

3D Printing

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Originally presented 9/29/19, but I know this will be presented many more times. Hello future Hacksburg!

3D Printing

- Building an object from nothing, instead of removing stuff from a chunk
- Useful for:
 - Rapid Prototyping
 - Making internal voids/passageways
 - Making really complicated things

Fused Deposition Modeling (FDM) Printers



<https://www.matterhackers.com/store/l/creality-cr-10-s5-3d-printer/sk/MVK3ZJSV>

Fused Deposition Modeling (FDM) Printers

- Fast
- Strong Parts
- Big Parts
- “Real” Materials
- Cheap (\$XXX)
- Low Temperature Tolerance
- Minimal Detail

Resin Printers



<https://formlabs.com/3d-printers/form-3/>

Resin/SLA Printers

- High Detail Parts
- Very Small Parts
- Good temperature tolerance
- Weird Resins
- Curing
- Expensive (\$X,XXX)

Laser Printers (not that kind)



https://www.trumpf.com/en_US/products/machines-systems/additive-production-systems/truprint-series-1000/

SLS/E-Beam Printers

- High Detail
- Ultra-High Strength
- Extreme temperature tolerance
- Very Small Parts
- No printing limitations
- Enormously expensive (\$XXX,XXX)

MELD!



Hacksburg

- Creality CR-10
 - FDM Printer
 - “400mm” cube working area
 - 0.4mm nozzle
 - 1.75mm filament
 - Marlin Firmware
- PLA
- Controlled by Octoprint

OctoPrint

- Raspberry Pi Controlled Print Server
- <https://printer.hacksburg.org>
- Must have an account



OctoPrint

- Set up accounts

Slic3r

- Slicing software
- Makes G-Code for the printer
- Other slicers



Key Settings

- Acceleration must be limited to 500 mm/s²
- Height offset must be applied
- Printer must shut off bed after printing
- Download from Wiki

Slic3r

- Open Slic3r