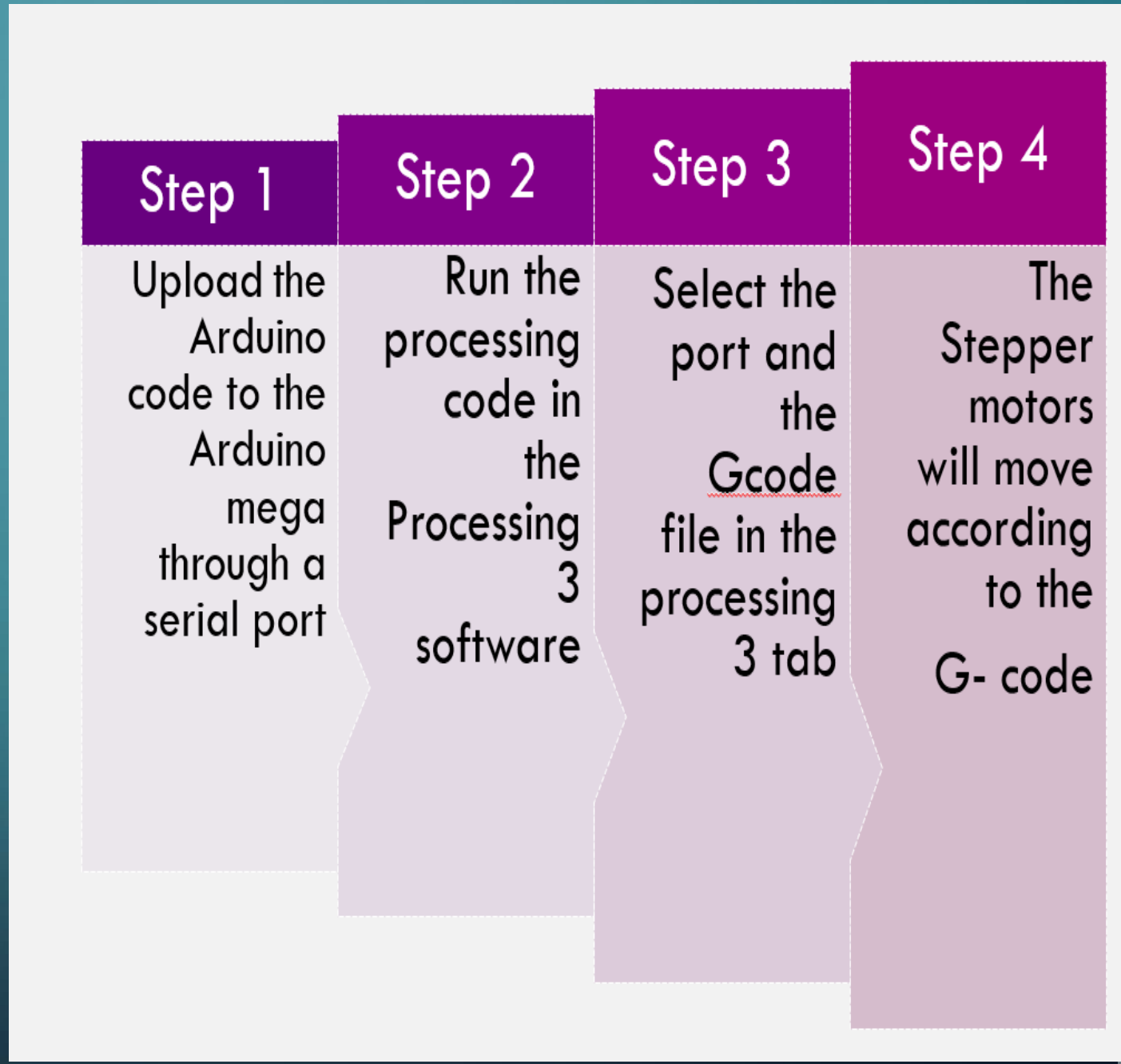
OVERVIEW:

we have developed a bot which can draw a neat and clear structure of any image on wall with maximum accuracy ,we just need to give an g-code file of an image to the processing code . And then the same image we wil drawn on the wall by the bot.

MOTIVATION:

There are so many bots are there to darw an image on the ground or on the paper but there is no bot which can draw on the wall.
so we tried to construct this wall-art bot.

WORKFLOW


Step 1
Upload the Arduino code to the Arduino mega through a serial port
Step 2
Run the processing code in the Processing 3 software
Step 3
Select the port and the Gcode file in the processing 3 tab
Step 4
The Stepper motors will move according to the G- code

Mechanical Aspects

Chasis

- It is an sauare shaped base, 3 caster wheeled drive bot that can be easily manufactured.

Material

- The chassis is made Wood. It reduces the overall weight of the bot and hence reducing the load on motors.

Motor Assembly

- Two Stepper motors are used, to get the required force. The shaft of the motor is passed through printed couplings.
- And the servo motor is attached at the middle of the chasis.

Pen holder

- It is a 3D printed cylindrical holder that is placed at the center of the chassis. It can hold only one pen at a time and the size of the holder is fixed and hence the pen diameter is fixed.

Wings

- For the ease of the traversal of the thread two wings are attched at the front side of the bot.They are attached to the chasis.

ELECTRONICS ASPECTS OF DESIGN

Code Algorithm

. All actuations are done with appropriate velocities which are calculated by the gcode line.
after uploading the arduino code upload the gcode file through the processing software through the same port

Micro-controller

- Arduino Mega 2560 R3 is used as the microcontroller board.

Actuators

- Stepper motors are used for traversal actuation of bot which is controlled by Cytron motor driver.
- servo motor ae used for the traversal of the Pen Holder.

Power Source

- 11.1V LiPo battery is used as the power source.
- Motors are directly powered from the battery.
- Arduino Mega board is powered with ac to DC converter .

COST STRUCTURE

Components	Cost(INR)
Wheels	4*40
Stepper motors	2*1250
Servo motor	1*100
Motor Drive	2*1500
Arduino Mega	1*650
Bread Board	1*100
Battery	1*1400
wodden square plate	3*20
couplins	2*150
Total	**8720**

Applications:

Plotting any Image on the smooth wall.

Limitations:

1.Particular size of pen can only be used.

2.It can plot only in single colour.

3.It cannot draw on rough surfaces.

Future Improvements:

1.Install a spring in the pen system so that it can draw on rough surfaces to.

2. installation of bluetooth .