



CNC PLOTTER

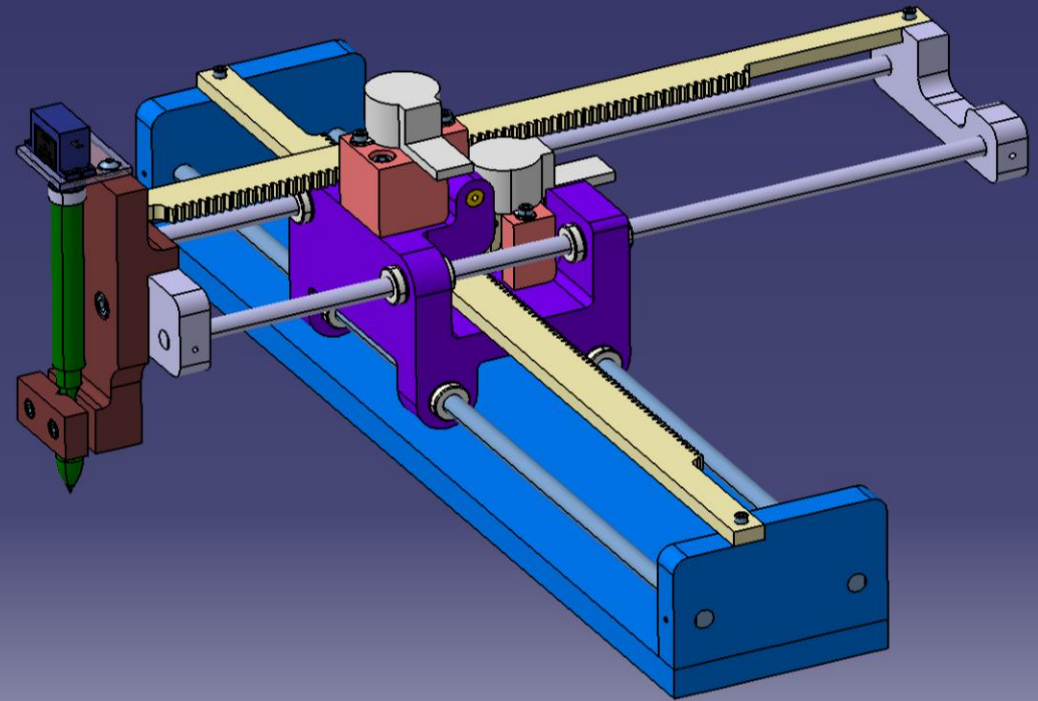
CADD24328 - CATIA TERM PROJECT

PRESENTED BY: SANDEEP SINGH – 991490328

PROFESSOR: FEREYDOON DIBA

INTRODUCTION

- Project designed and modeled in CATIA.
- CNC Plotter - A handy machine to draw.
- Controlled by CNC programs generated by Mastercam.
- Arduino based actuators controlled.
- Easy to manufacture and replaceable parts.
- X, Y and Z Motors to draw on Letter size paper.
- Fine level of details in point of manufacturing and assembly

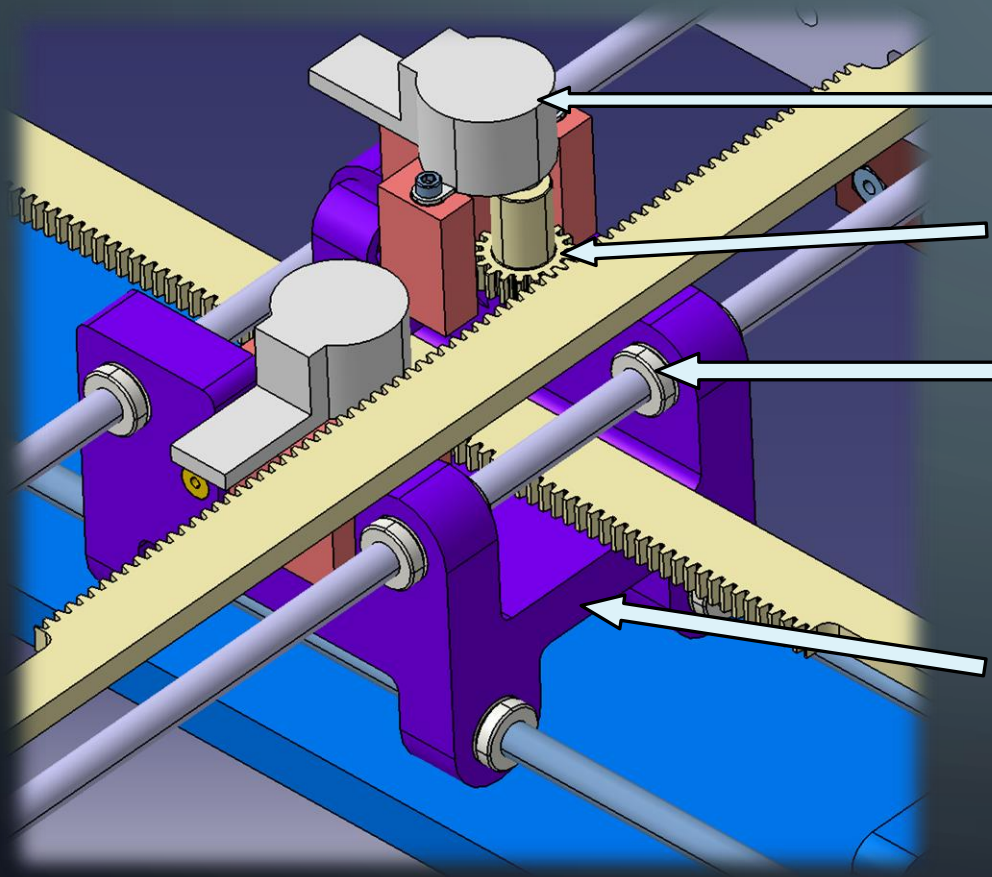


INSPIRATION

- Combination of mechanical and electrical spheres – as a small robot.
- Creative and useable at some point
- Project- based learning in fields of 3D modeling, drafting, simulation, advanced manufacturing processed and programming.
- Medium scale projects helps building up strong base for large projects.



MAIN PARTS



Servo motor

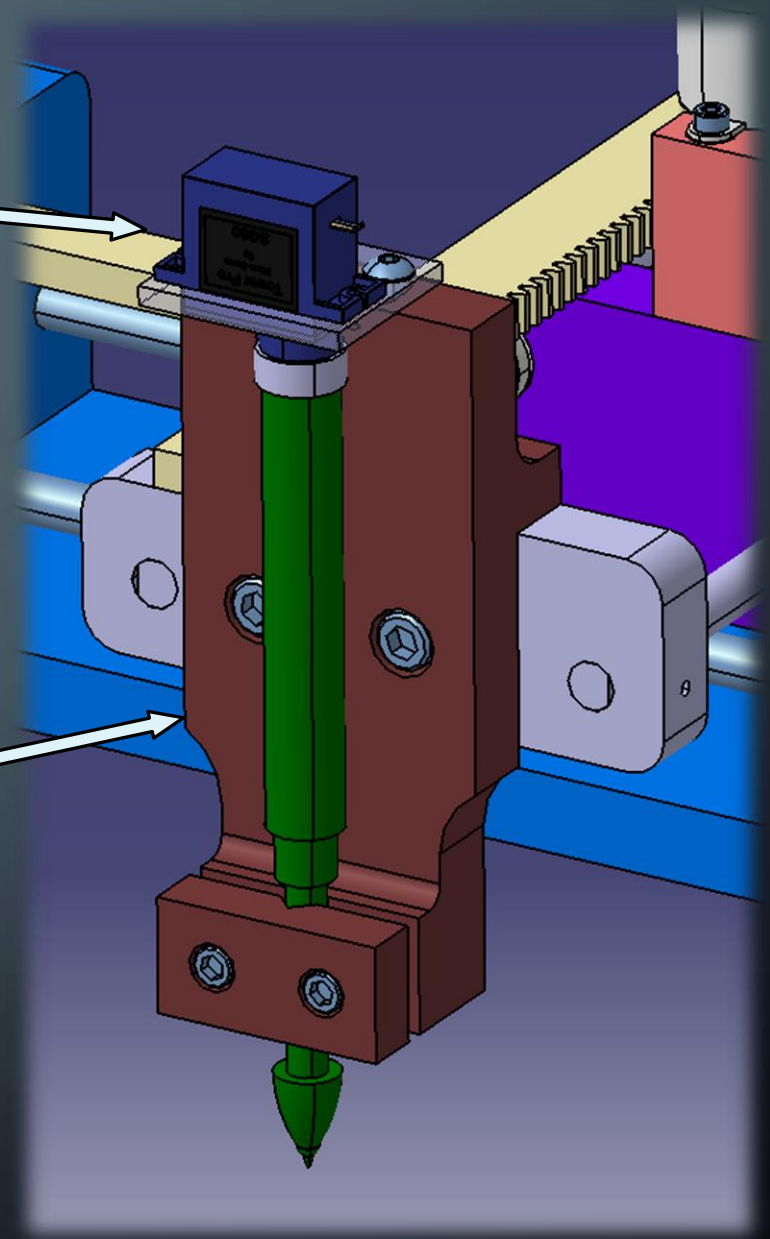
4 Phase 5V
Stepper Motors

Racks and pinions

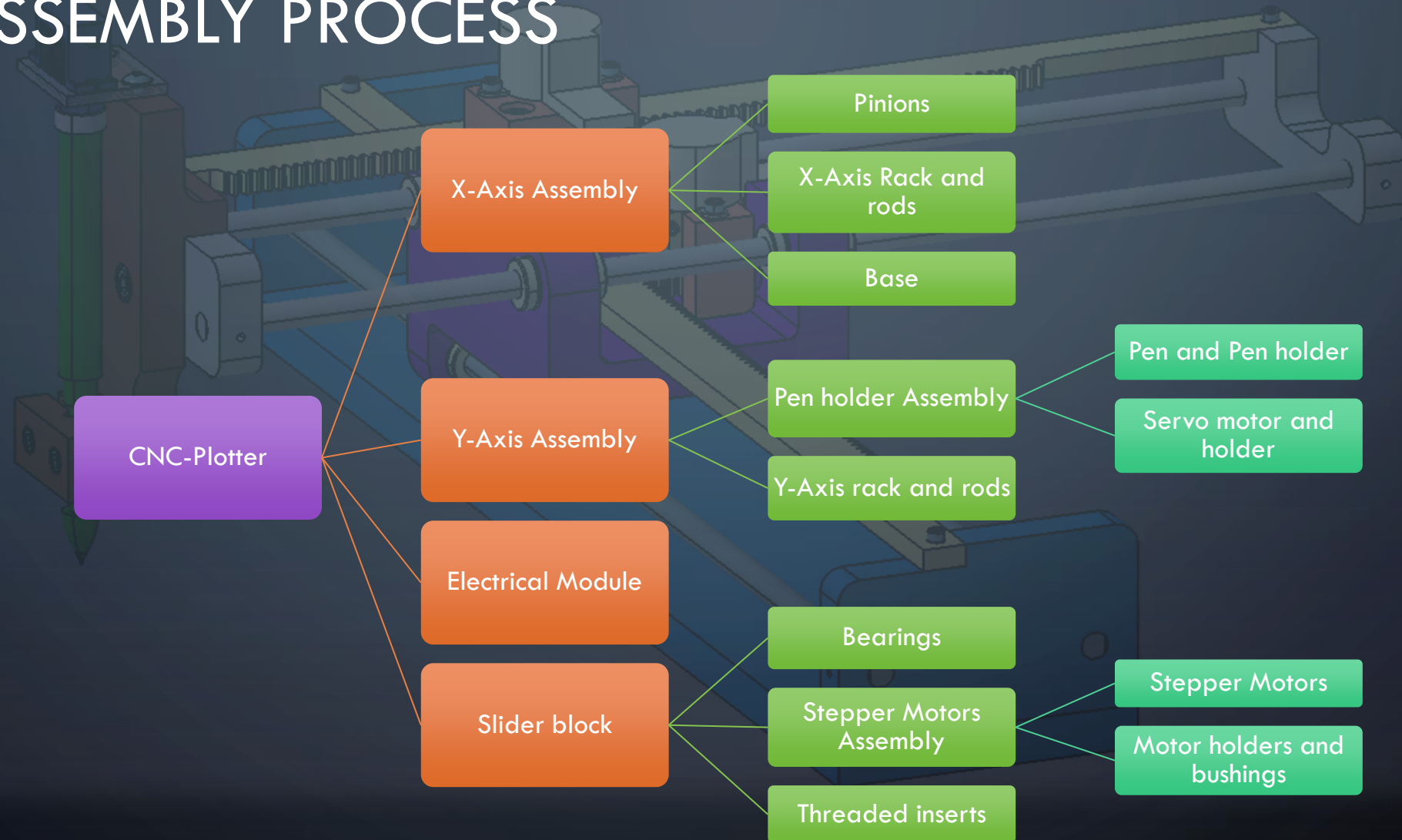
Linear Bearings

Pen Holder and
Assembly

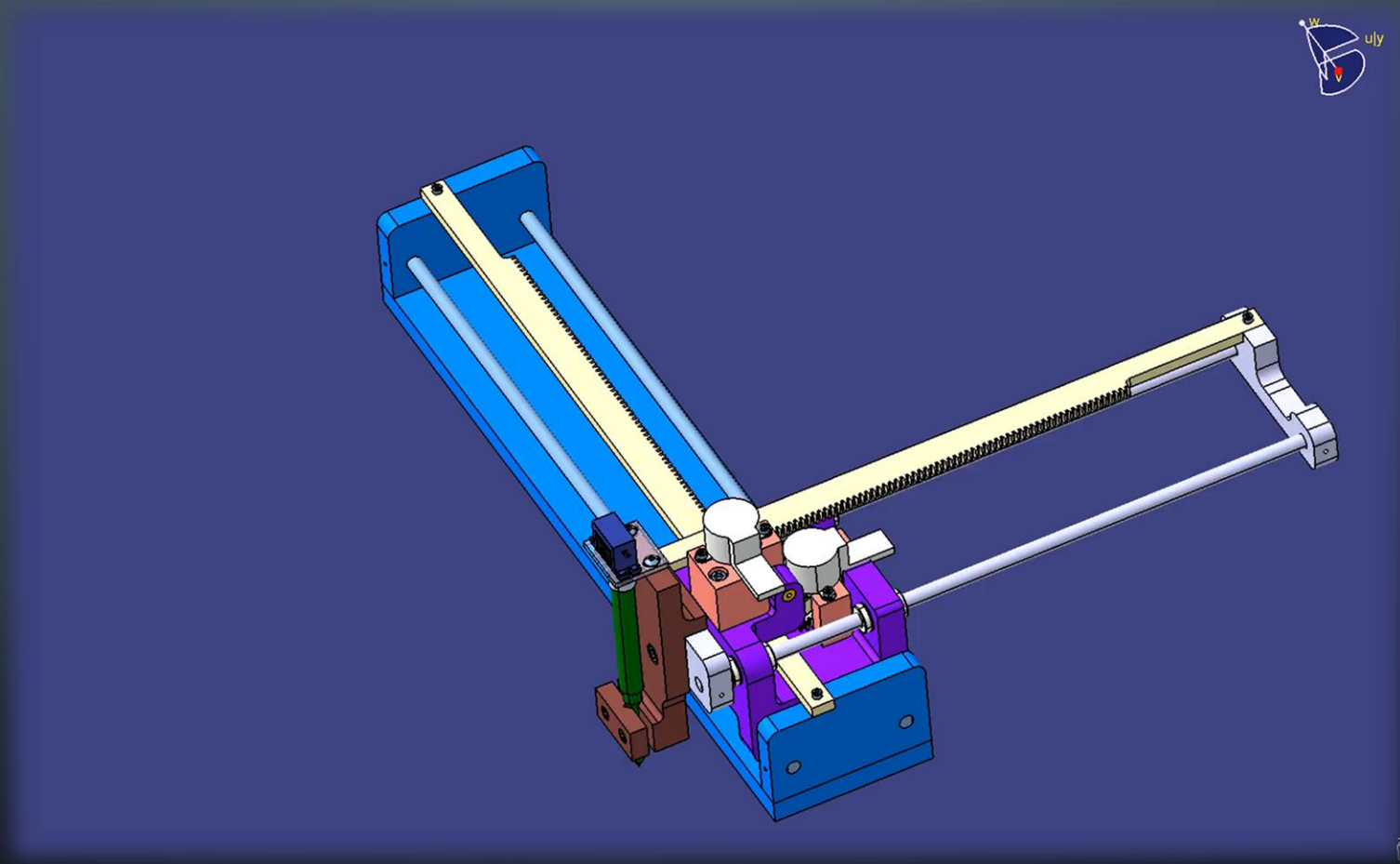
Slider Block



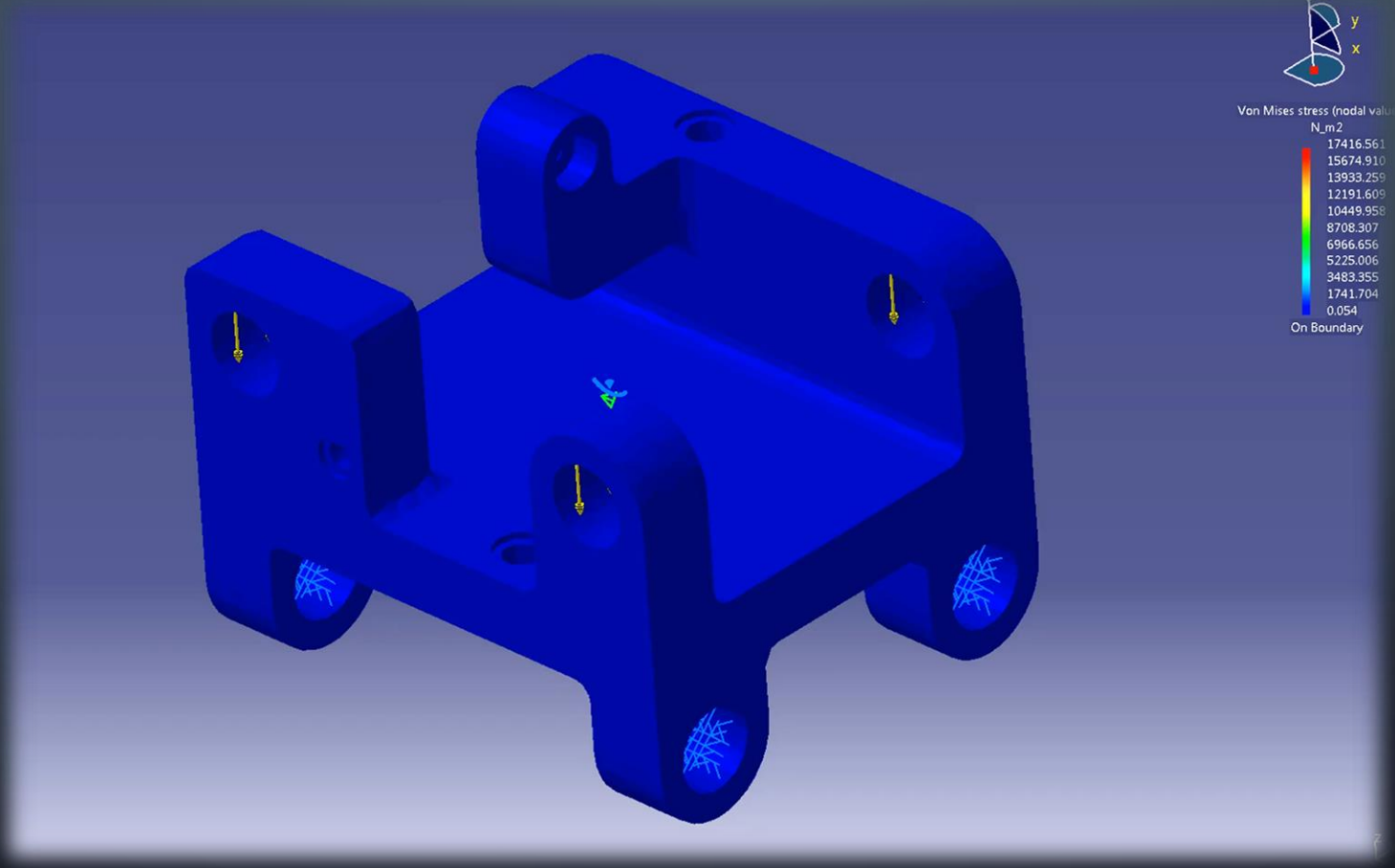
ASSEMBLY PROCESS



SIMULATION

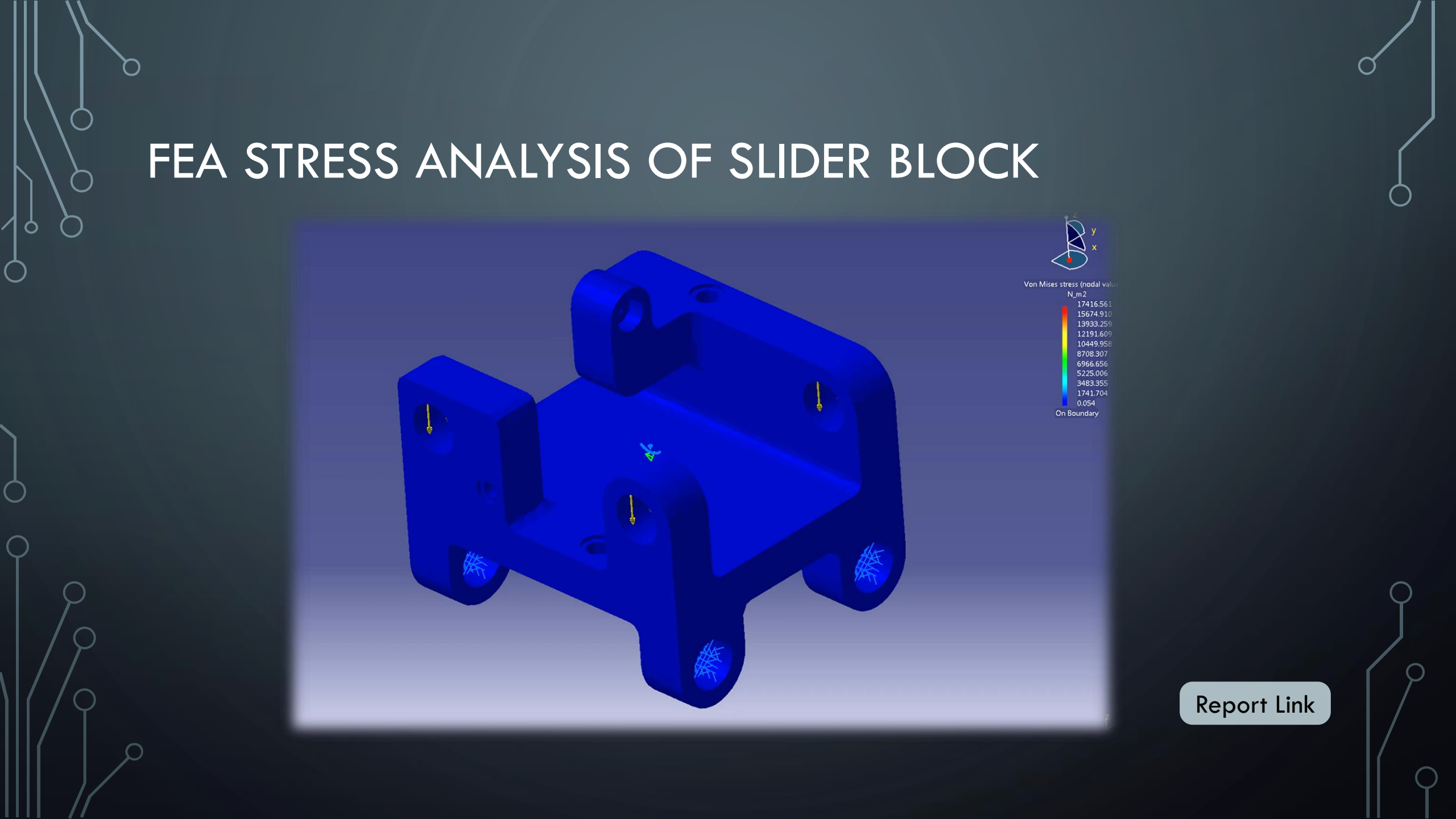


FEA STRESS ANALYSIS OF SLIDER BLOCK



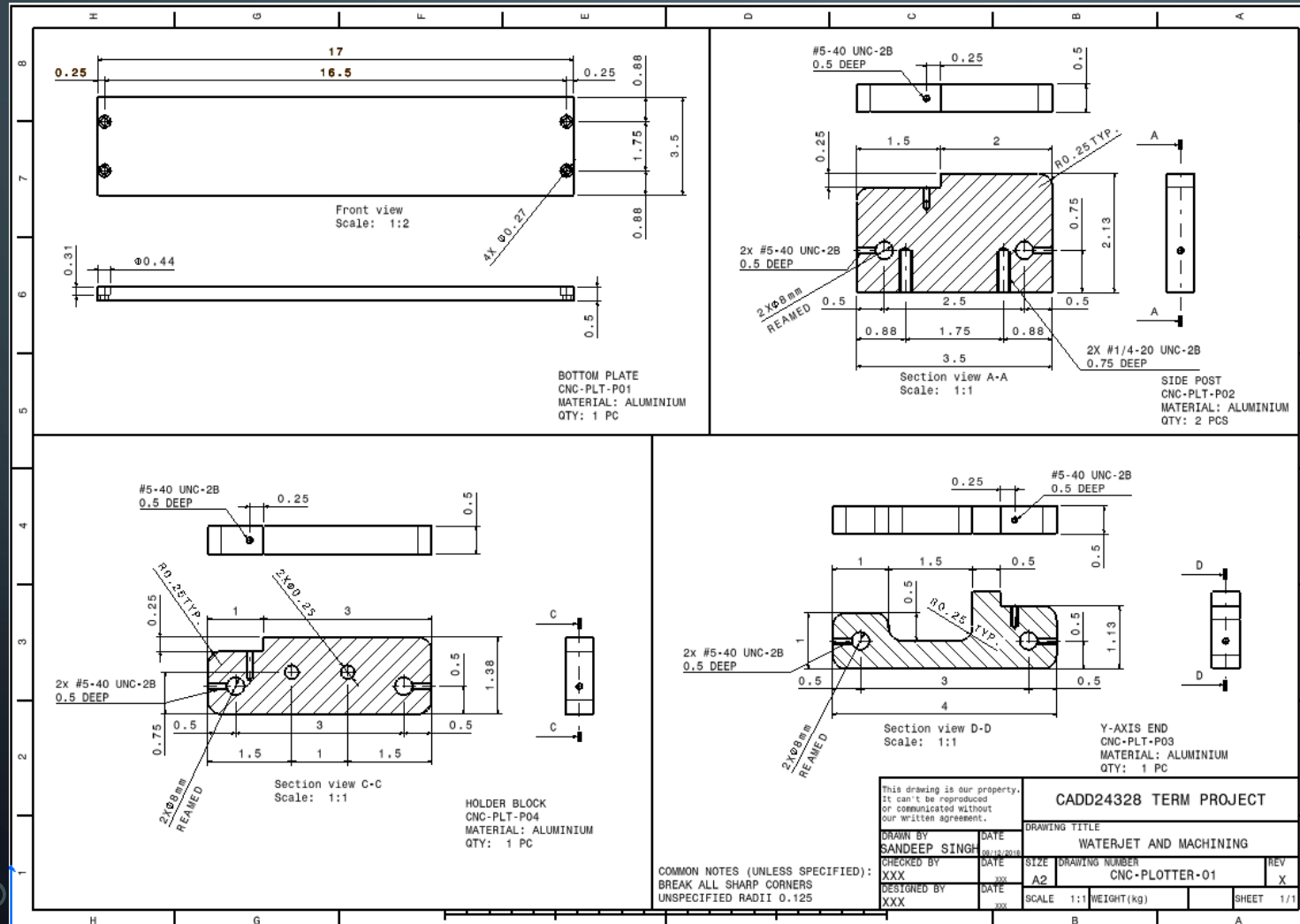
The image displays a 3D finite element analysis (FEA) of a slider block. The block is rendered in a solid blue color. It features a central rectangular body with four vertical support pillars at the corners. The top surface is flat, and the bottom surface is also flat, with the four pillars connecting them. The block is shown from an isometric perspective. To the right of the block, there is a color-coded stress scale legend. The legend is titled 'Von Mises stress (nodal values)' and 'N_m2'. It shows a vertical color bar with a gradient from blue at the bottom to red at the top. The values range from 0.054 at the bottom to 17416.561 at the top. The values are: 0.054, 1741.704, 3483.355, 5225.006, 6966.656, 8708.307, 10449.958, 12191.609, 13933.259, 15674.910, and 17416.561. A small 3D coordinate system icon is located above the legend. The background is a dark blue gradient with white circuit-like patterns on the left and right sides.

[Report Link](#)



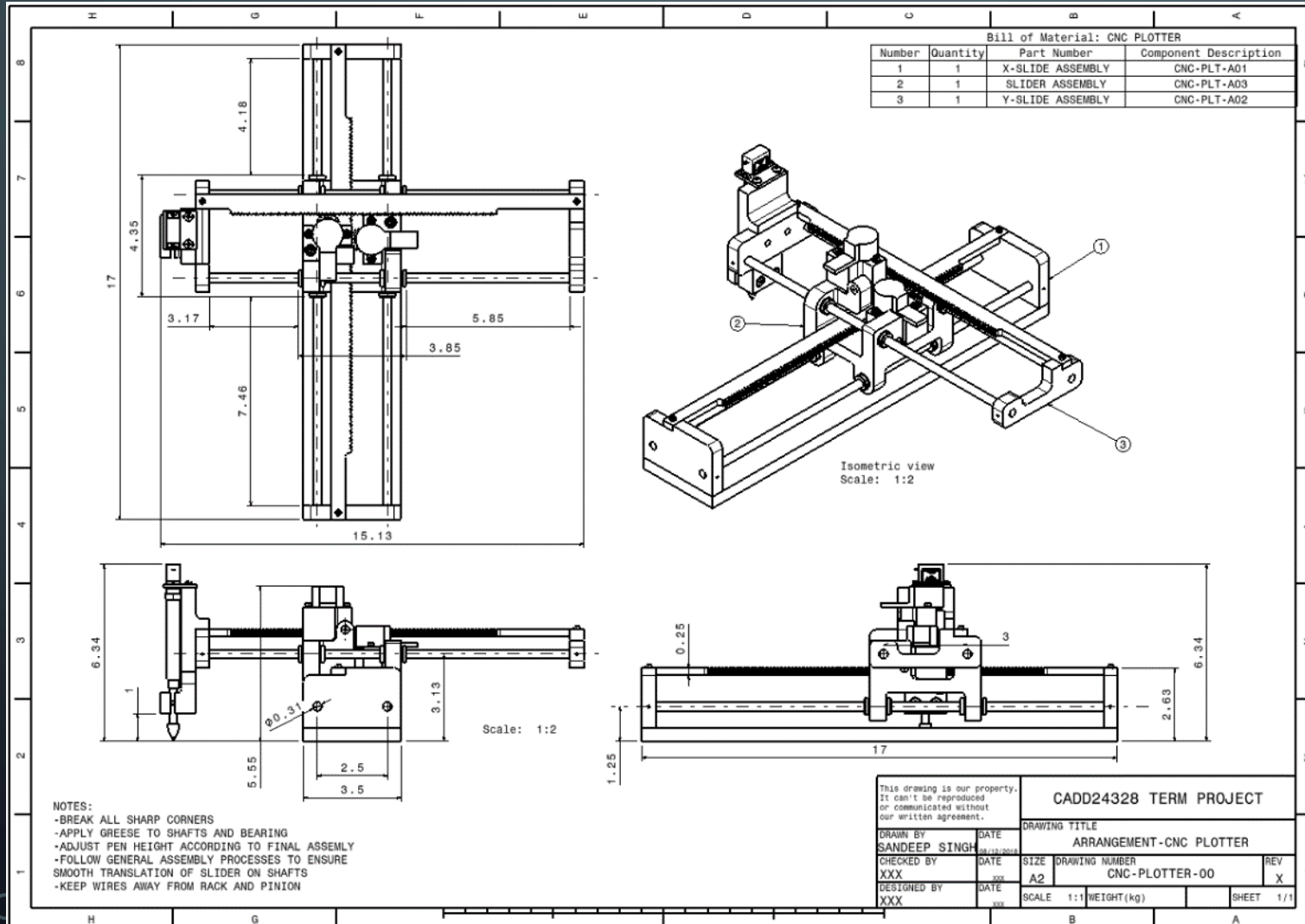
Report Link

DETAILED DRAWINGS



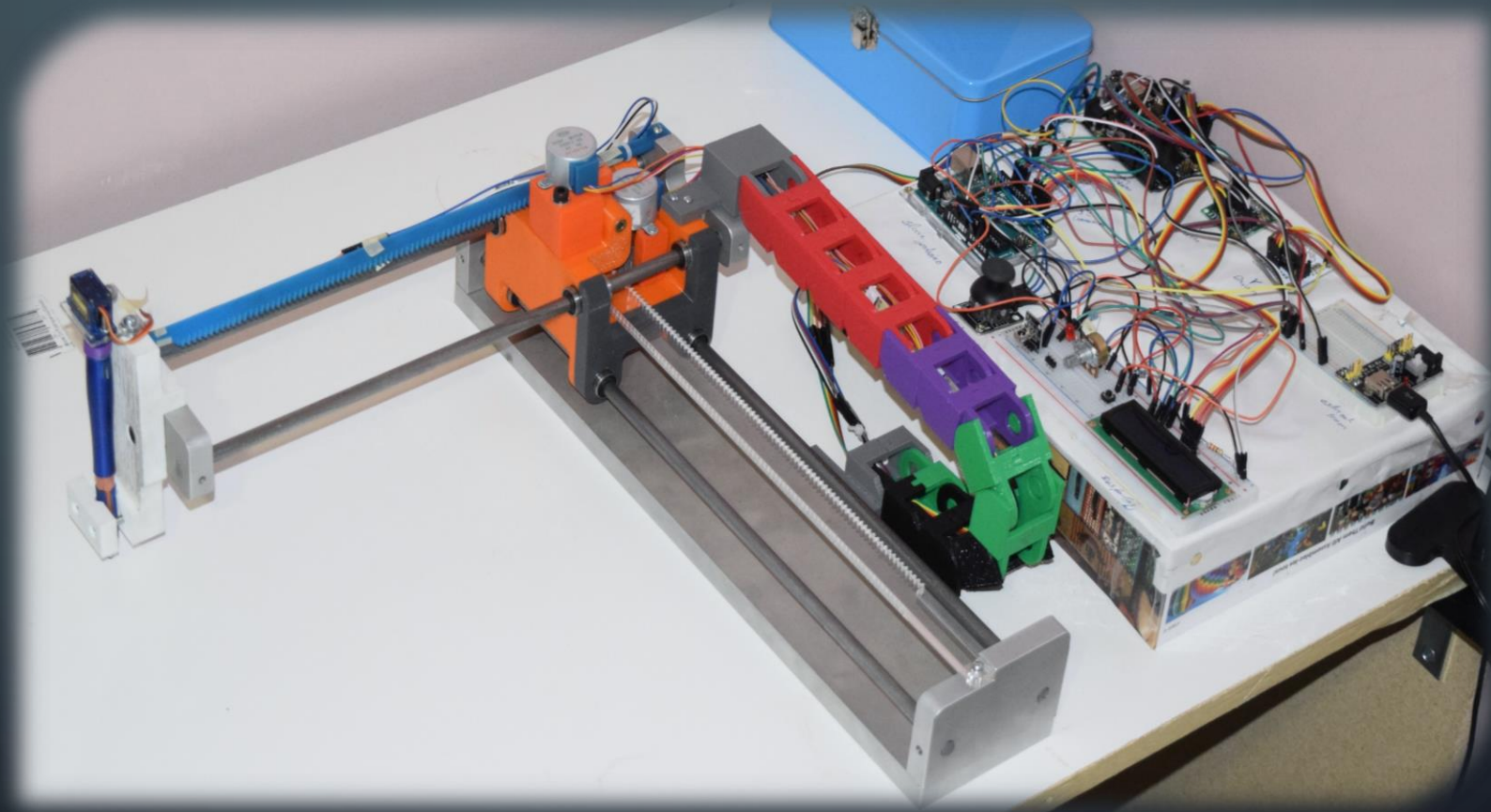
- Detail drawings donated as “CNC-PLOTTER-xx”
- Detailed parts donated as “CNC-PLT-Pxx”
- Different drawings according to manufacturing processes – Waterjet, Laser Cutting, and 3D printing

ASSEMBLY DRAWING



- Assemblies denoted as “CNC-PLOTTER-Axx”
- Separate drawings for Sub- Assemblies
- Bill of materials contains part numbers
- Notes for specific assembly instructions

THANK YOU



Please feel free to ask questions

Manufacturing of the project was a team work, and I am very thankful to all who helped and motivated me all along the progress.