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College of Engineering
Aggie Innovation Space

Intro to 3D Printing

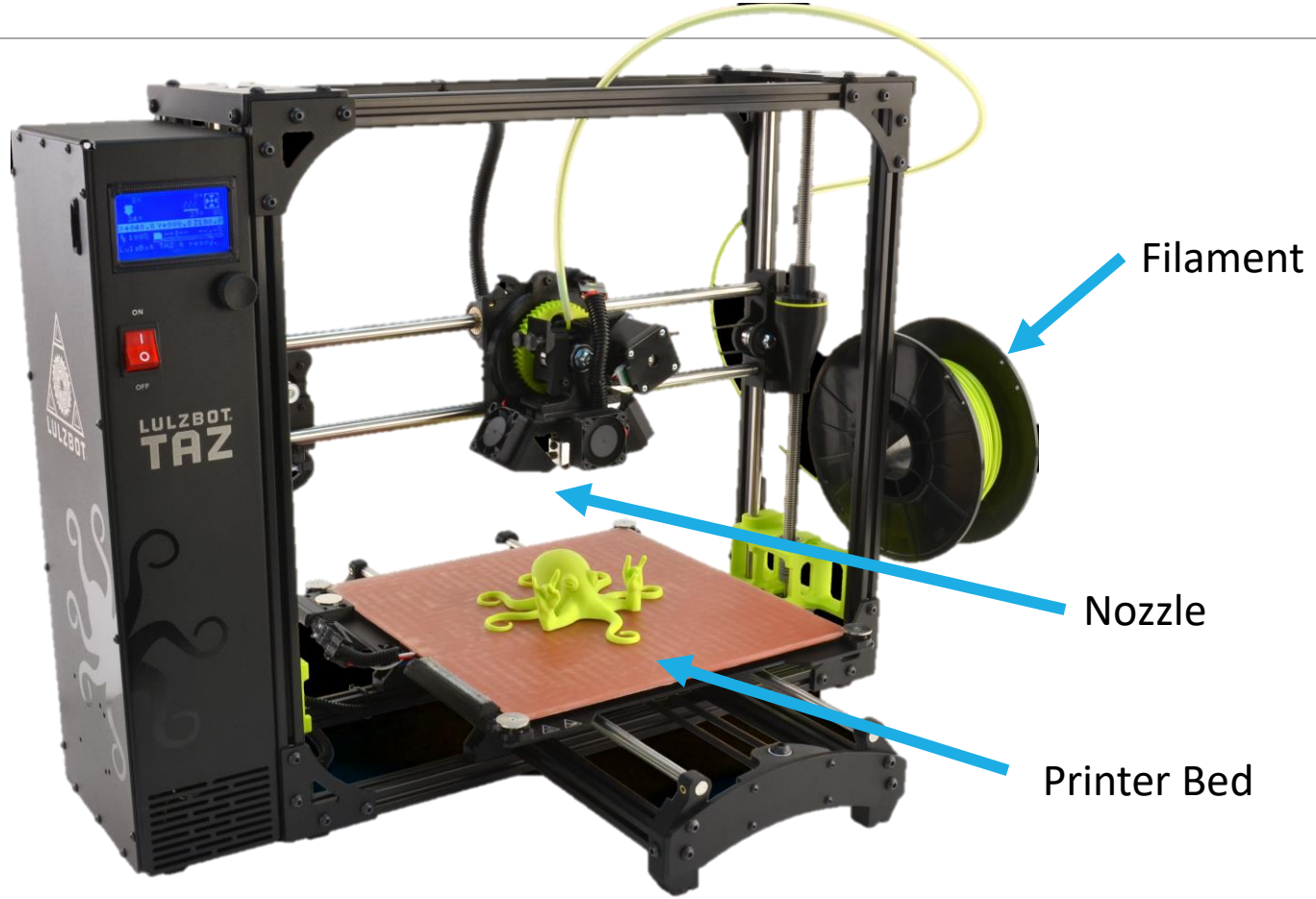
AIS

AGGIE INNOVATION SPACE

WHAT IS IT?

- 3-D printing is additive manufacturing with (usually) low strength thermoplastics
- Taking a 3-D design/sketch and adding layer by layer of some material to create a physical model
- It has been around for 30 years and is increasing in popularity, mostly in the consumer space

HOW DOES IT WORK



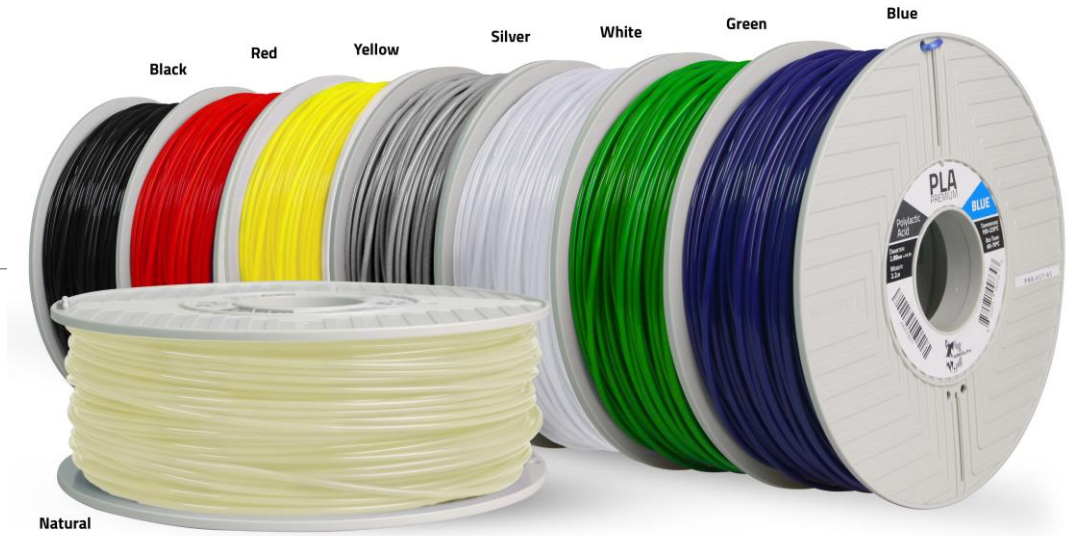
- FDM

Fused Deposition Modeling

PRINTERS

MATERIAL

- **PLA**
- ABS
- Resin
- Nylon
- ASA
- PEEK
- Polycarbonate
- Carbon Fiber

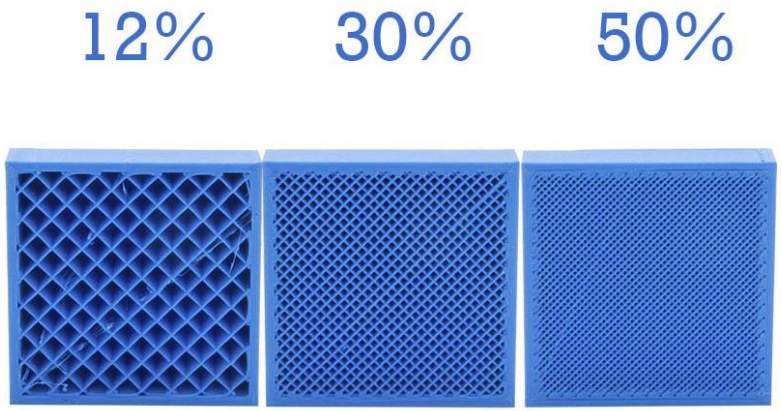


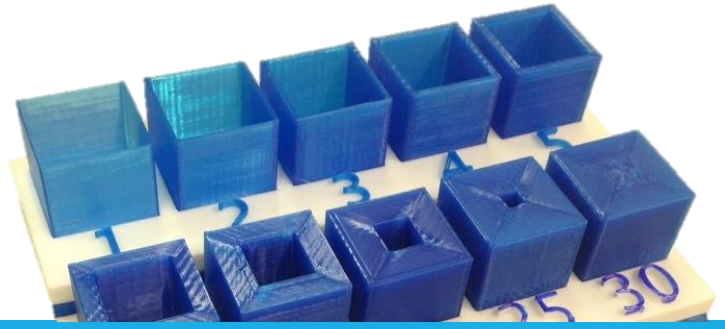
PROCESS- 3D MODEL

- Model in SolidWorks, Fusion360, etc.
- *Things to keep in mind*
  - Tolerance: Design your models to have a spacing of .225 mm (.008 in) for tight slide fits
  - Add chamfers/fillets to edge where parts slide into one another
  - If you need exact diameters for holes- you can drill it out afterwards
  - Can a 3D printer do this? (no box within a box)

PROCESS – SLICING SOFTWARE

- Save model as .stl, bring it into slicing software
  - Turns your 3D model into something the 3D printer can read and print
- Infill
- Layers
- Supports
- Shells





PROCESS - PRINT

What material to use?

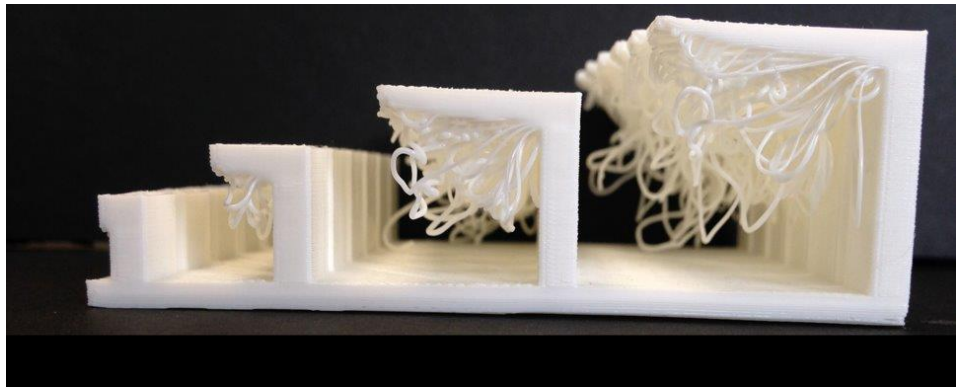
- Properties: Weight, flex, strength

What printer to use?

- Dimensions
- Accuracy/Detail
- Material

Time?

- Depends on size, infill, etc..



AIS

- Bring your .stl file
- EC1, Room 210B
- Open Monday-Friday
- Printing is free for all Capstone projects
- https://ais.nmsu.edu
- Advanced 3D Printing workshop this next Wednesday