Course Project Presentation

# Paper 3D LOM

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# Objective

- LOM based 3D Printer
- Making rapid Prototyping affordable
- Large scale models possible
- Material optimisation

# Concept

- Galvanometer based CO2 laser
- Paste and cut
- Indexed feed
- one side adhesive laminated material as feed
- 4 degrees of freedom for pasting

# Galvanometer

- Two mirrors for reflecting the laser beam
- Covers the area of 300mm*300mm
- Large acceleration and high speed
- Precise and accurate
- 2 degrees of freedom

# Feed

- Laminated sheet
- pair of Three rollers set
- Indexed feed
- constant thickness
- Responsible for the X-direction of motion

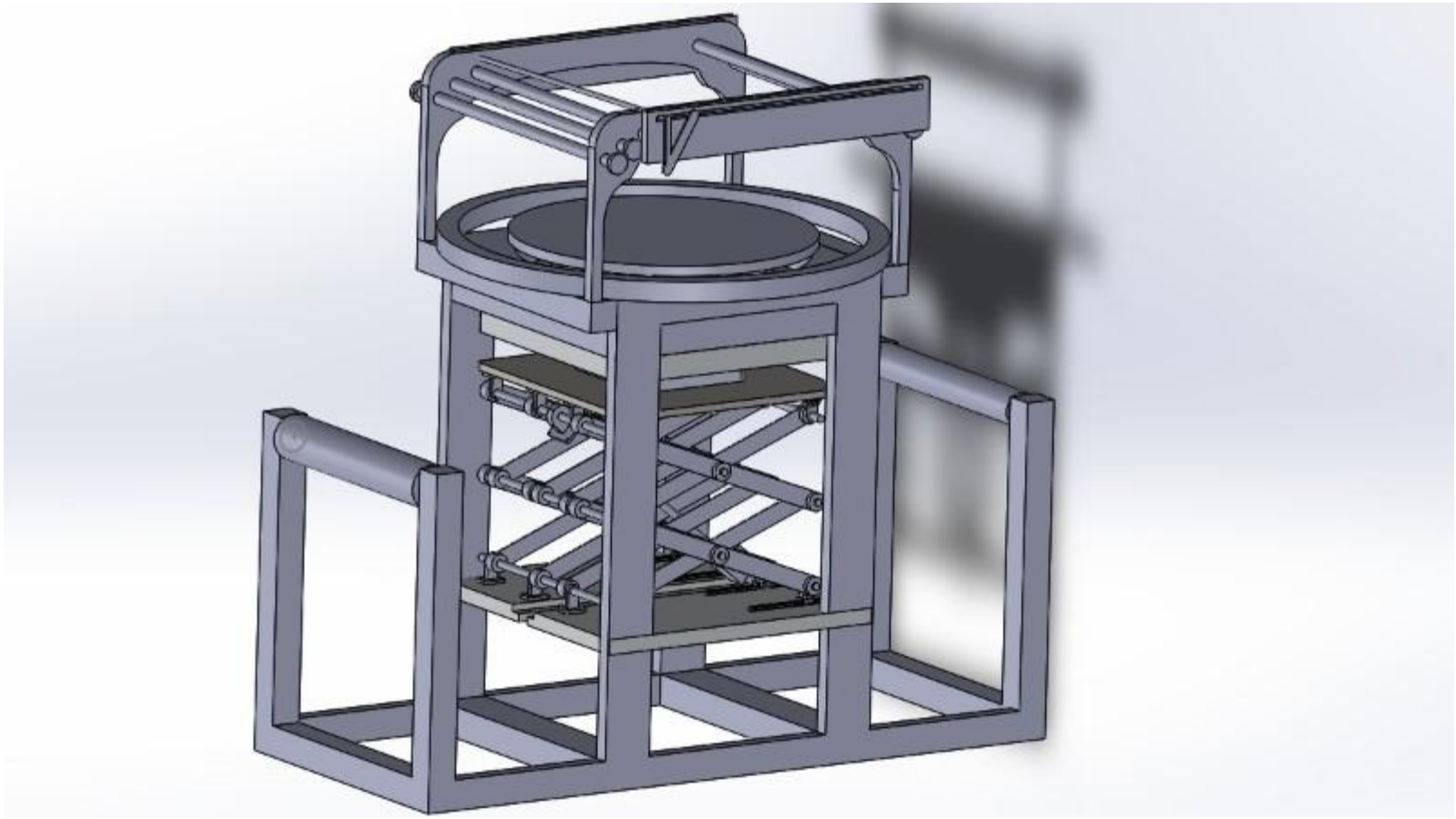
# C-Motion of the table

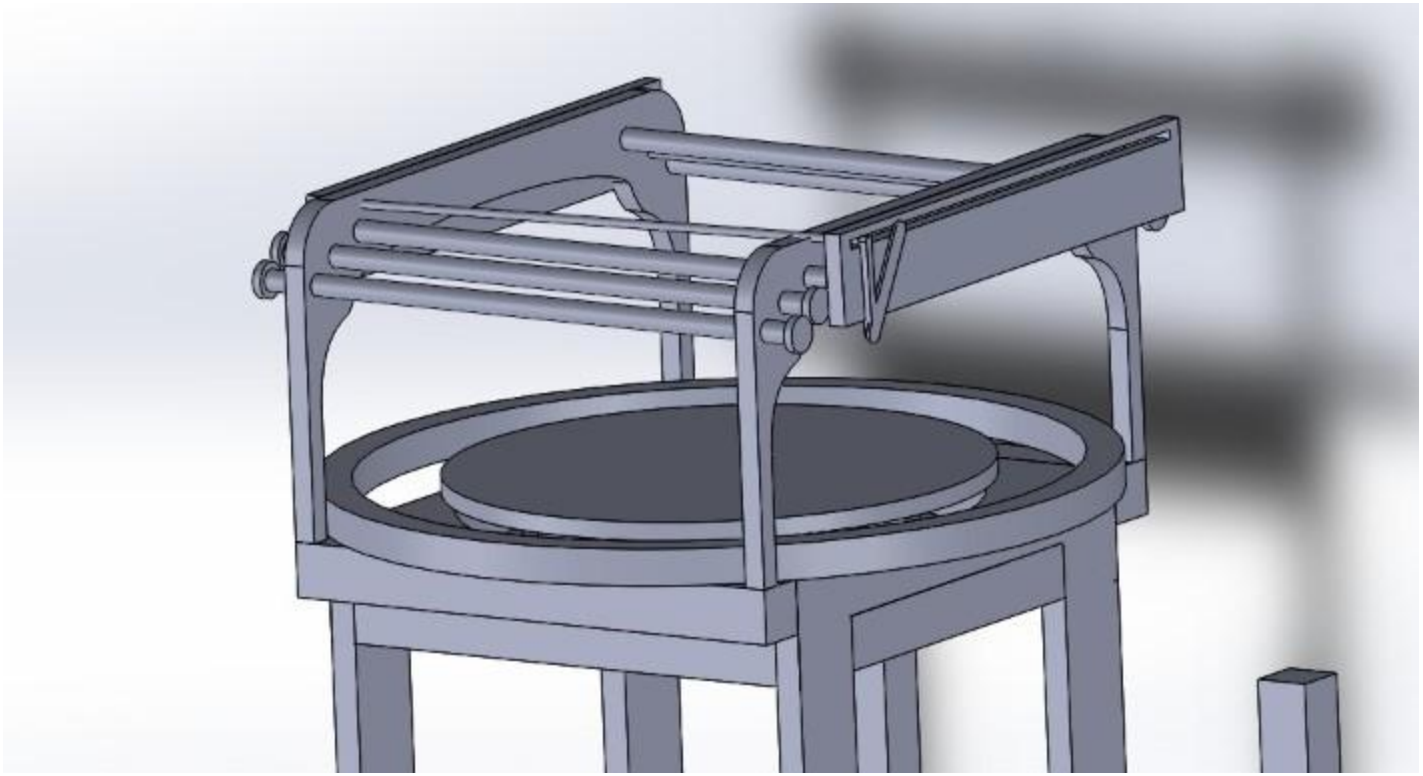
- This motion of the table is governed by the planetary gear arrangement
- Servo motor for running the mechanism
- Feedback mechanism
- Small least count

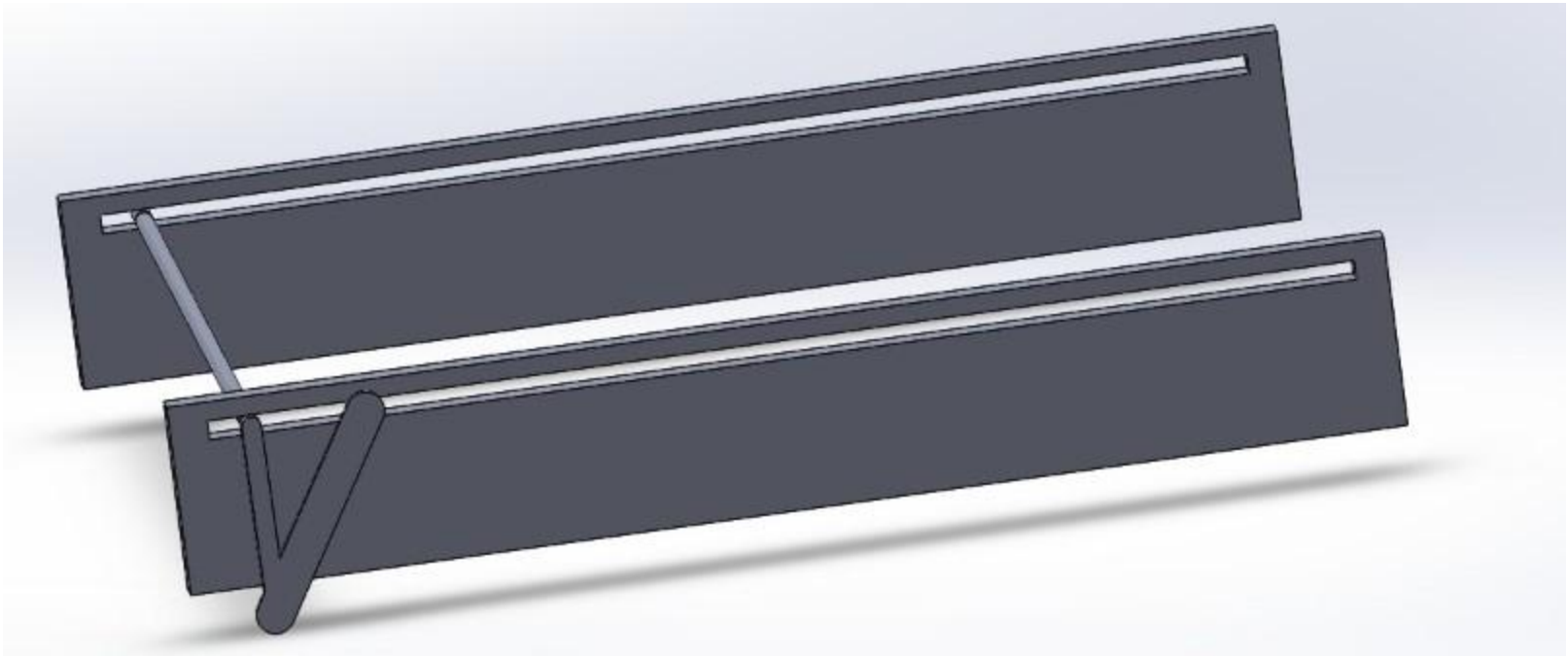
# Hot Roller

- Ensures the contact between two layers
- Melts the adhesive
- Even distribution of the melted adhesive
- constant pressure

# CAD Model








299.94
25.40
249.20
249.20
25.40

# Material

- Cellulose based paper
- HDPE based lamination
- Low melting point
- affordable
- Low thickness (70-100 micrometer)

# Optimisation of material used

- Multiple shape cut from one index of feed
- Efficient arrangement of different objects in a region without any overlap and with minimal wasted gap between shapes
- Disadvantage of losing tension in the paper
- Feasibility and speed (considering indexing)

# Summary

- On full manufacturing of the 3D LOM machine, we would be able to bring down the time as well as the cost of the whole process.

Thank you!