

Prototyping Interactive Systems

DES 206

23-02-2024

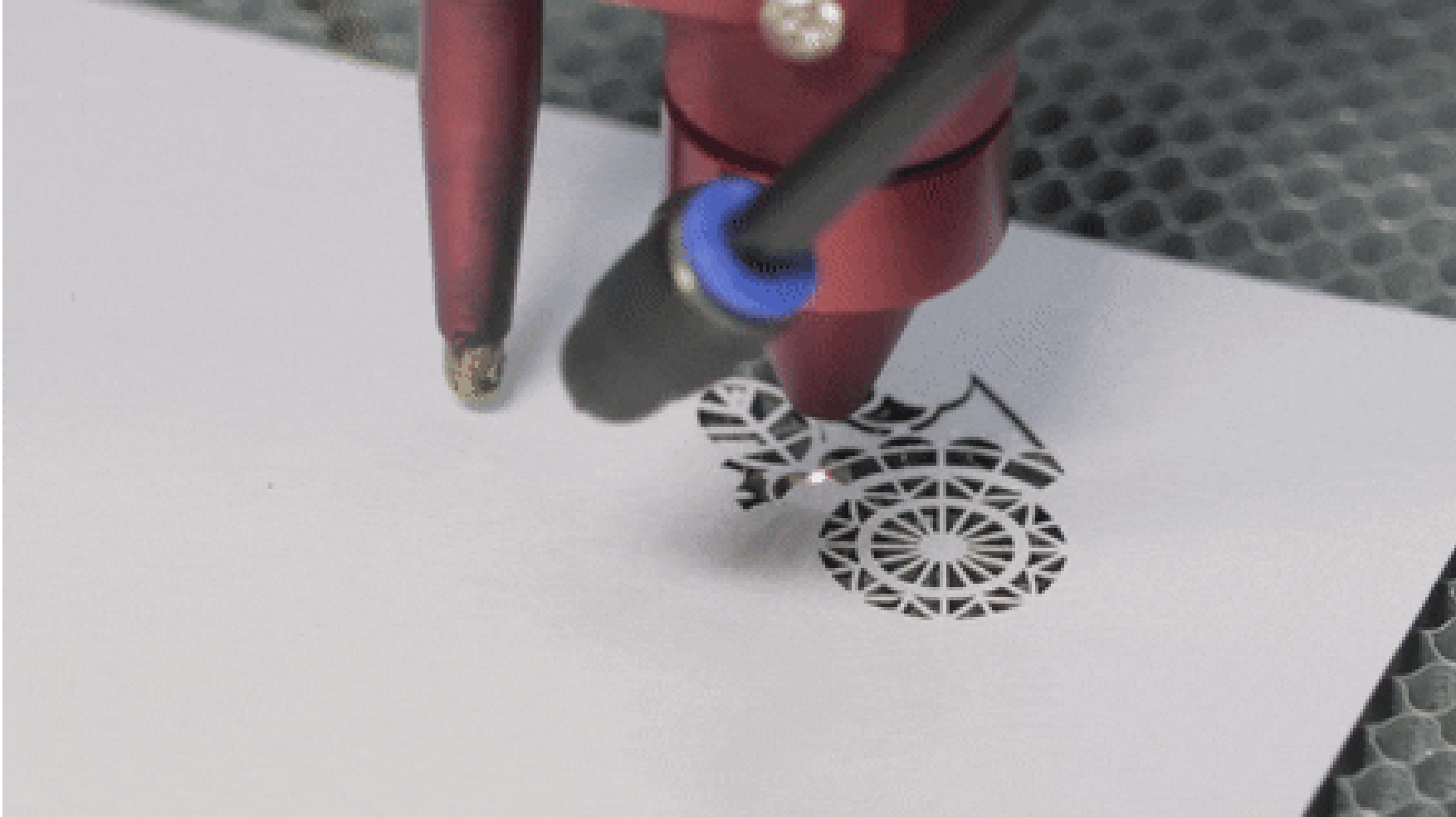


INDRAPRASTHA INSTITUTE *of*
INFORMATION TECHNOLOGY
DELHI

Richa Gupta

Prototyping processes

Laser Cutting



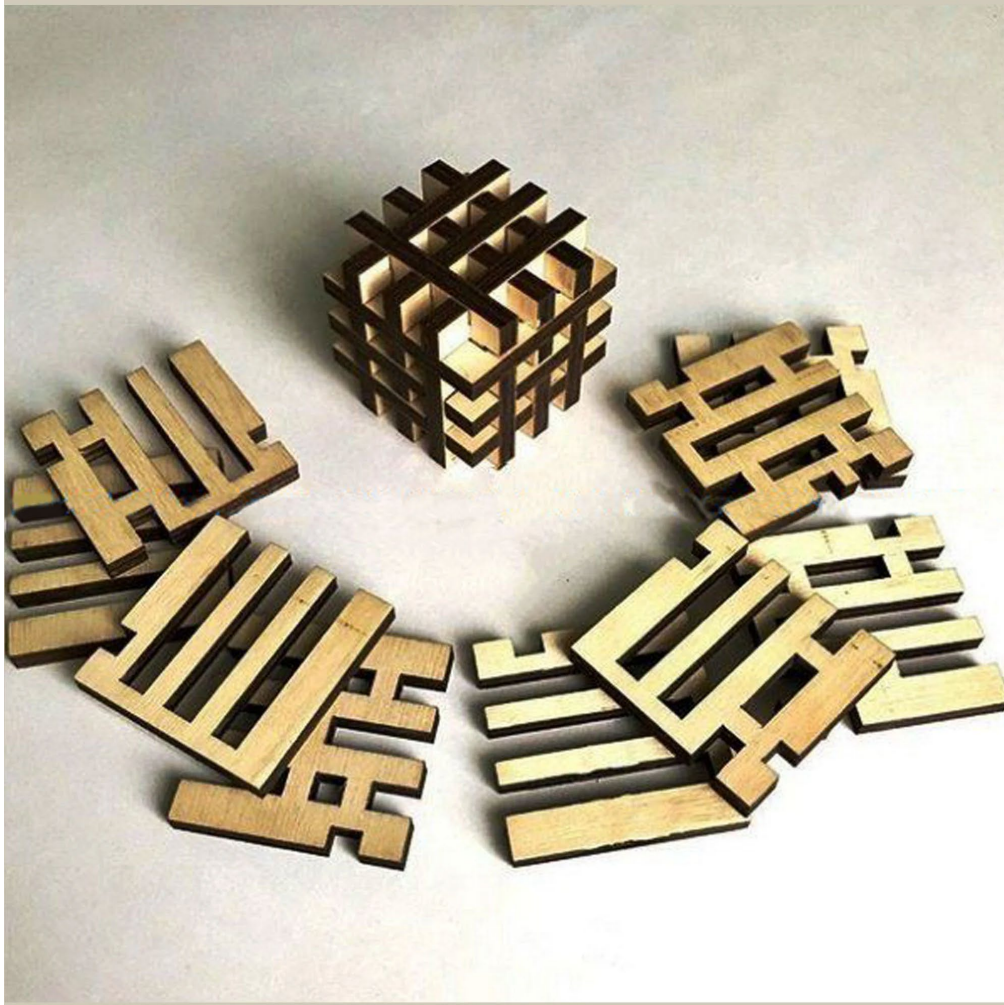
Laser Cutting



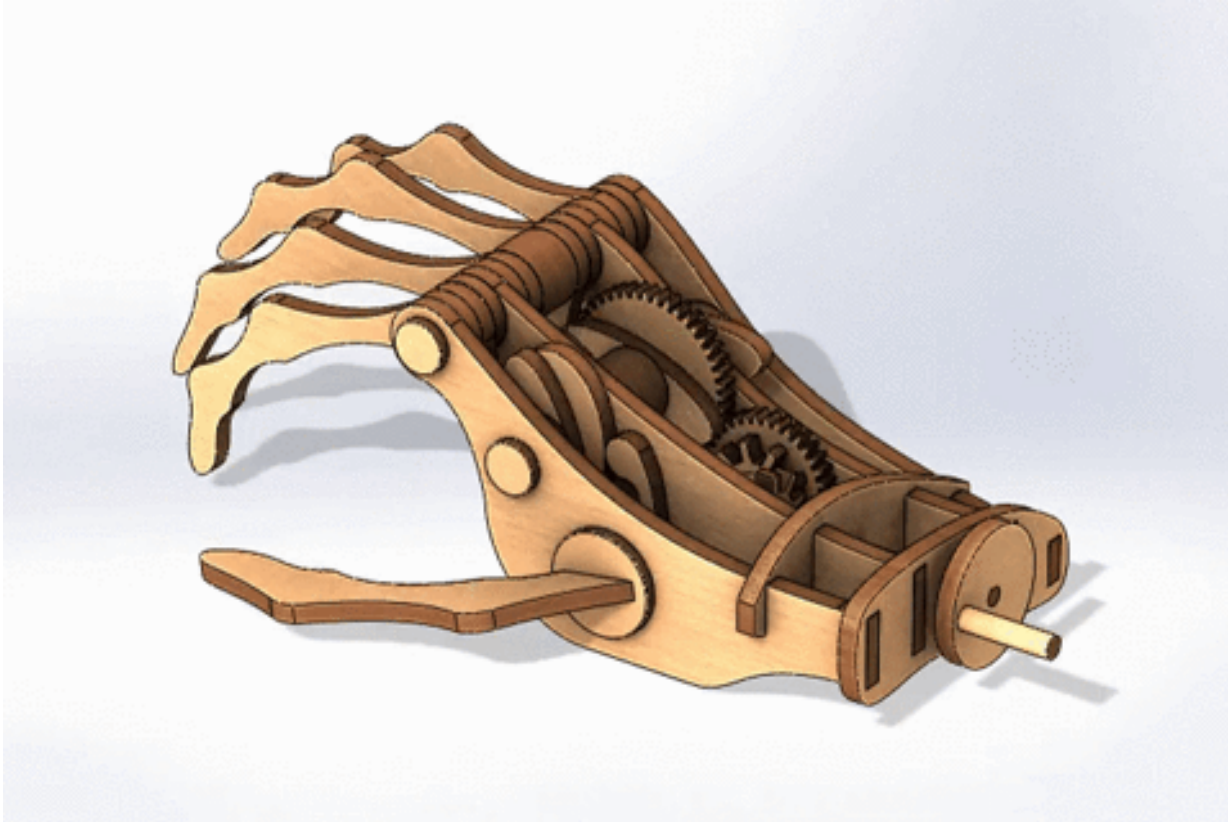
- Laser cutting is a **slitting process with which metallic and non-metallic raw materials of different material thicknesses may be cut**
- This is based around a **laser beam** which is guided, formed and bundled
- When it hits the workpiece, the material heats up to the extent that it melts or vaporises
- The building of the part, model, or assembly is typically accomplished through assembly of cut parts in various ways
 - Layered
 - 3D assembly



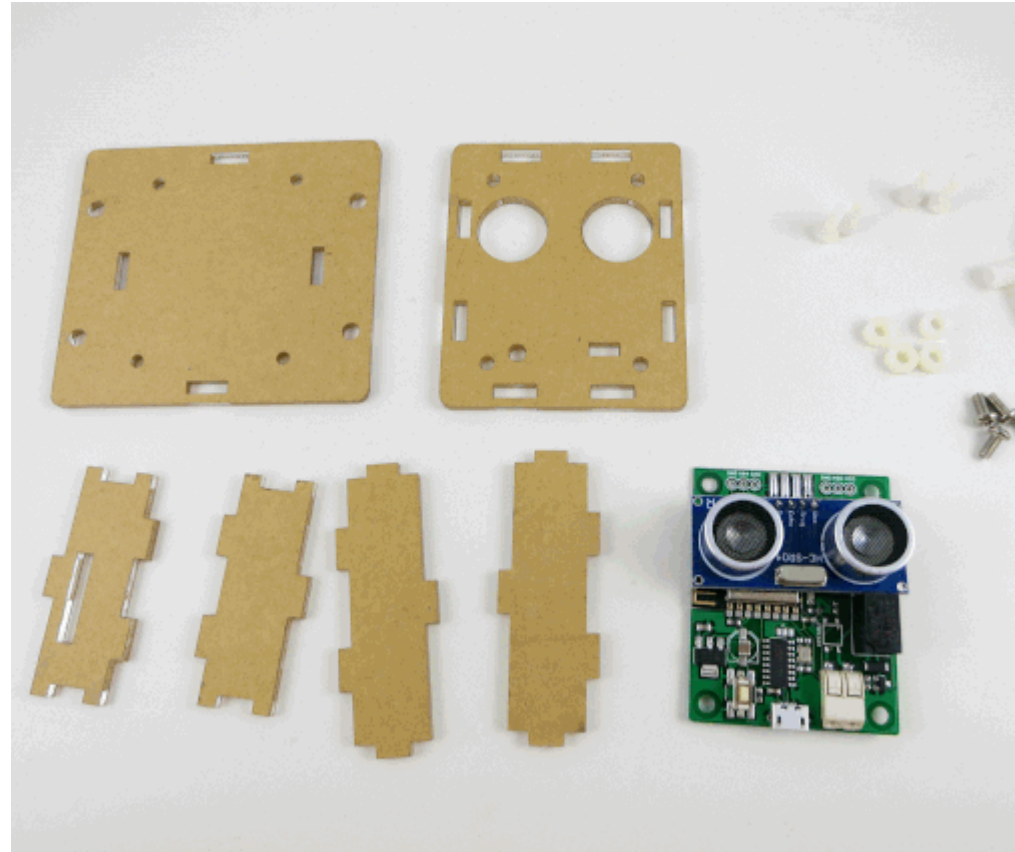
3D assembly of cut parts



3D movable assembly of cut parts



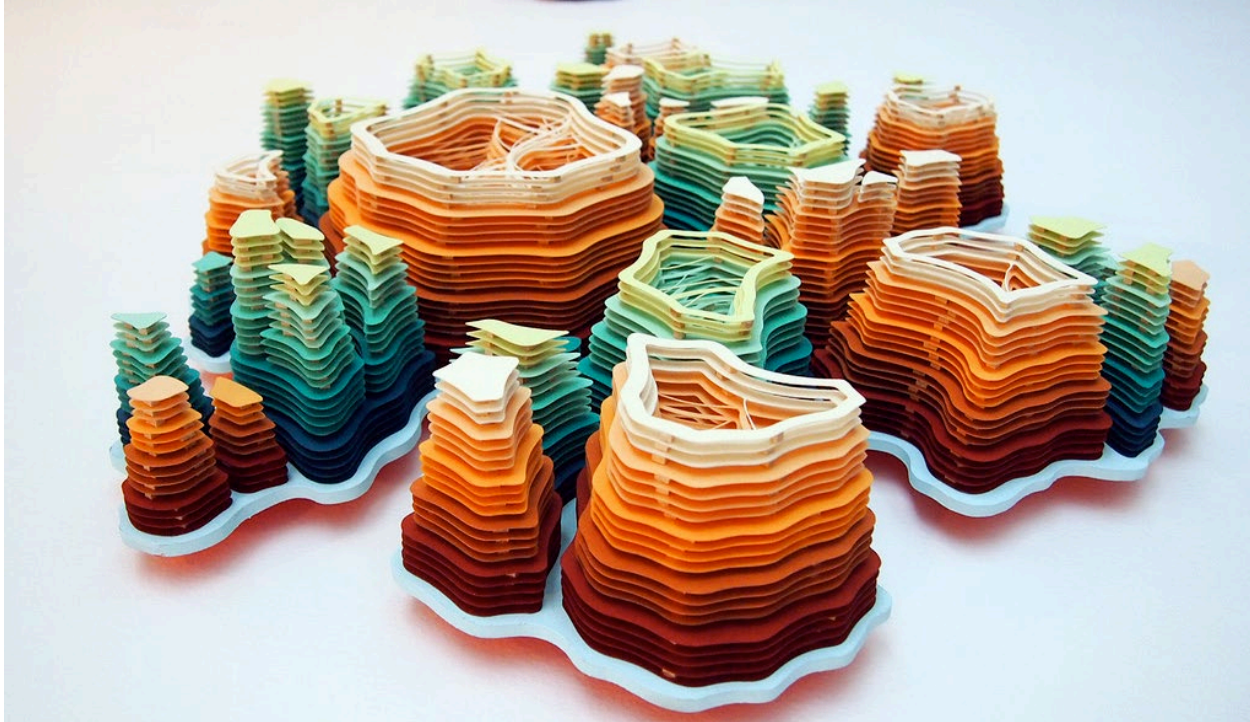
Project casing using laser cutting



Exploring Laser cut possibilities



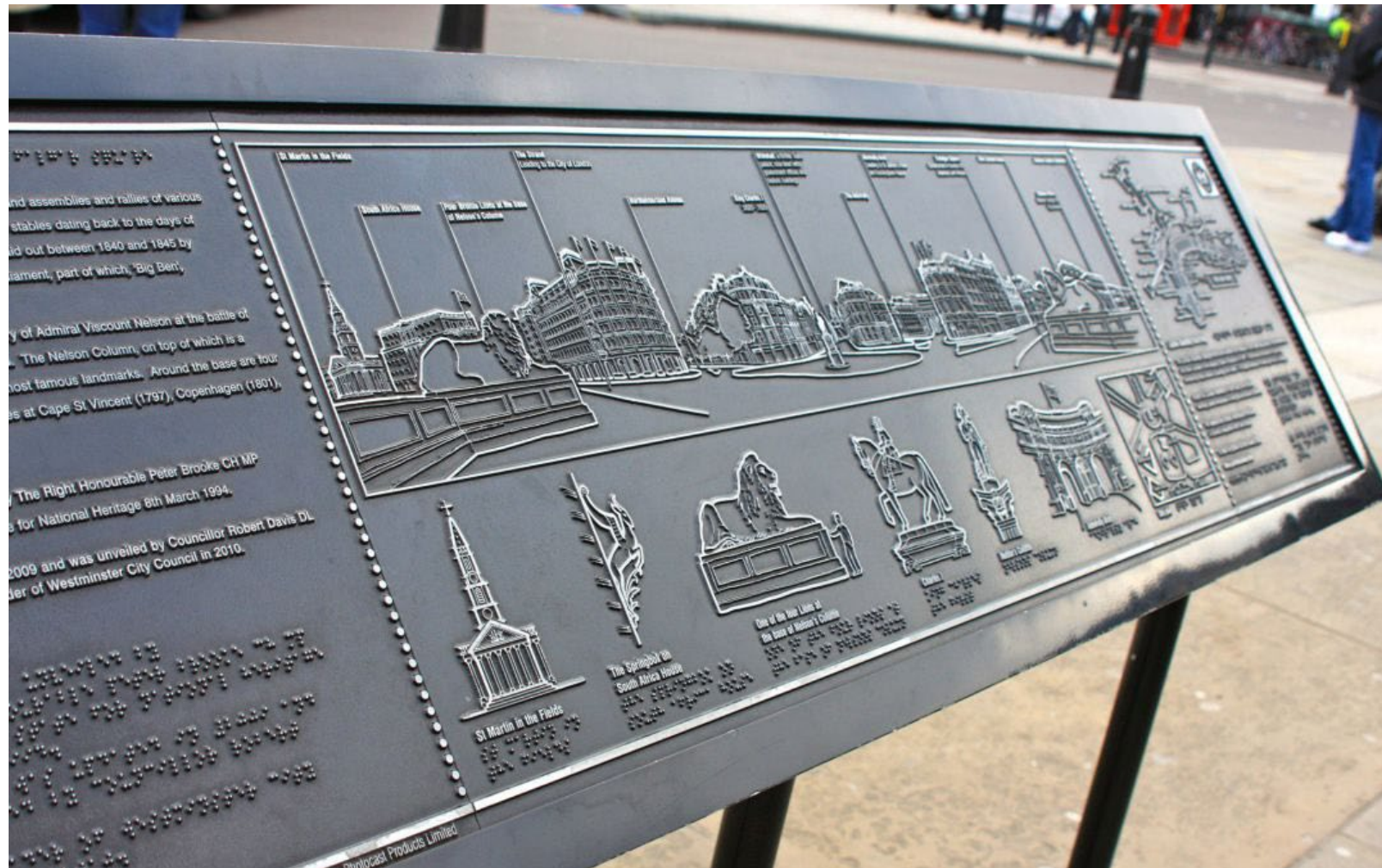
Layered assembly of cut parts



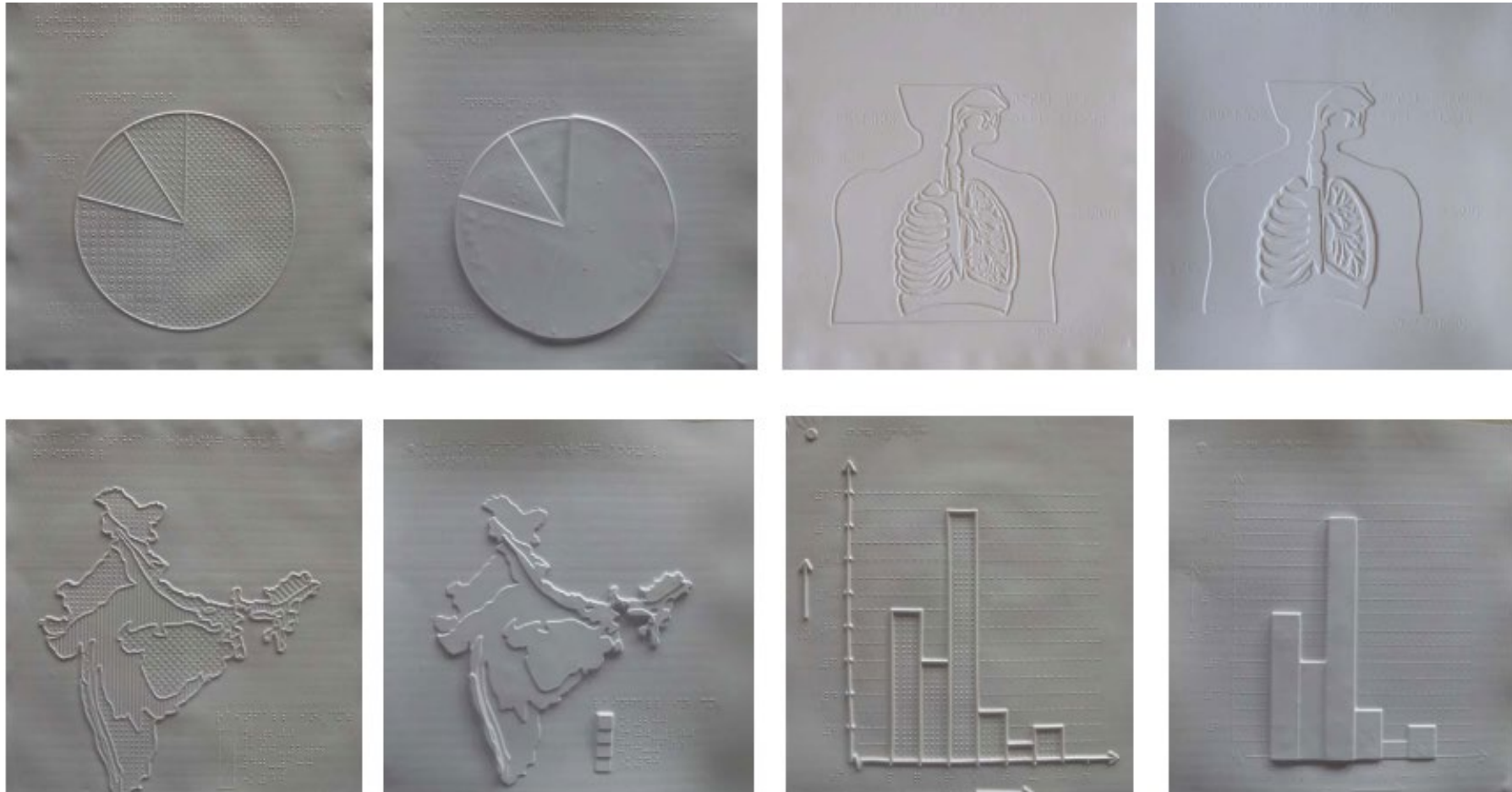
Layered art



Embossed signage / graphics



Using laser cutting in tactile graphic design



Richa Gupta, et al. "Evaluating the Use of Variable Heights in Tactile Graphics",
Presented at IEEE World Haptics Conference 2019, Tokyo

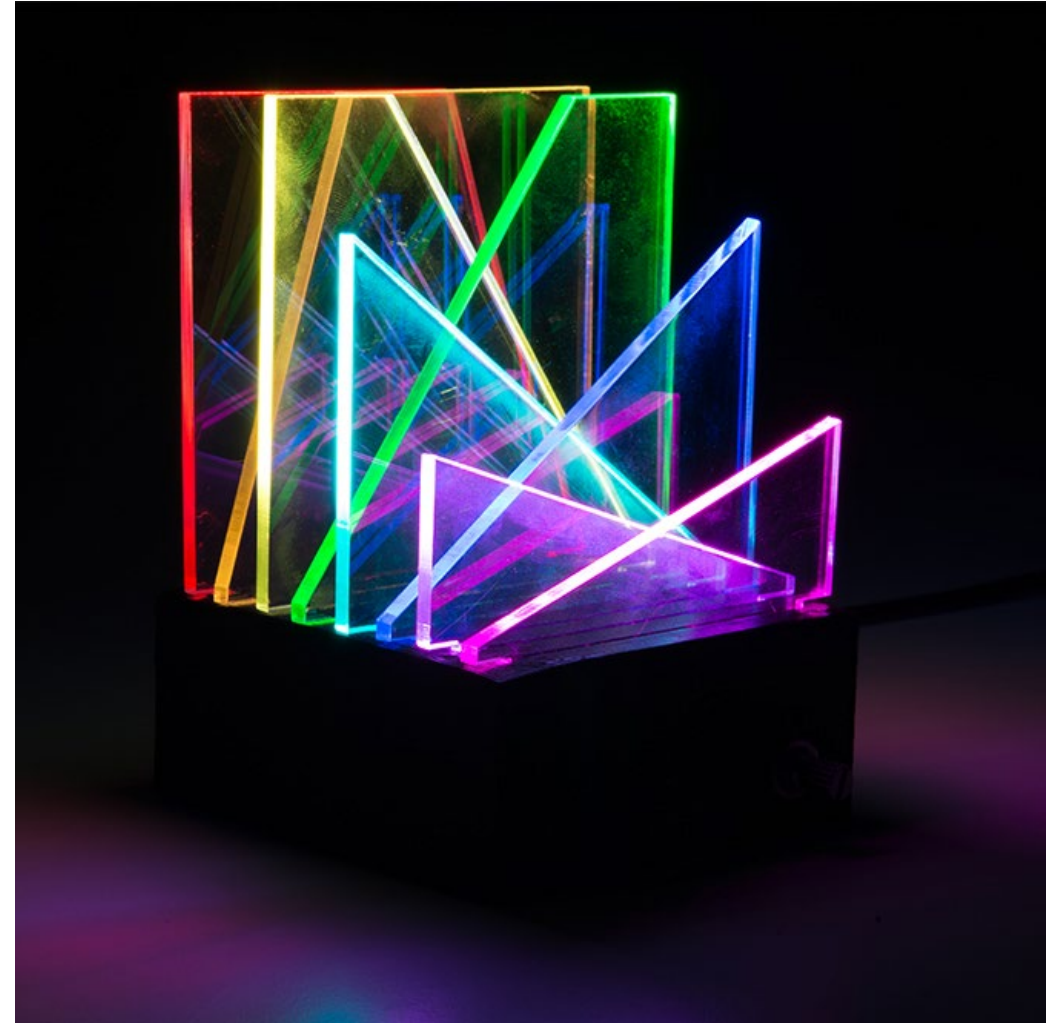
Laser cutting on different materials



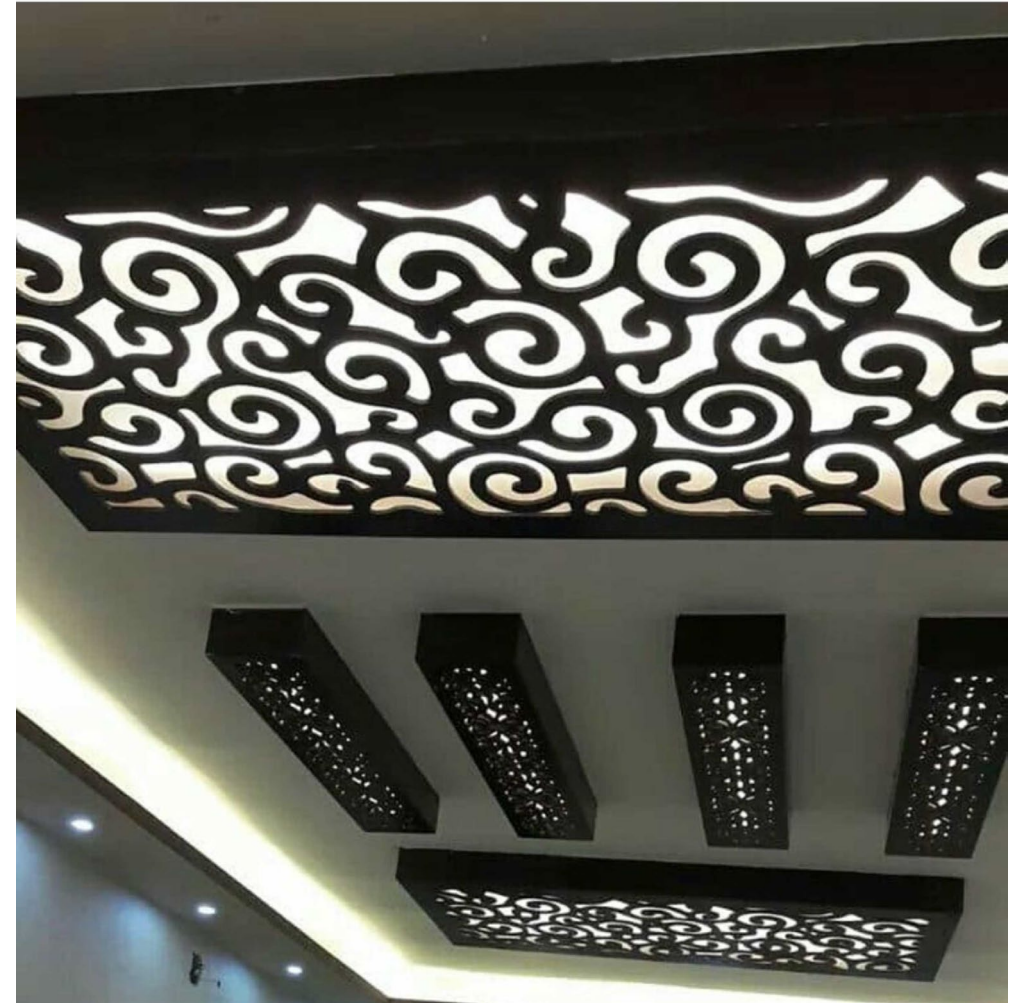
- Acrylic sheets
 - Engraving
 - Cutting
- Available in various thicknesses
- Laser strength can be adjusted



Laser cutting on acrylic



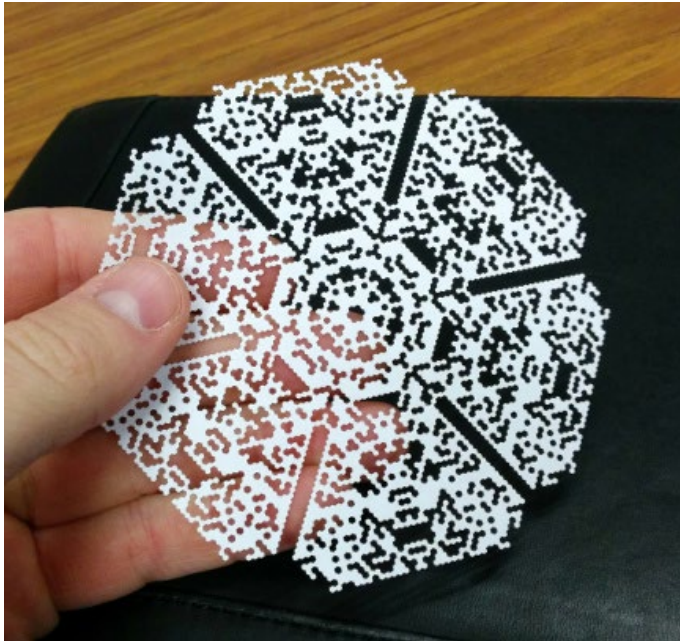
Laser cutting on acrylic



Laser cutting on different materials



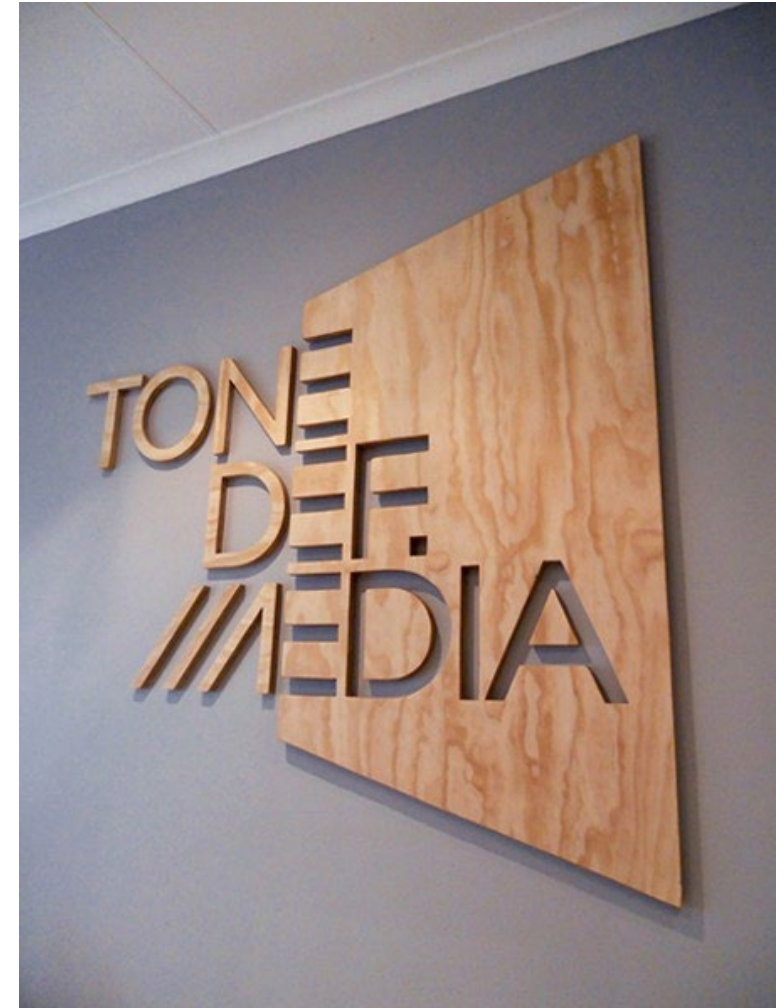
- Paper
 - Select thickness depending on requirement



Laser cutting on different materials



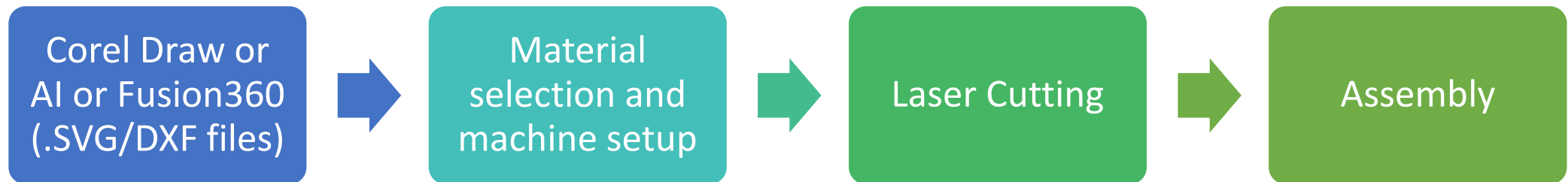
- Wood
 - Panels
 - MDF



Laser cutting process and assembly



- Faster, cheaper as compared to 3D printing
- Can be done with various materials i.e. wood, paper, acrylic, metals
- Innovative designs possible



Let's go to DI lab



- From sketch to laser cut to model
 - Use AI
 - .svg, .dxf files
- You can also use Fusion 360
 - Make the sketch in a plane
 - Extrude to say 5 mm
 - Create a .dxf files for each part

Mid-sem Group Project



- Will be counted as Mid Sem exam
- Group of 3 (already shared)