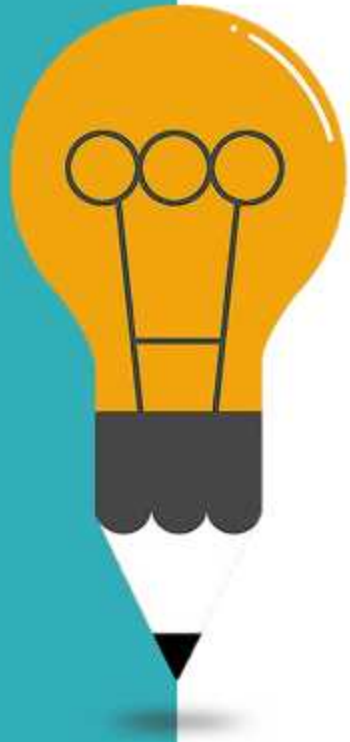
PROJECT PRESENTATION

SAND DRAWING MACHINE

Instructor：林家德老師
Team Leader：連子揚
Team Member：連儷芳、林暉恩、陳憬嶔

CONTENT



Team member

Team member

Lien Zi-Yang

Leader

1.PCB design

2.Hardware testing

Lien Li-Fang

Member

1.Software design

2.Appearance design

3.Written report

4.Brief making

Lin Hui-En

Member

1.Software design

2.Hardware testing

3.Appearance design

4.Brief making

Chen Ching-Chin

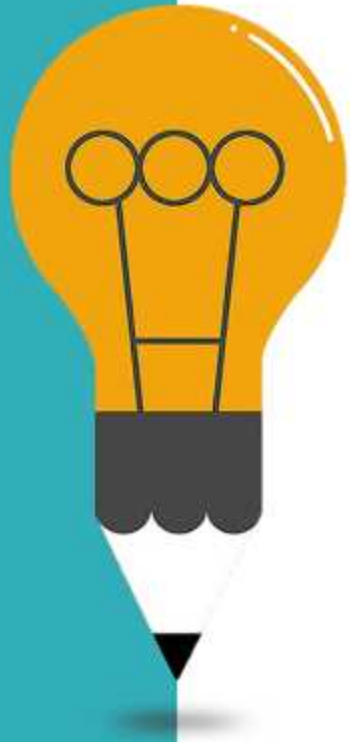
Member

1.PCB design

2.Software design

3.Hardware testing

CONTENT

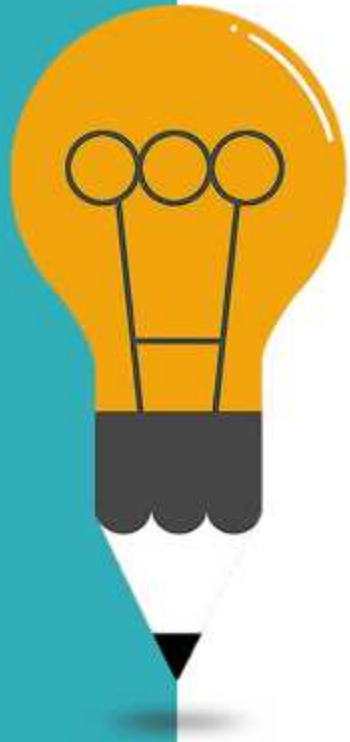


Motivation

Motivation

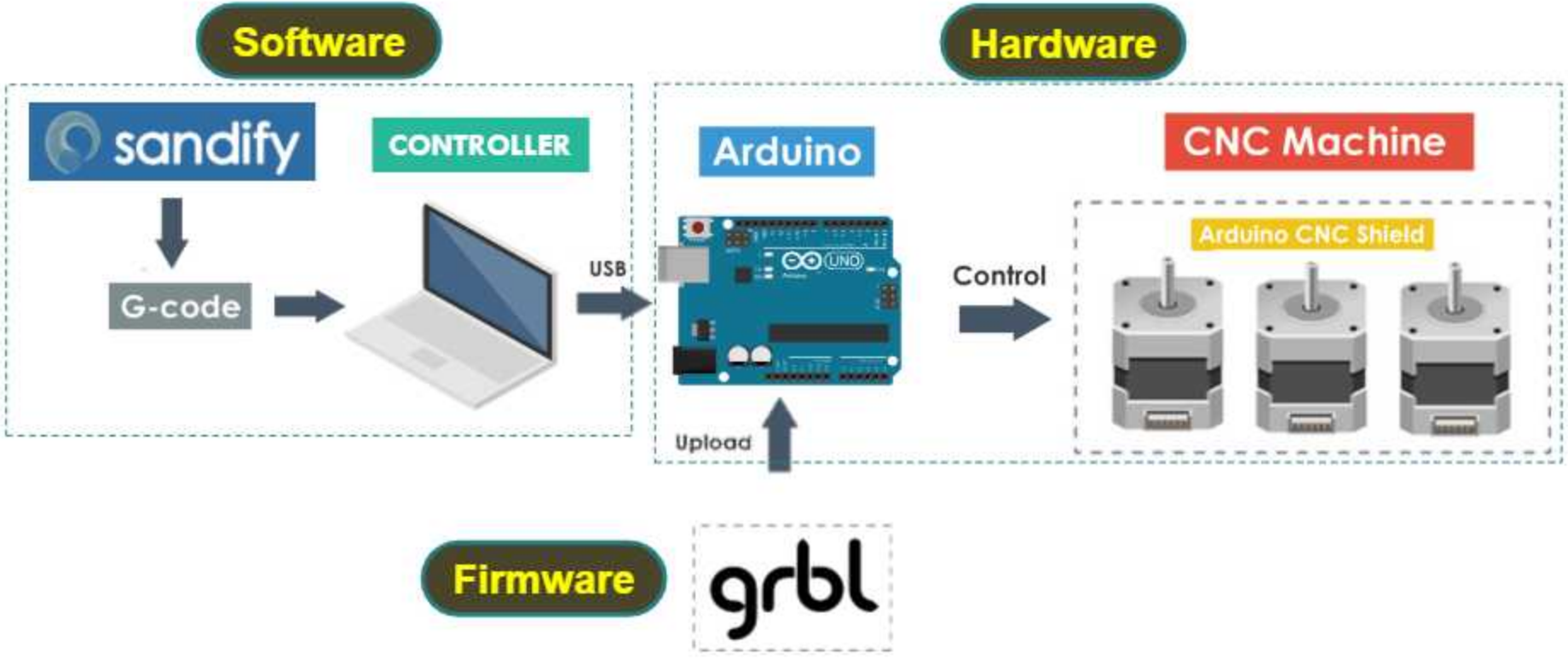
- Anxiety ?
- Stressed ?
- Mandala drawing !

CONTENT

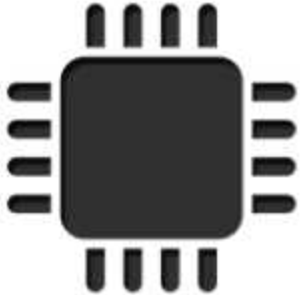


Project introduction

Structure overview



Function introductions



Hardware

Software

Hardware

01 XY axis rail

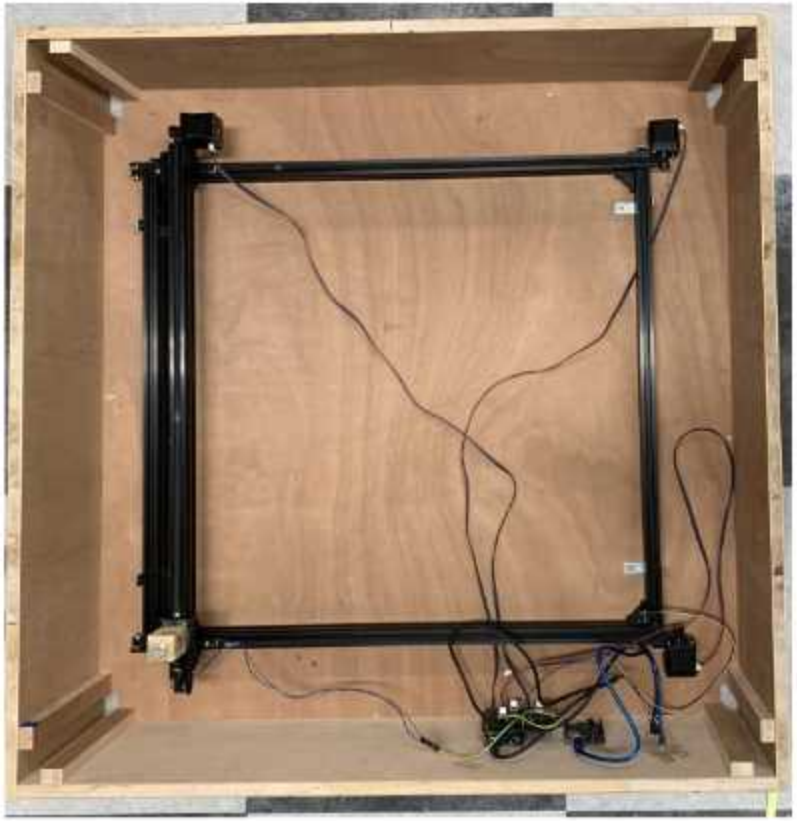
02 Stepper motor driver

03 Stepper motor

04 Circuit board

05 Sand table

XY axis rail



3D 總舖
MAKER SHOP

Hardware

01 XY axis rail

02 Stepper motor driver

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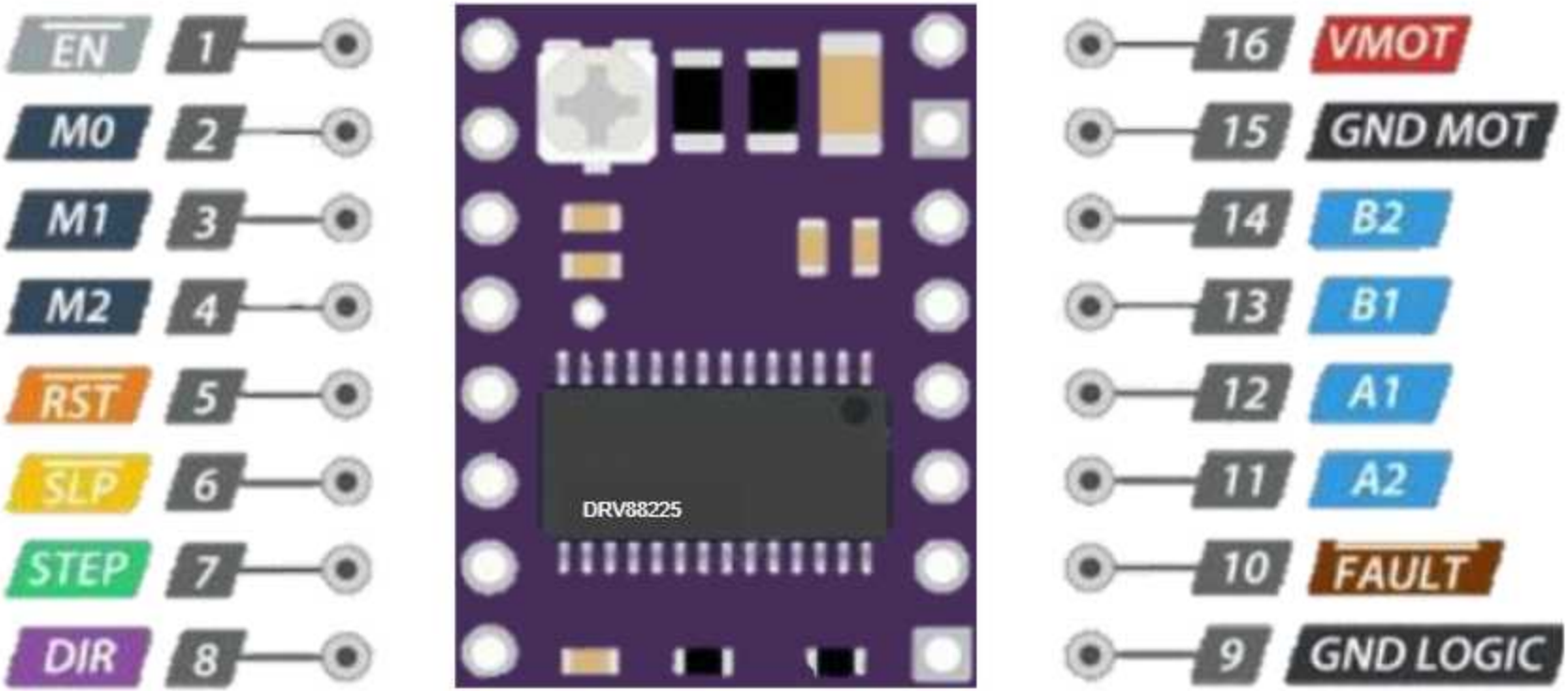
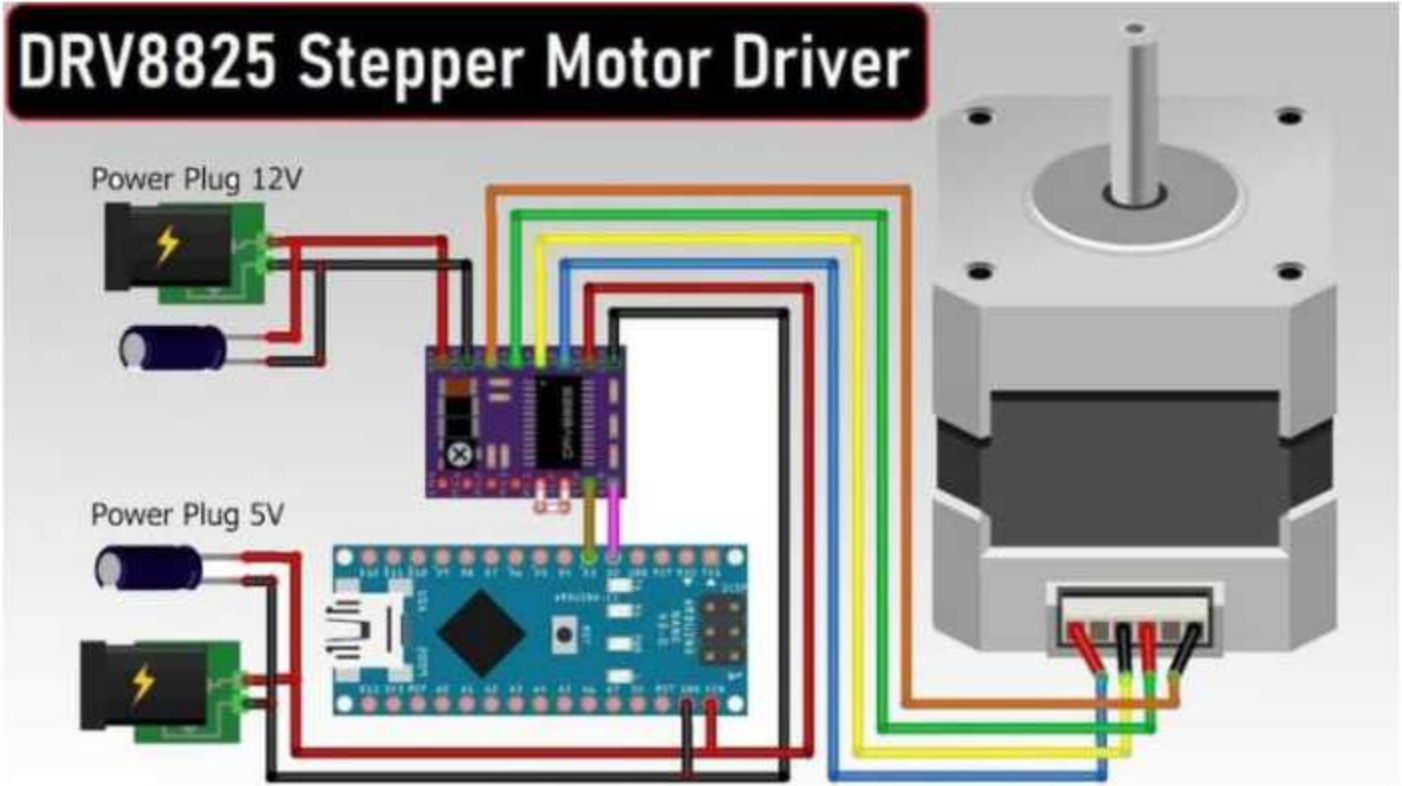
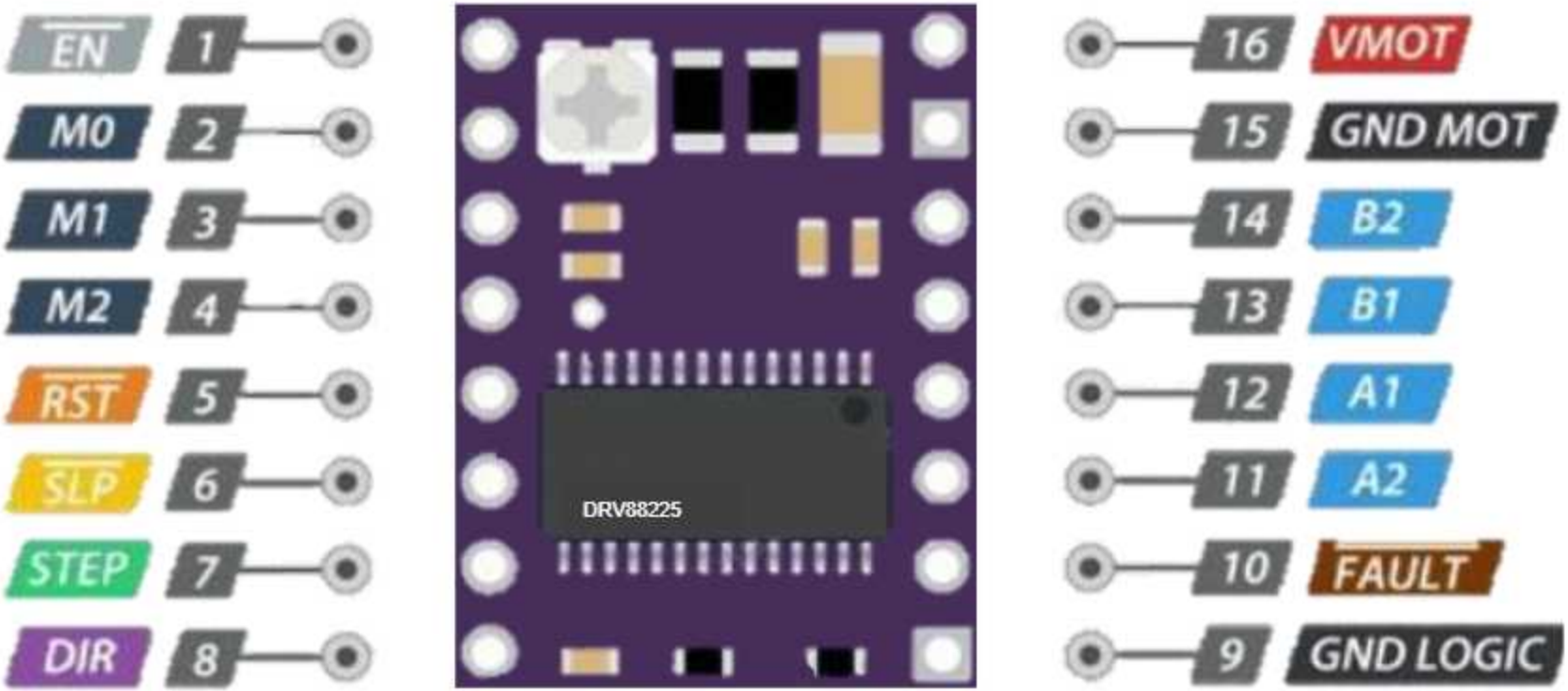
Stepper motor driver



Stepper motor driver



Stepper motor driver



Hardware

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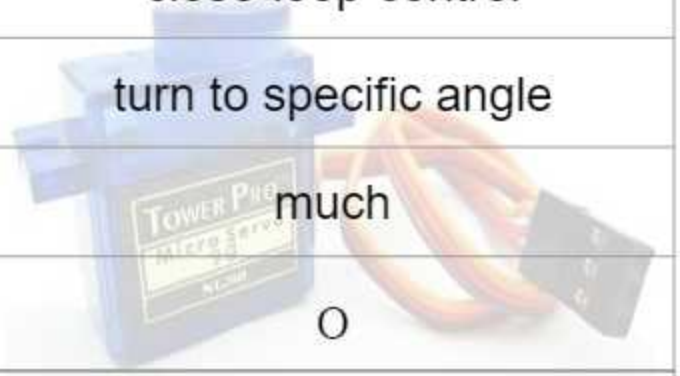
Stepper motor

- rotate, stop and approach specific position immediately
- control stepper motors with coils
- open-loop control system
- over speed or certain frequency would lead to overshot

Stepper motor v.s. Servo motor

	Stepper motor	Servo motor
conformity		close-loop control
whirl		turn to specific angle
deviation		much
over shot		O
temp variation		lower



Hardware

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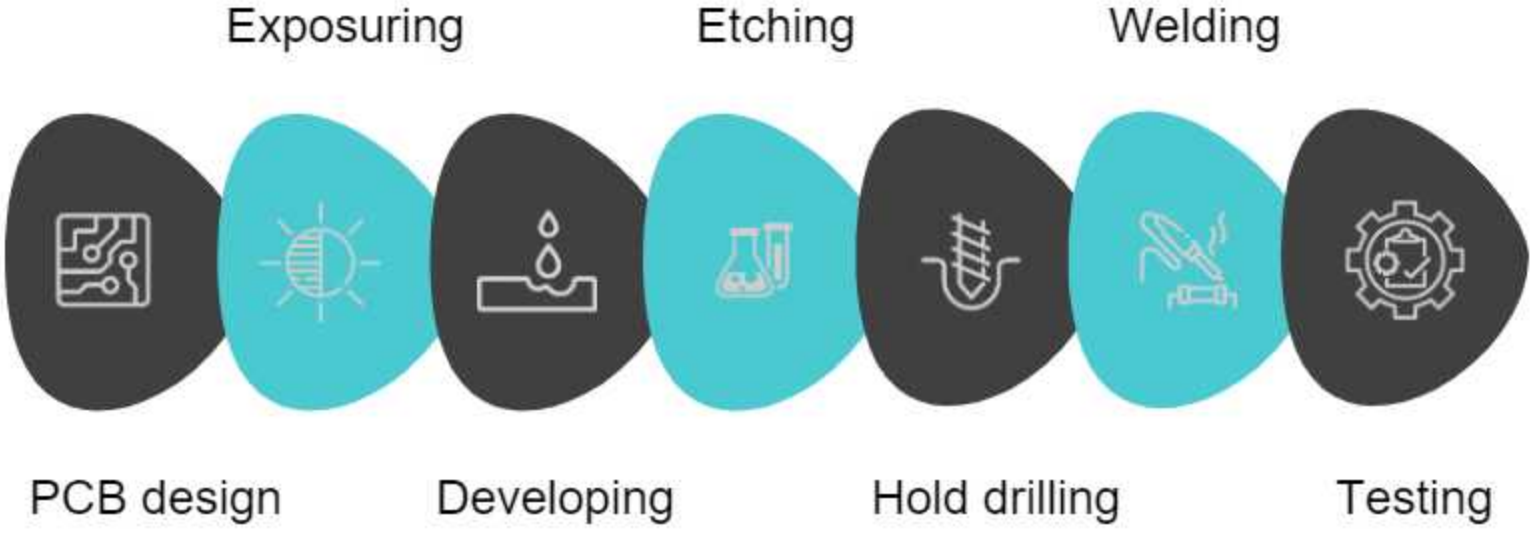
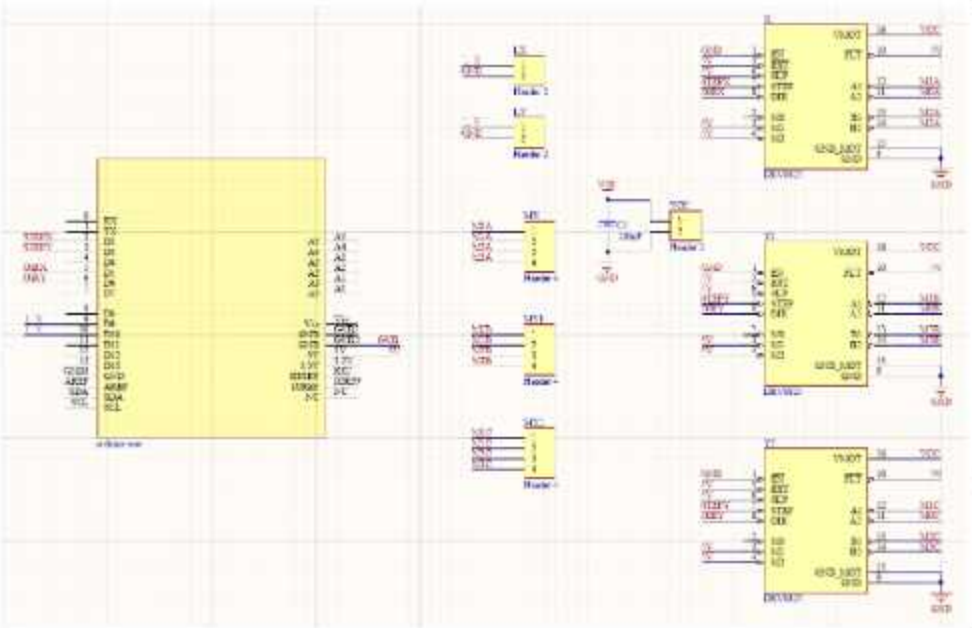
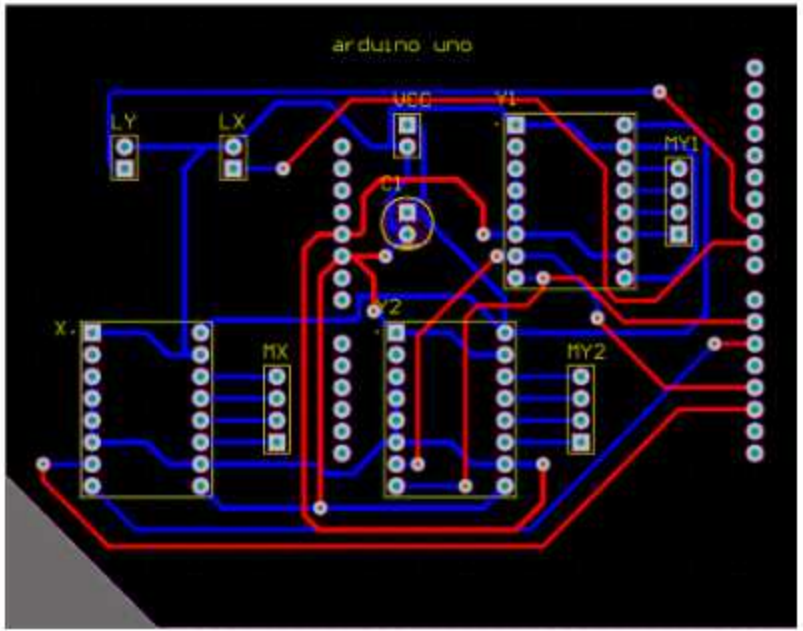
Circuit board

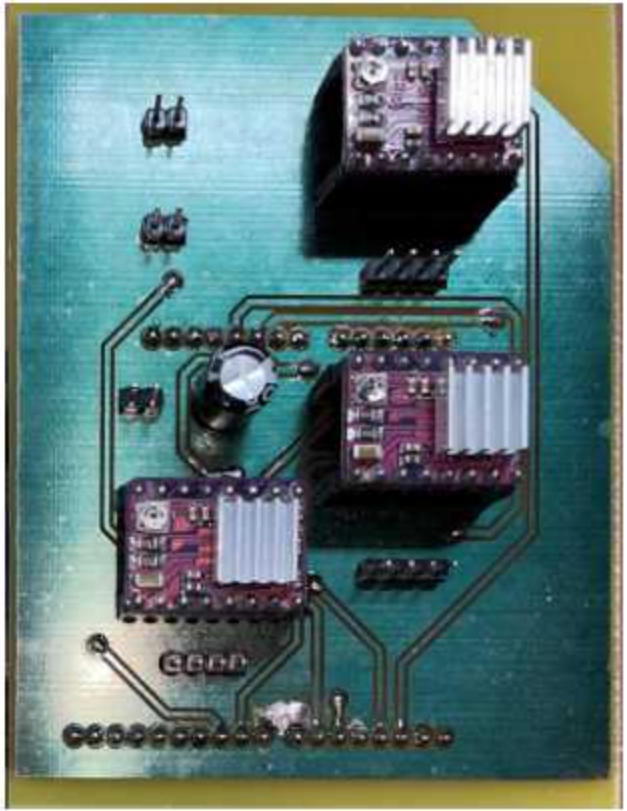


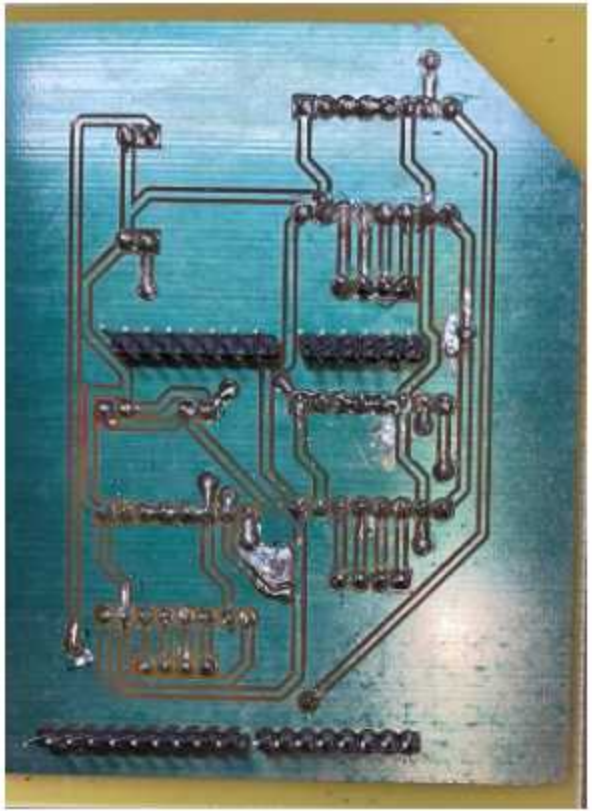
Circuit board





Circuit board





Hardware

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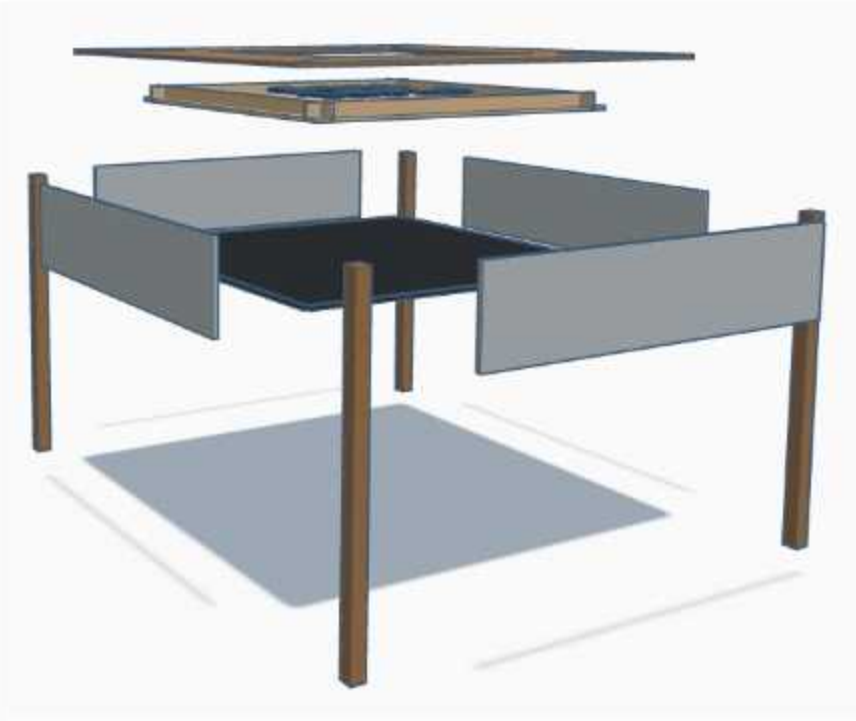
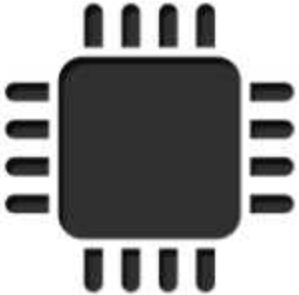
Sand table



Full color LED

Function introductions



Hardware

Software

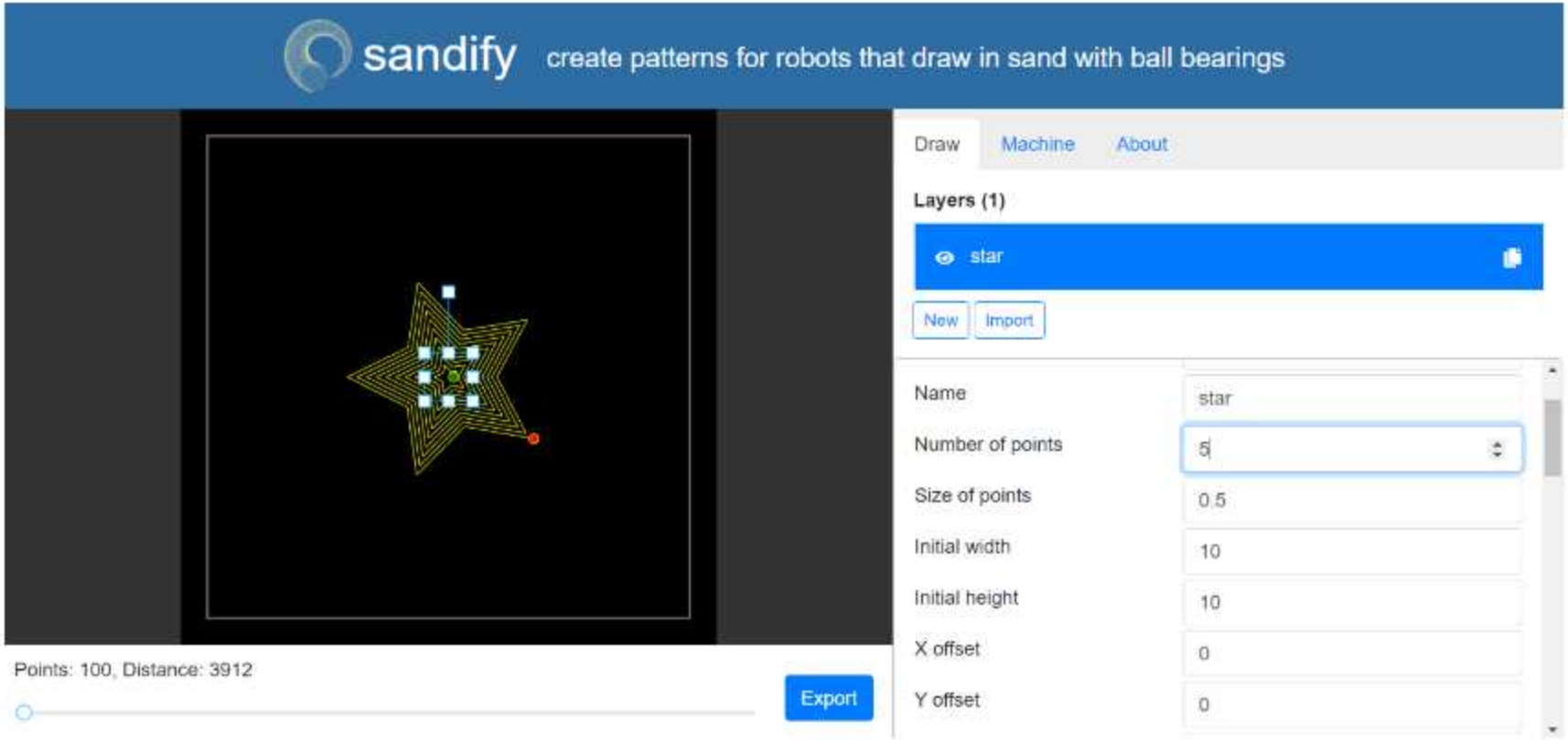
Software

01 Sandify

02 G code

03 GRBL controller

Sandify


sandify
create patterns for robots that draw in sand with ball bearings
Draw
Machine
About
Layers (1)
star
New
Import
Name
star
Number of points
5
Size of points
0.5
Initial width
10
Initial height
10
X offset
0
Y offset
0
Points: 100, Distance: 3912
Export

Software

01 Sandify

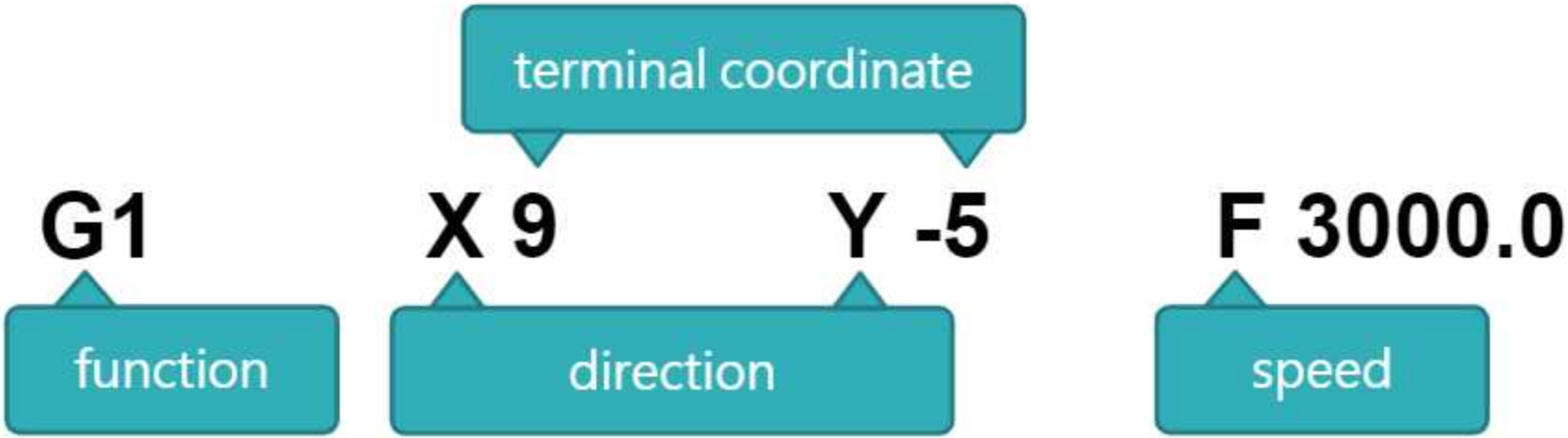
02 G code

03 GRBL controller

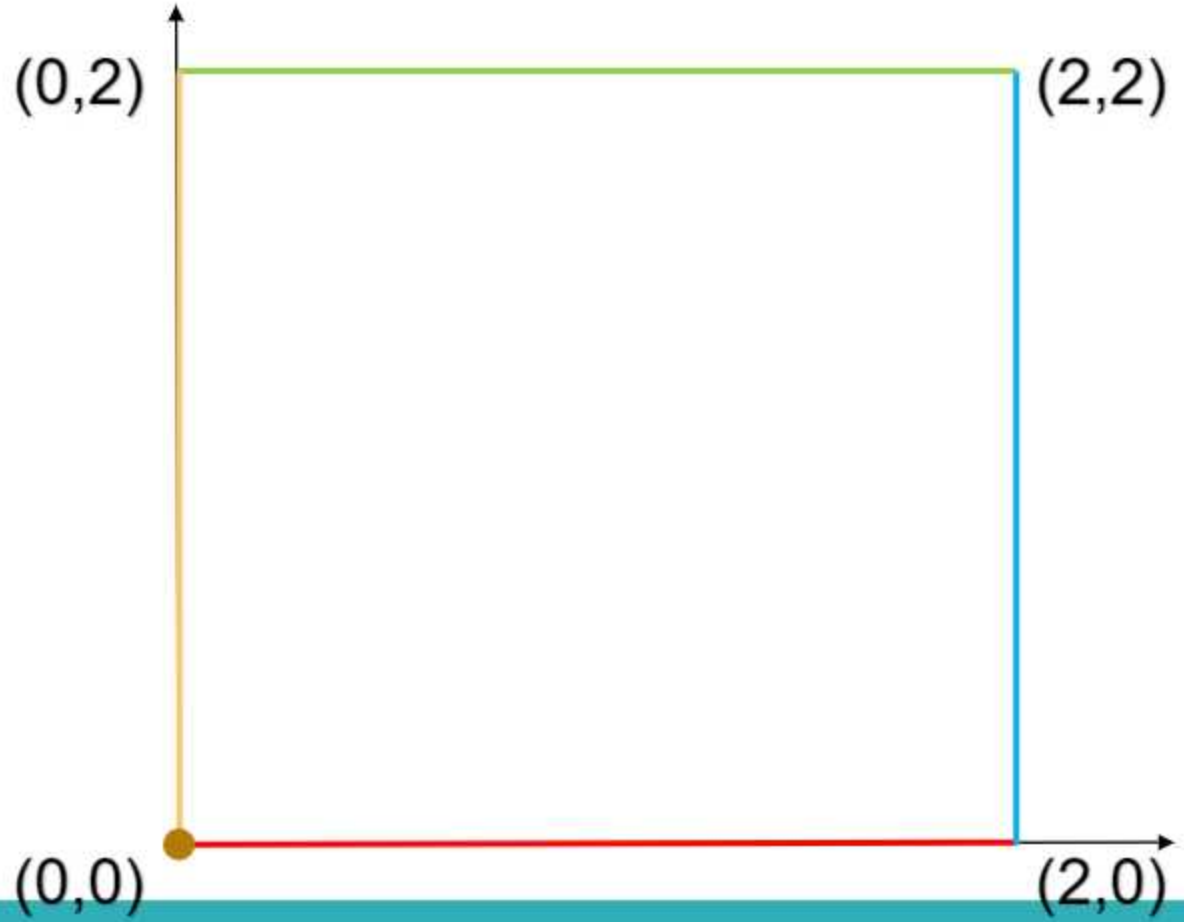
G code

- Widely used CNC programing language
- To control speed and direction
- Easy to understand and to execute

G code


terminal coordinate
G1
X 9
Y -5
F 3000.0
function
direction
speed

How G code operates



G0 X2
G0 Y2
G0 X-2
G0 Y-2

Software

01 Sandify

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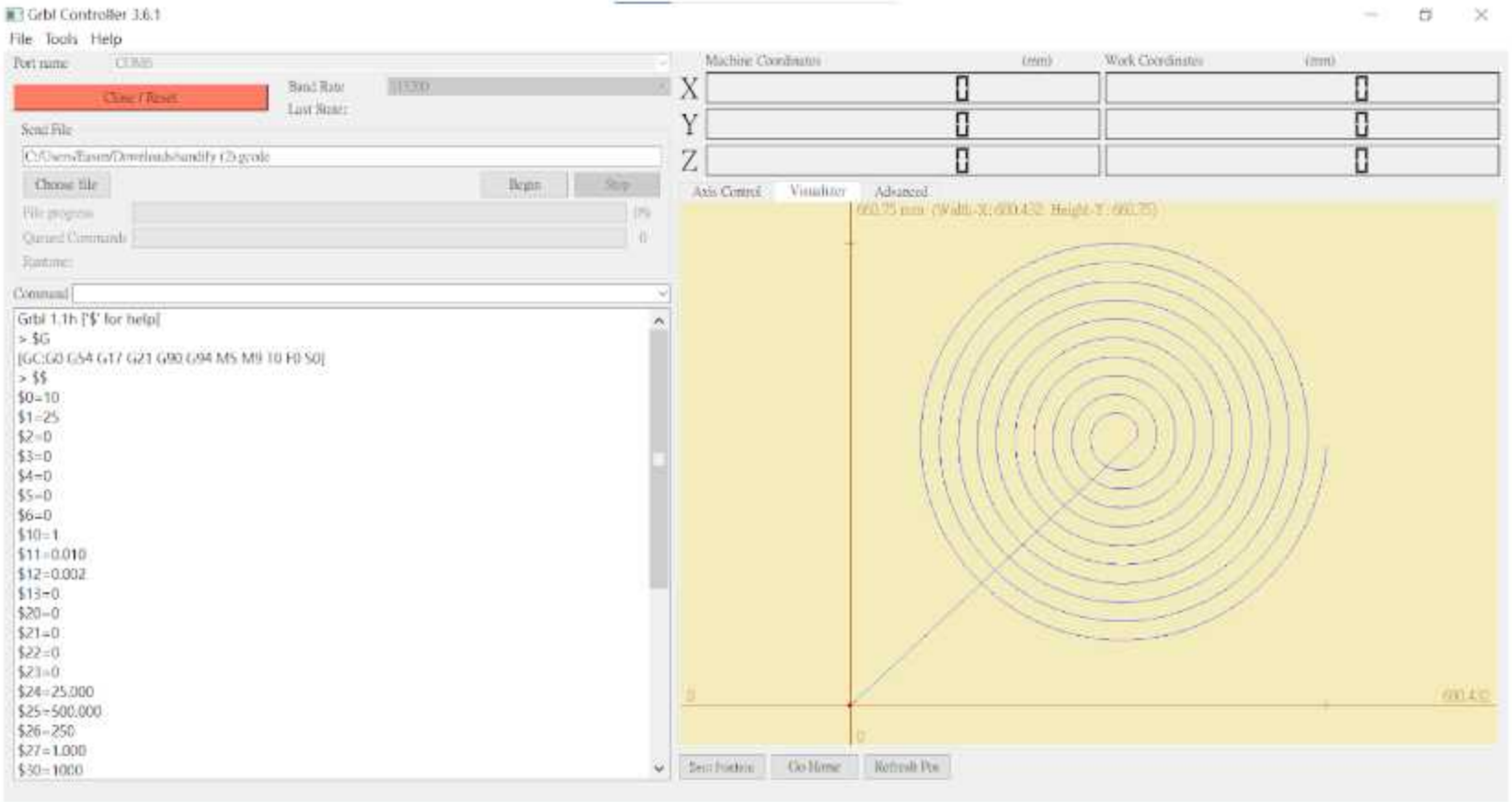
03 GRBL controller

GRBL controller



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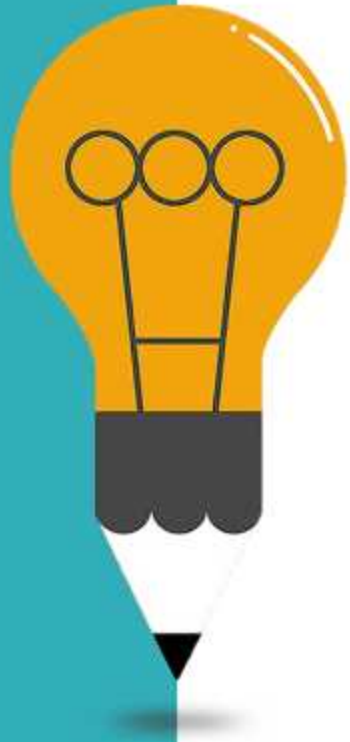
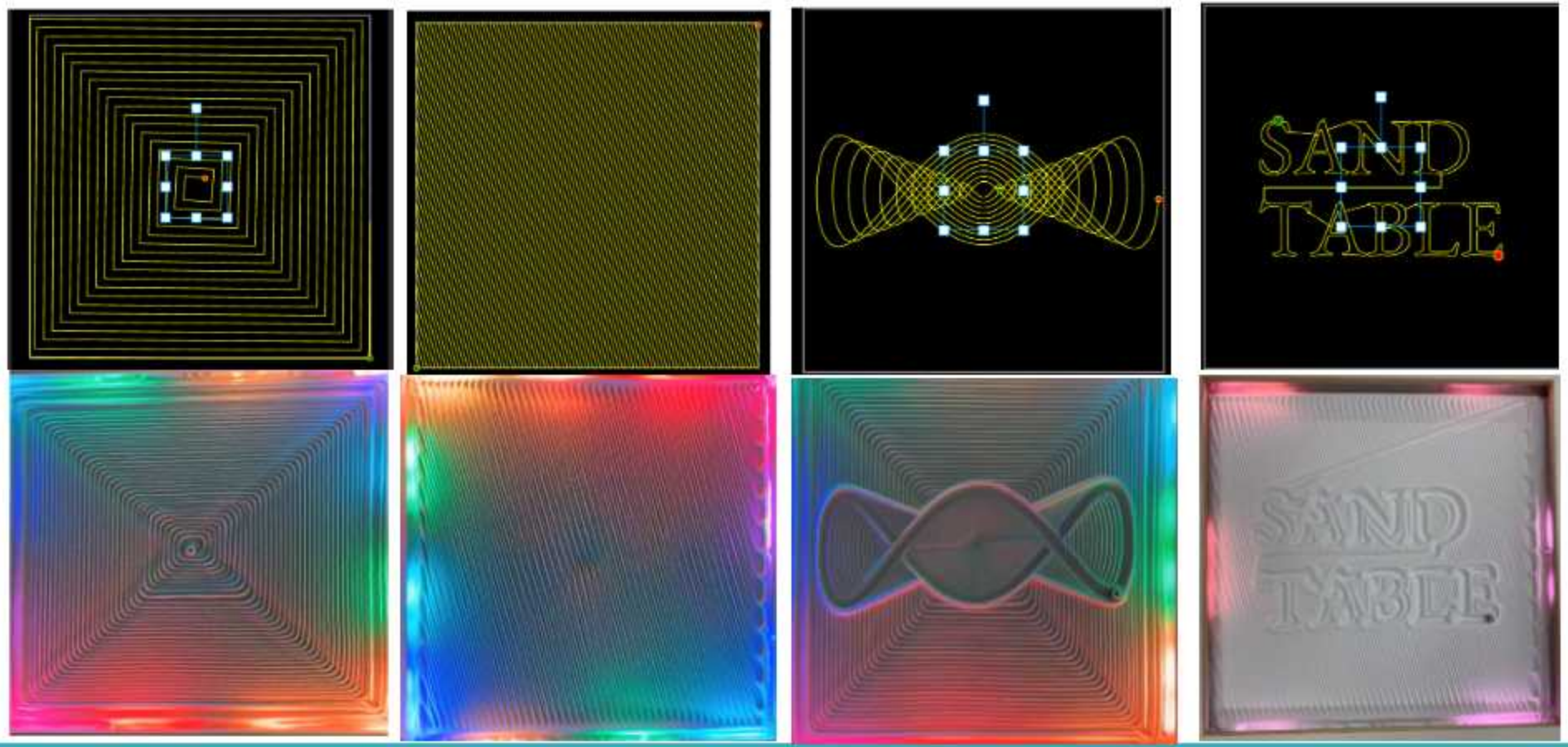


Achievement display

Achievement display

Achievement display



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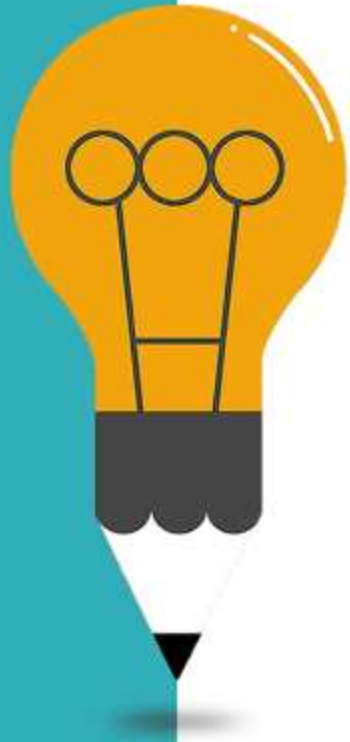


Future prospects

- Noise problem
- Magnetic levitation
- Remote controlling

Particular thanks

盧昭伶老師

陳仲仕先生

子三乙同學

Particular thanks

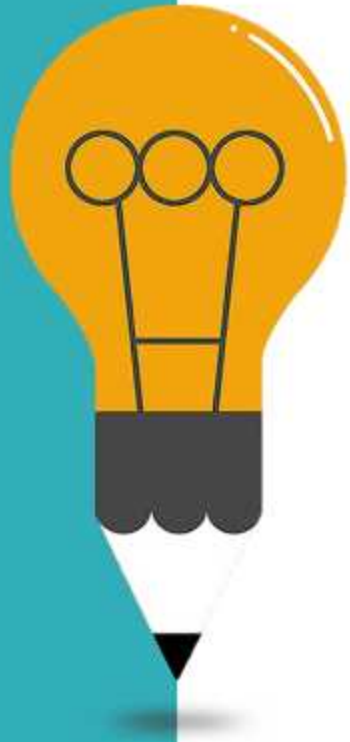
林家德老師

陳祈燕老師

陳晉村老師

Thanks for your listening

CONTENT



Question & Suggestion