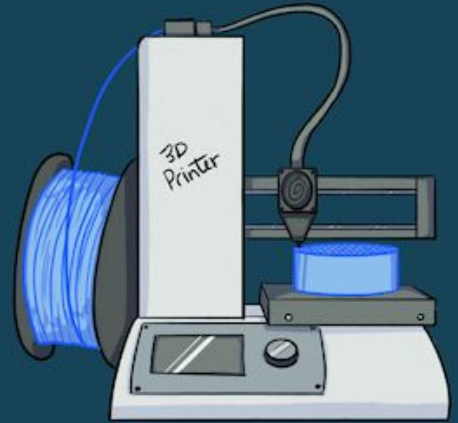


3D Printing

Introduction

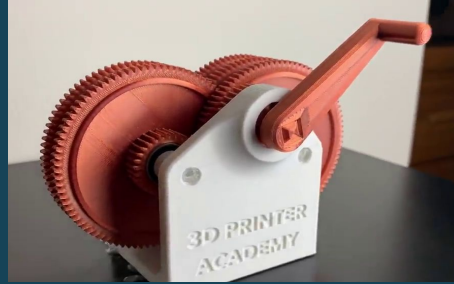


Topics

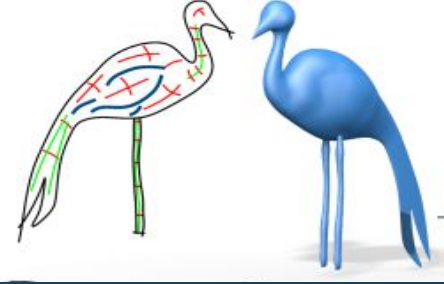
Introduction



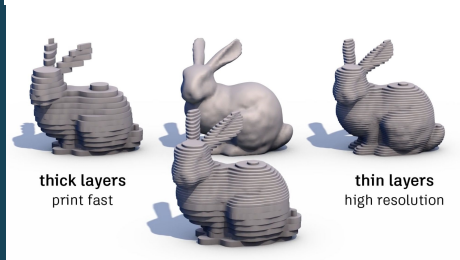
Use cases



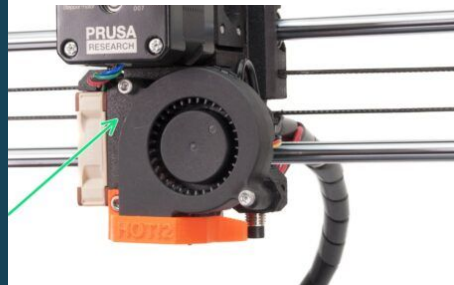
Idea to 3D



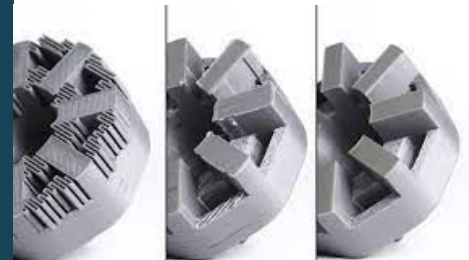
3D to GCode



Practice!



Post Processing

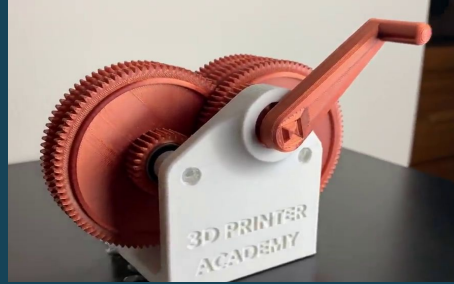


Topics

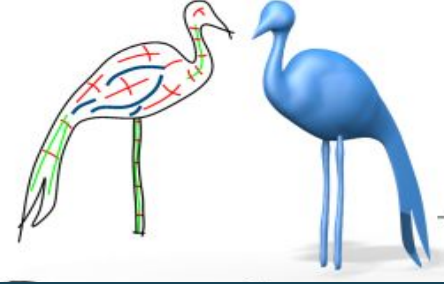
Introduction



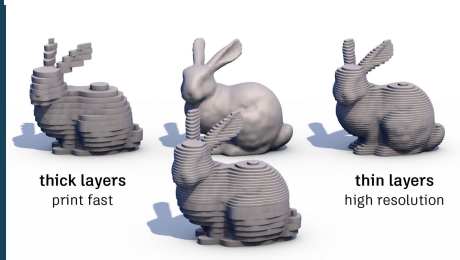
Use cases



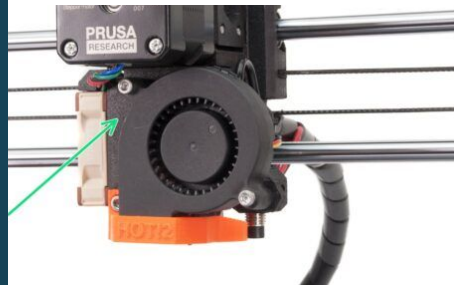
Idea to 3D



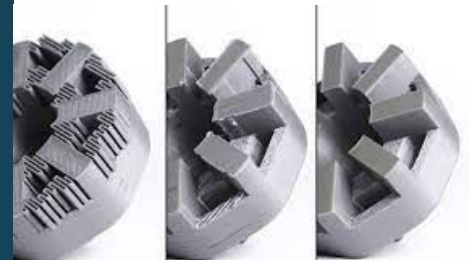
3D to GCode



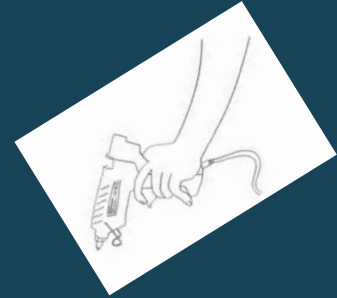
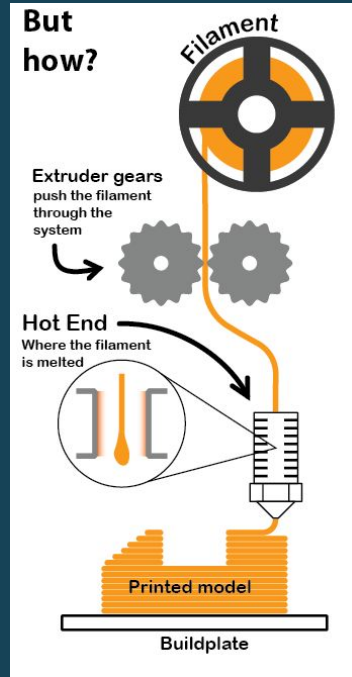
Practice!



Post Processing



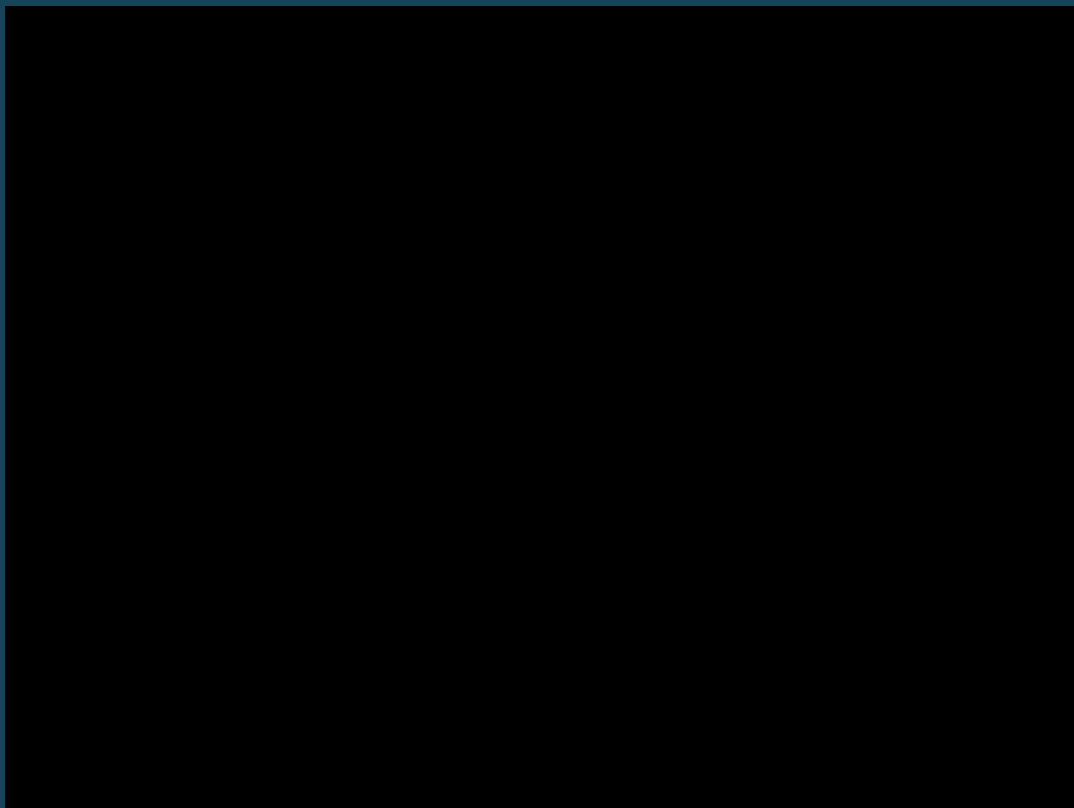
Introduction

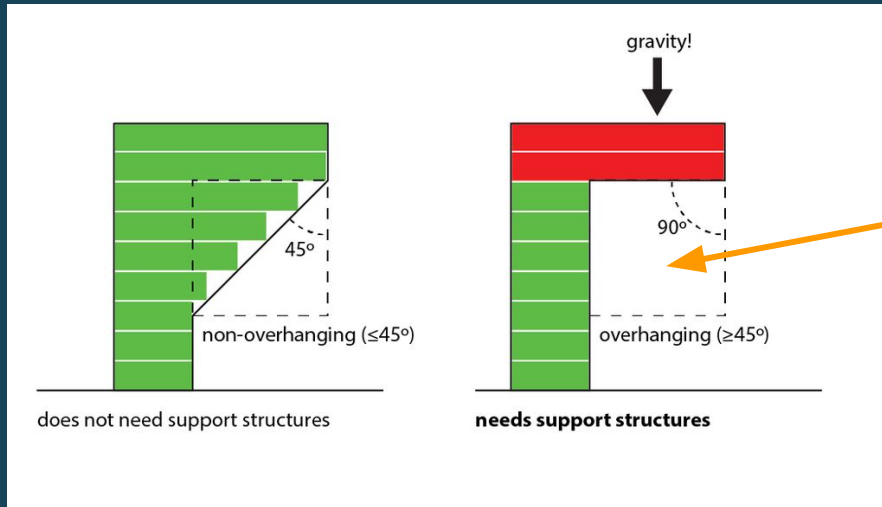


FDM - Fused Deposition Modeling



Build model
Layer by layer

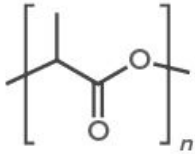




You can't print in thin air!

We are printing with PLA

POLYLACTIC ACID (PLA)



Obtained from fermented plant starch from corn, cassava, sugar cane or sugar beet.



Hardware

Prusa i3 MK3s



Prusa i3 MK3s



Newest Version

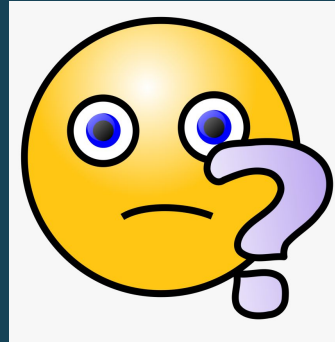
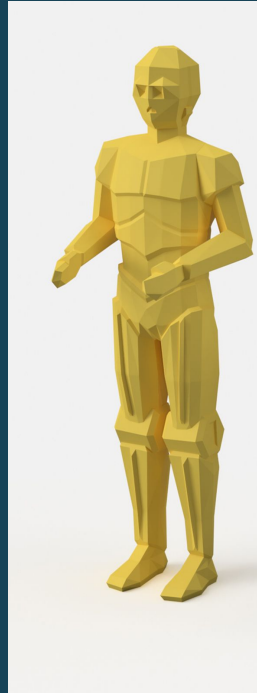
Several iterations since 2009

More reliable than other printers

4x the price (~1.200)

Use cases

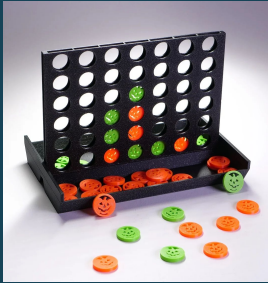
More than just decorations?



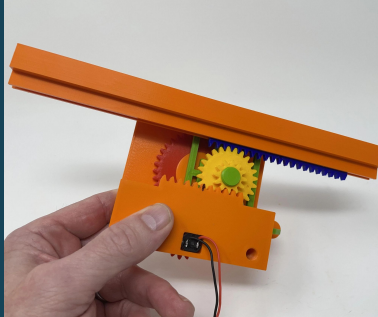
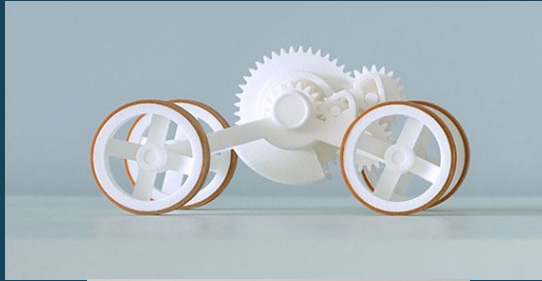
Use cases

Yes!

Analog games



Mechanisms



Electronics



Use cases

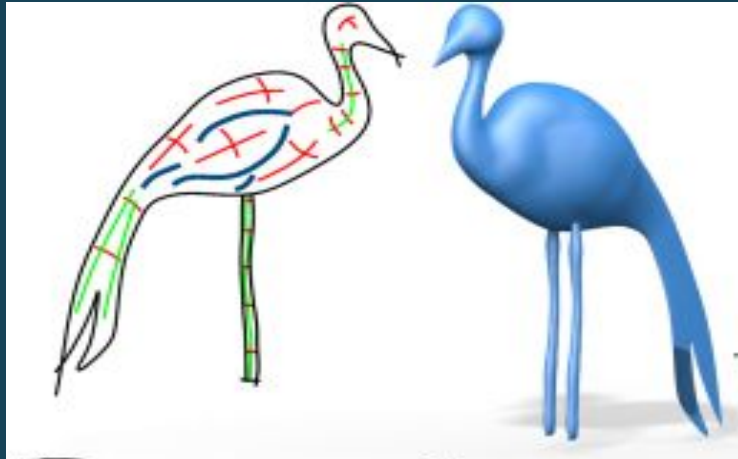


Check out the demo table

You are mostly limited by your imagination



Idea to 3D



Idea to 3D

What if I can't 3D model?

Take Louise's Workshop

Talk to expert classmates

Watch Blender Tutorials



Idea to 3D

Where can I find existing models?

Thingiverse
Printables



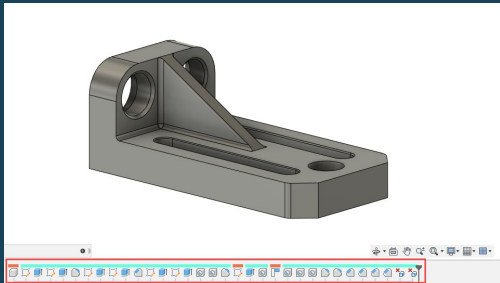
Read the comments for tips on print settings

Idea to 3D

Recommended programs

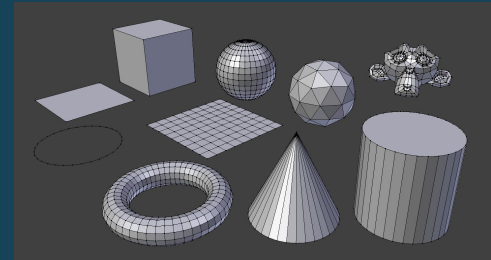
Needs accurate dimensions

Fusion 360, AutoCAD...



Sculptures, Figures

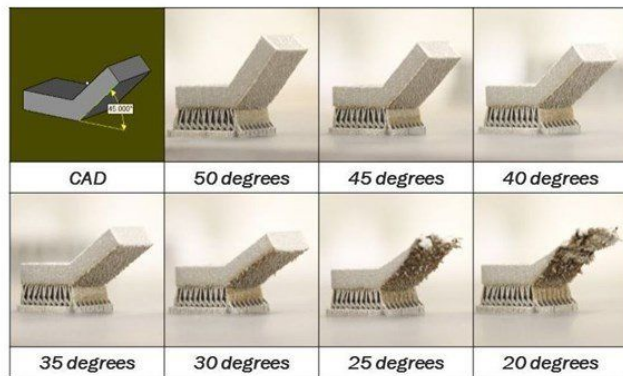
Blender, Maya, 3Ds Max,
ZBrush,...



Idea to 3D

Important: Model should be optimized for 3D printing

Some examples!



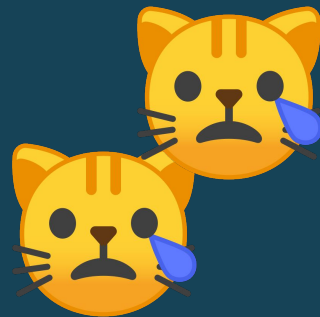
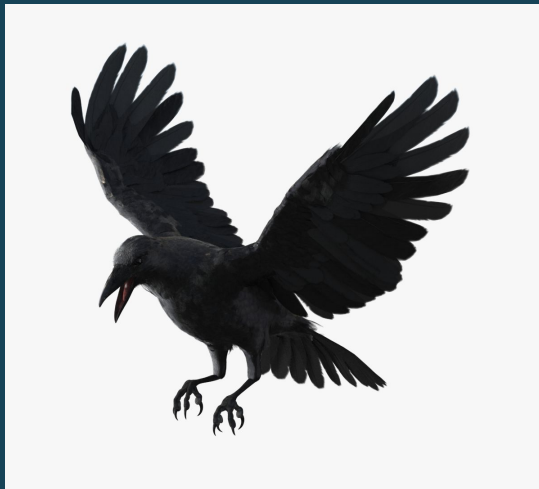
You can't print in thin air!

Can I print this...?



Use a Resin 3D printer instead..

Can I print this...?



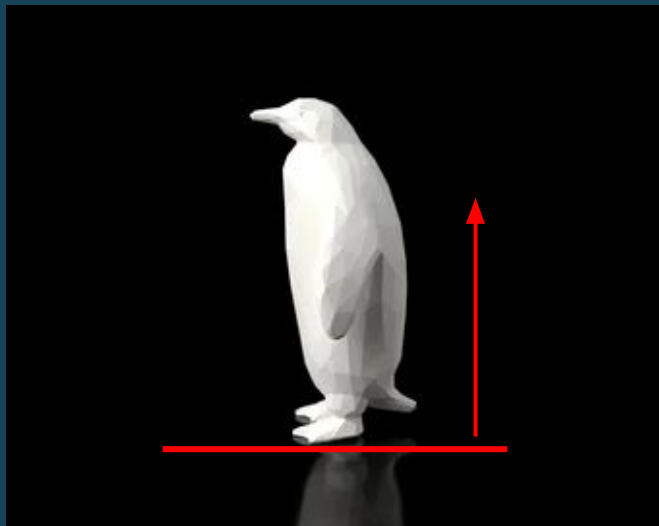
With lots of ugly supports, probably not..

Can I print this...?



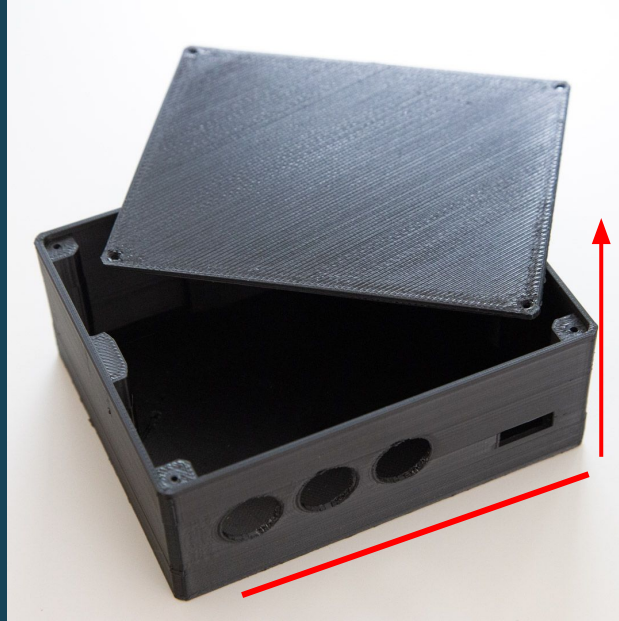
Maybe the tree stem, glue on vegetation?

Can I print this...?



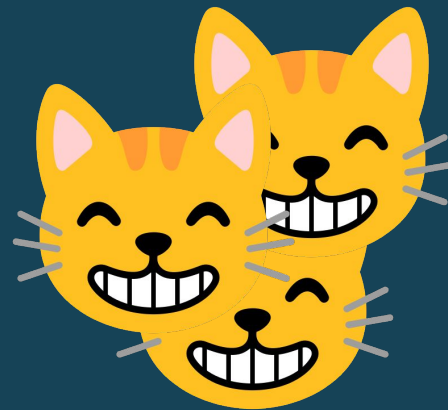
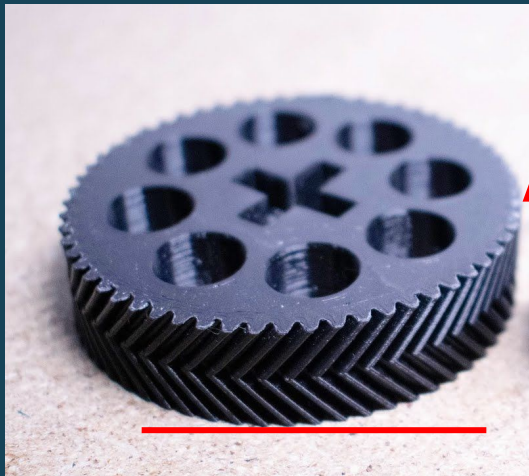
Yes! May need some supports

Can I print this...?



Yes! Holes may needs supports

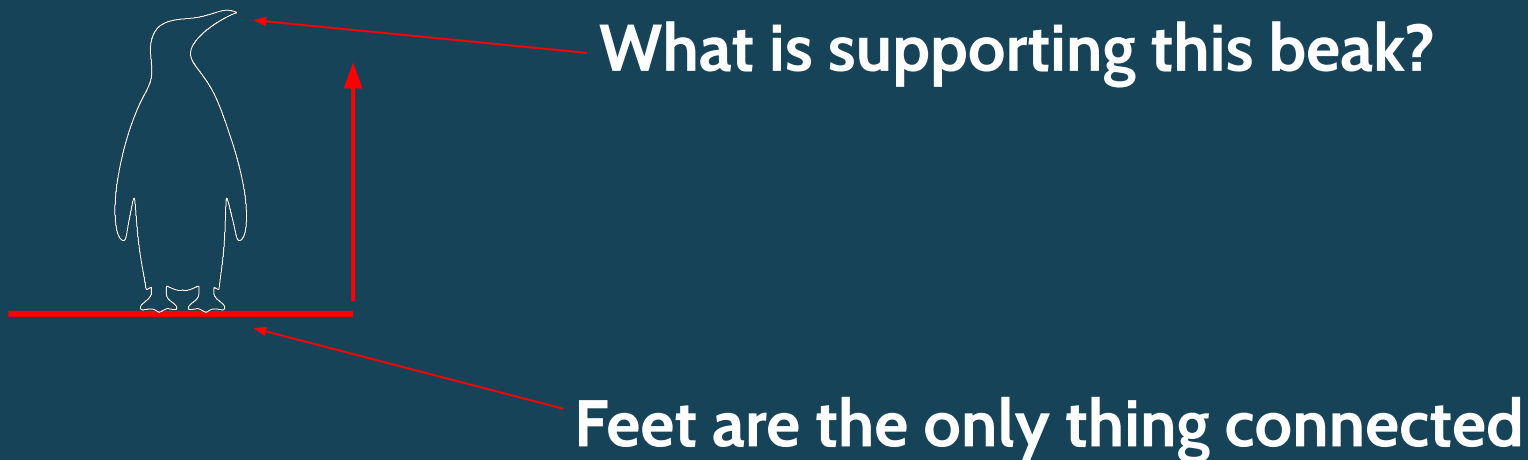
Can I print this...?



Yes! Easy

Can I print this...?

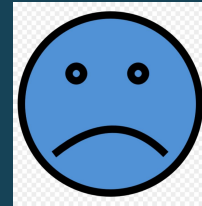
Consider how it will be printed in real world



Can I print this...?

Best strategy
Try it out!

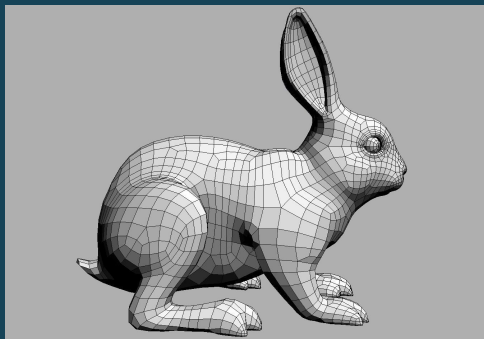
Watch your prints - Don't leave them alone!



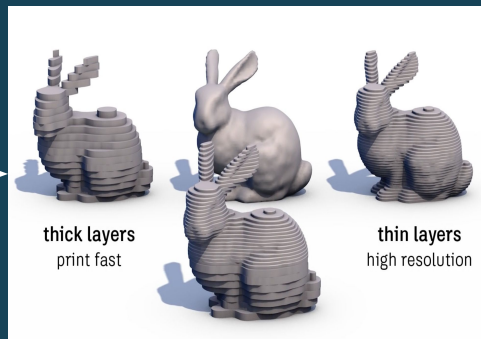
You need to physically
supervise the print

3D to GCode

Slicing



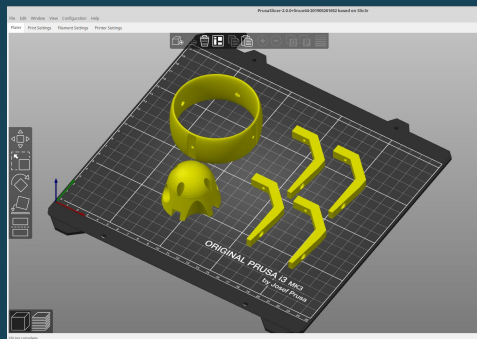
3D model
*.stl,...



```
M190 S60 ; wait for bed temp
M109 S215 ; wait for extruder temp
G29 ; mesh bed leveling
G1 X10 Y-3.0 Z0.5 F6000.0
G92 E0.0
G1 X60.0 E9.0 F1000.0 ; intro line
G1 X100.0 E12.5 F1000.0 ; intro line
G92 E0.0
```



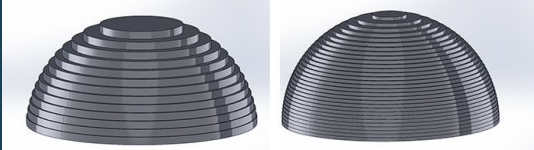
GCode



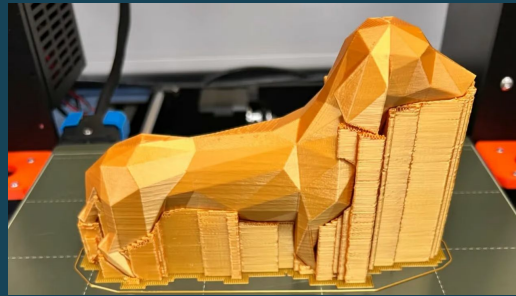
Slicer



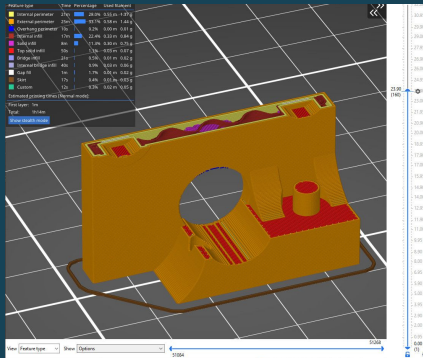
Approximates our
3D models in layers



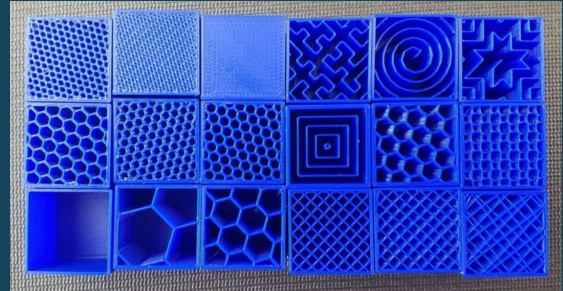
Generates “supports”



Previews print







Generates “infill”







PrusaSlicer







Print settings :


  0.20mm SPEED  


Filament :

  Prusament PLA  

Printer :

  Original Prusa i3 MK3S & MK3S+  

Supports: 

Infill:  Brim: ☐

Please confirm:
Using Prusament PLA
Printer: Prusa i3 MK3s

Printer tips

Remove all remaining plastic on surface

Clean surface with Acetone

Confirm enough filament is available

Practice!



Lets get a model

Slice it

And print it!

Octoprint

Login to ExperimentalGameCultures Wifi

Visit octopi.local or IP address on printer



Your responsibilities

Don't print materials beside stock PLA
(may damage hotend)

Supervise the print

You can use our PLA (fair use) for university projects

Your account

Add name to the list & sign
Start printing :-)

