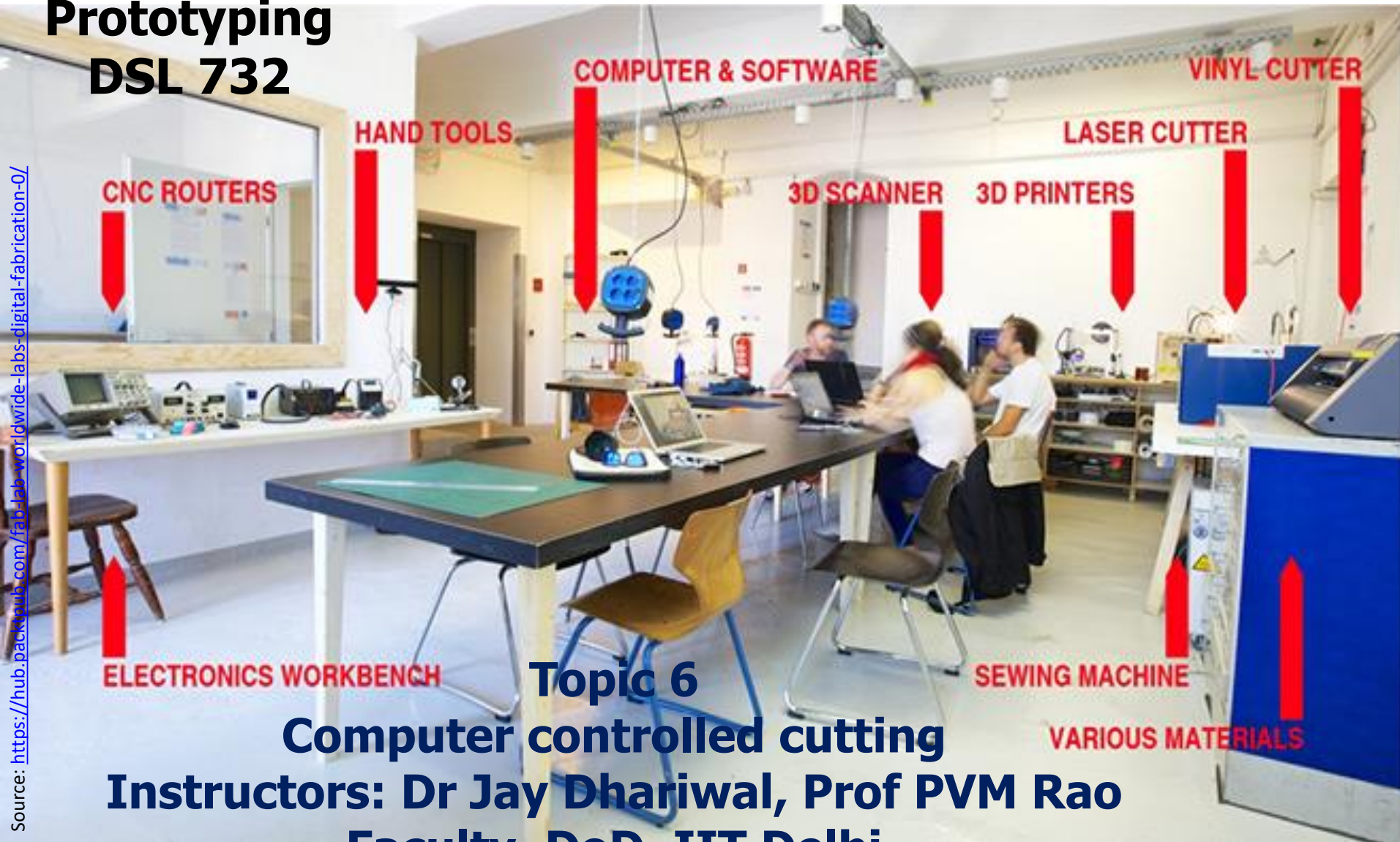


# Materials and Prototyping DSL 732

Source: <https://hub.packtpub.com/fab-lab-worldwide-labs-digital-fabrication-0/>



## Topic 6

### Computer controlled cutting

Instructors: Dr Jay Dhariwal, Prof PVM Rao

Faculty, DoD, IIT Delhi

Dated: 12th April, 2021

# Computer controlled cutting methods

- Waterjet cutting, cut anything, high pressure jet of water with garnet. [Demo](#)
- Plasma cutting, can cut metal, messier.
- Laser cutting
- Cutting plotter
- Hot wire cutting for foam
- Wire EDM (electric discharge machining)
- [Fab academy](#) [Video](#)





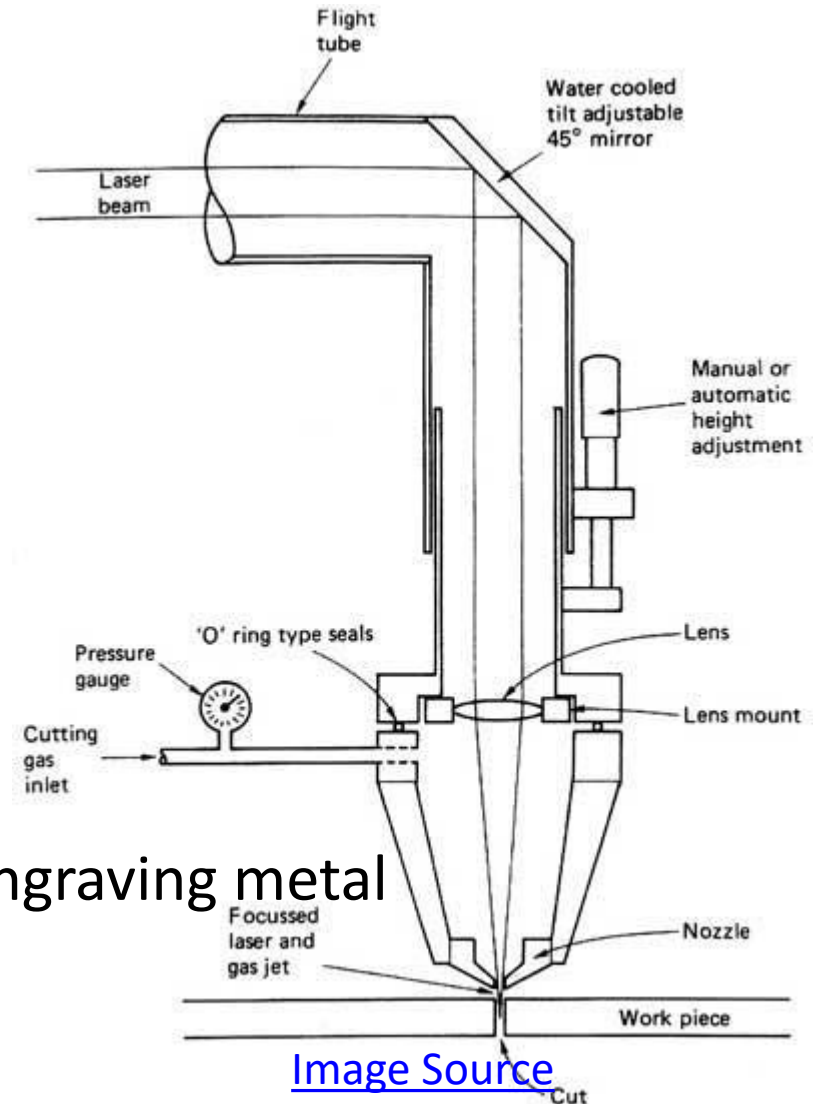
## Waterjet cutter

- Protomax specifications
- Protomax Layout
- How to use it?
- Protomax characterization
- Nozzle clogging



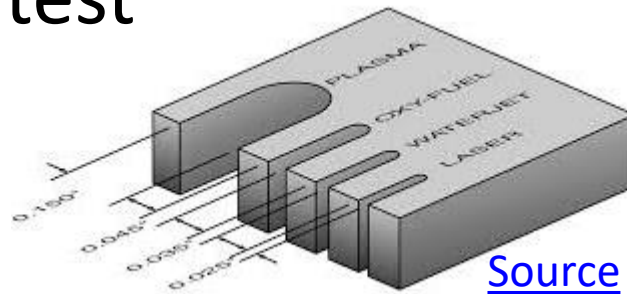
# Laser cutting

- Work horse in Labs
- Using laser to cut material through optics
- Motion control + CNC + g-code
- Engraving/Cutting, Raster/Vector
- Speed, Power settings for different materials
- CO<sub>2</sub> 60 W laser – wood, acrylic, Cardboard.
- [Fiber 3000 W laser](#) for cutting/engraving metal



# Characterization of laser cutter

- [Details](#)
- Speed power test
- Raster test
- Kerf
- Kerf =  $f(\text{speed, power, thickness})$
- Kerf test
- Press-fit comb test



For material thickness of 2 mm

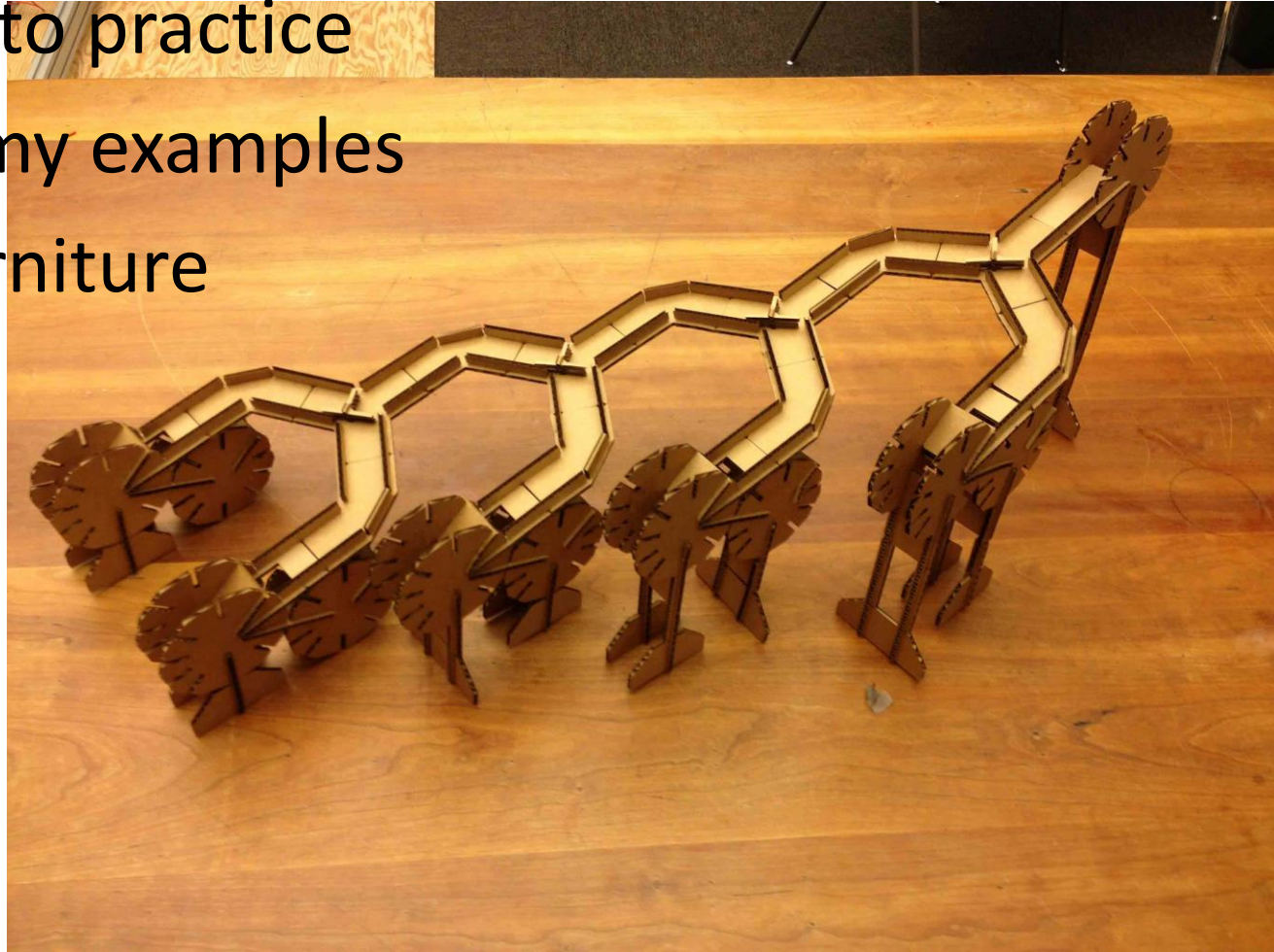
# Pressfit kit possibilities

- Cardboard to practice
- Fab Academy examples
- Press fit furniture

[Example 1](#)

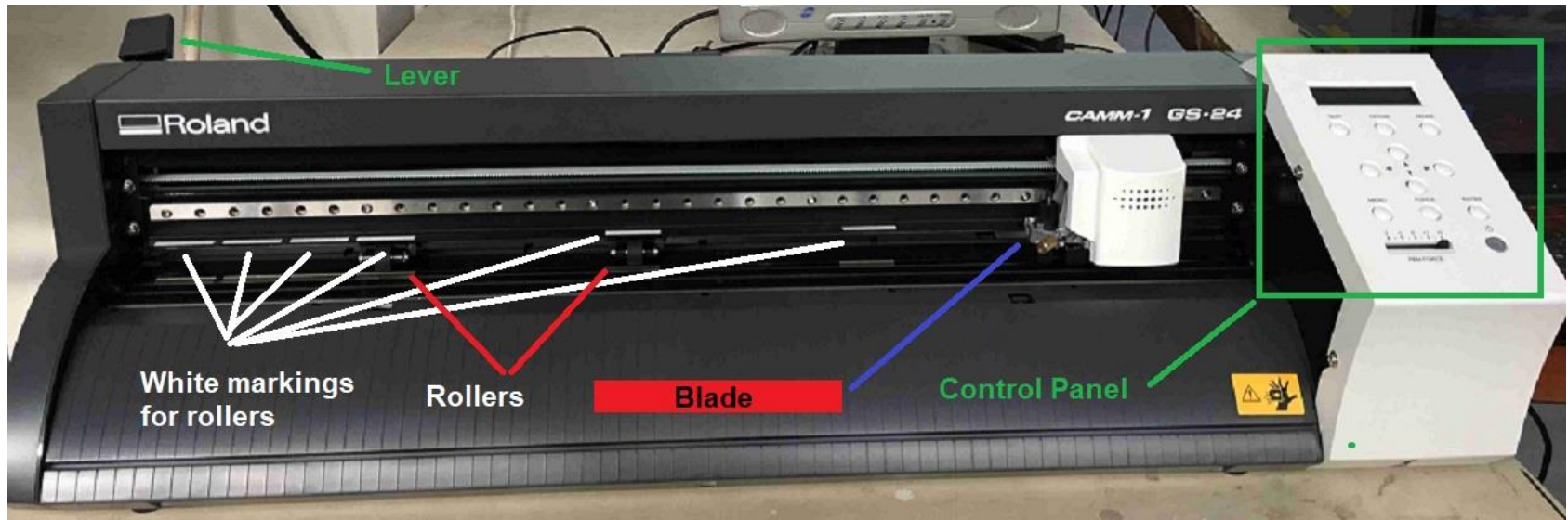
[Example 2](#)

- Parametric modeling

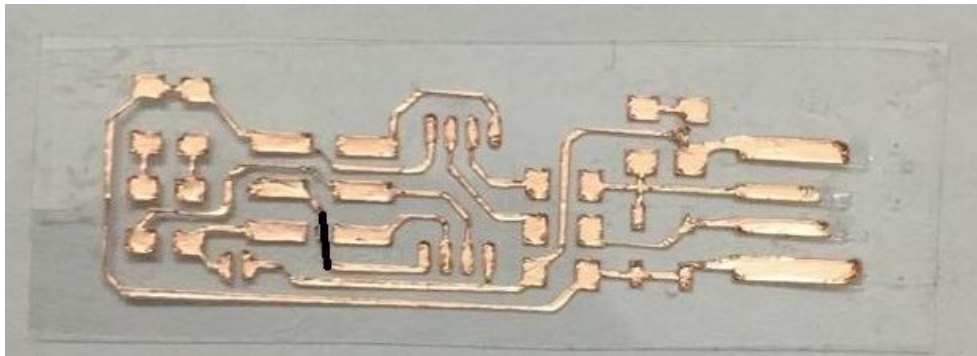


[source](#)

# Cutting plotter



Roland CAMM-1 GS-24 desktop cutter



Flexible PCB

