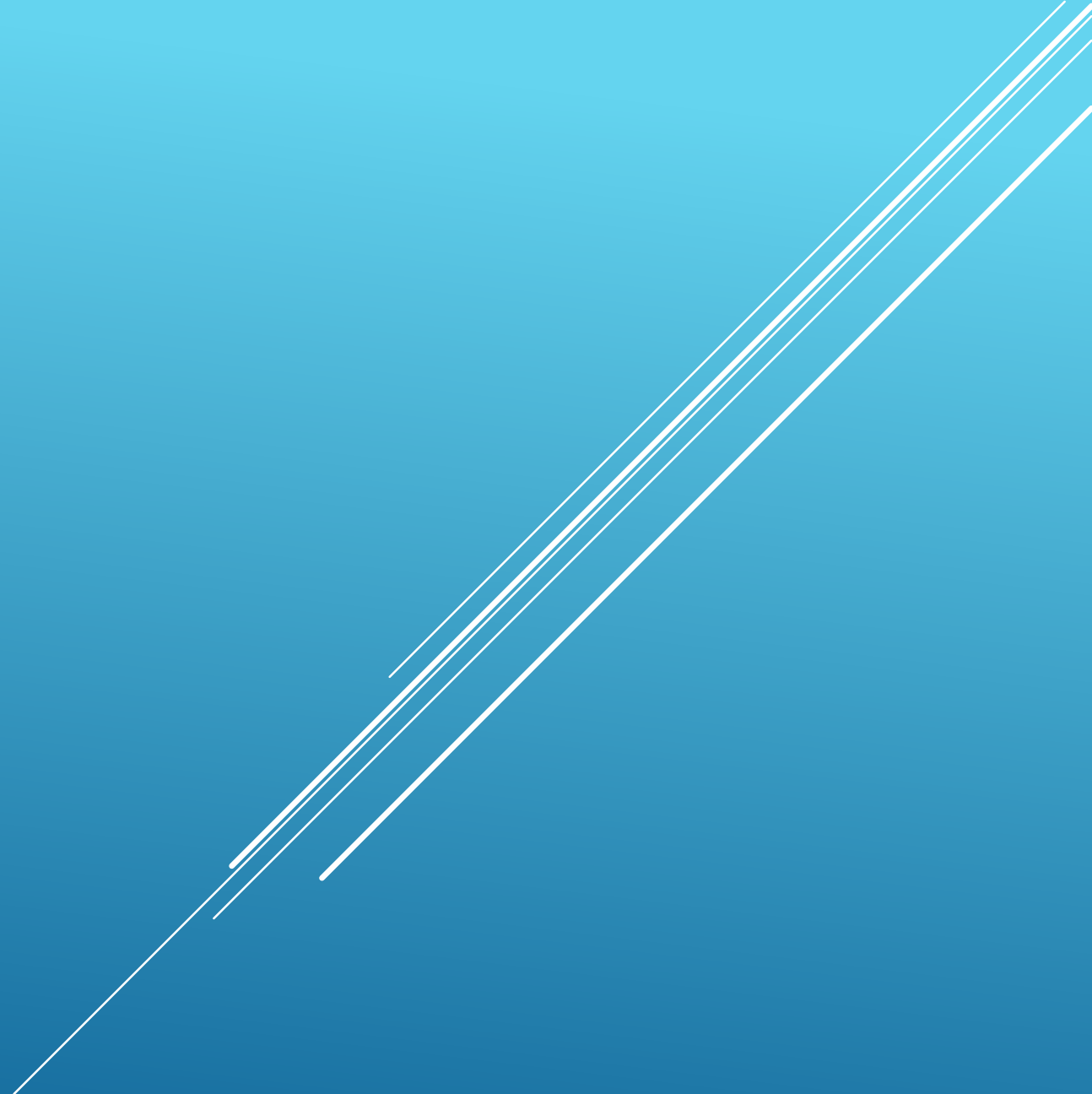


3D PRINTER

Overview



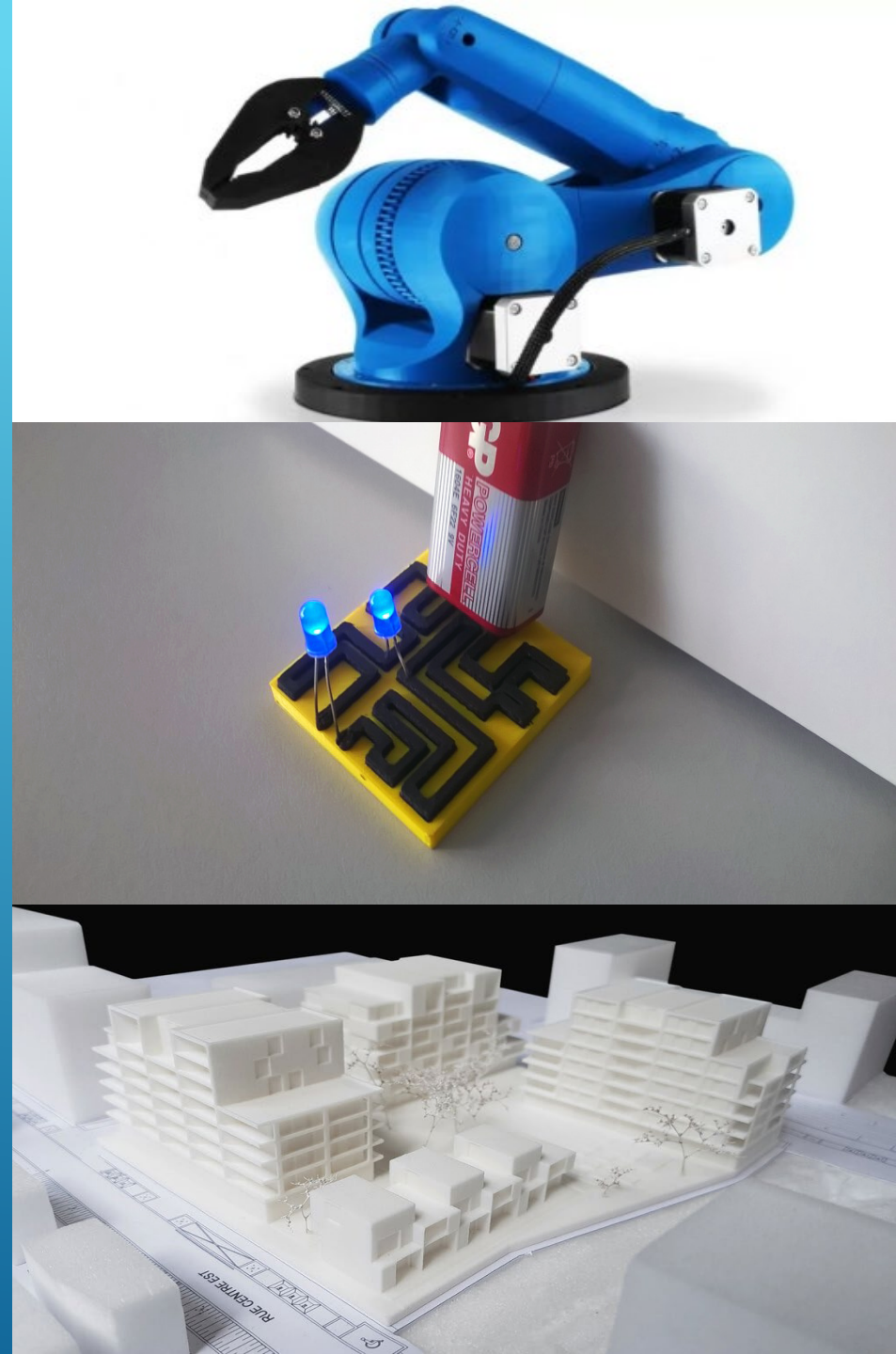


CONTENT

- Filament Types
- 3D Modeling
- Cura 4.0 Open Source Printing Software
- GCode

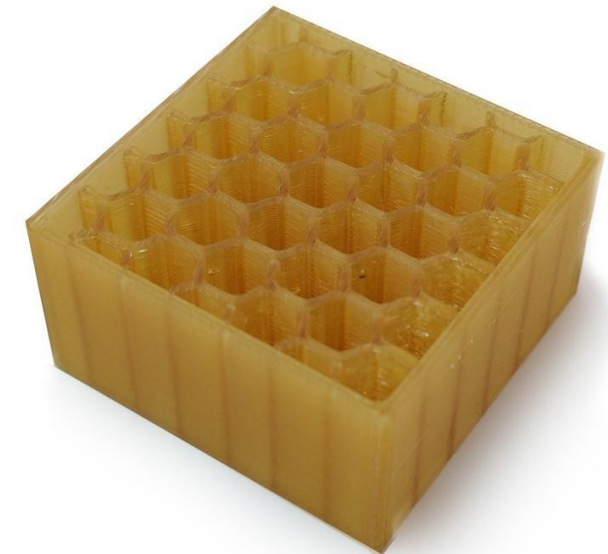
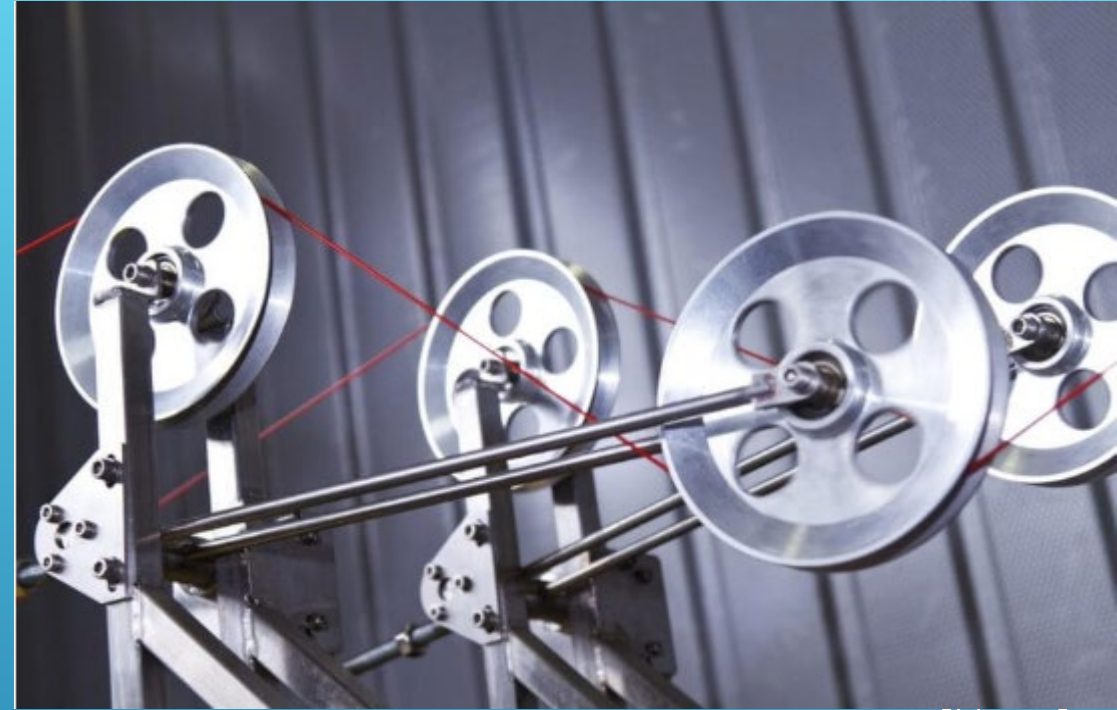
FILAMENT TYPES

- ▶ ABS
- ▶ PLA
- ▶ PVA
- ▶ PET
- ▶ PETG
- ▶ PETT
- ▶ HIPS
- ▶ NYLON
- ▶ Wood
- ▶ Sandstone
- ▶ Metal
- ▶ Magnetic Iron
- ▶ Conductive PLA
- ▶ Carbon Fiber
- ▶ Flexible (TPE/TPU)
- ▶ Glowing In The Dark
- ▶ Amphora

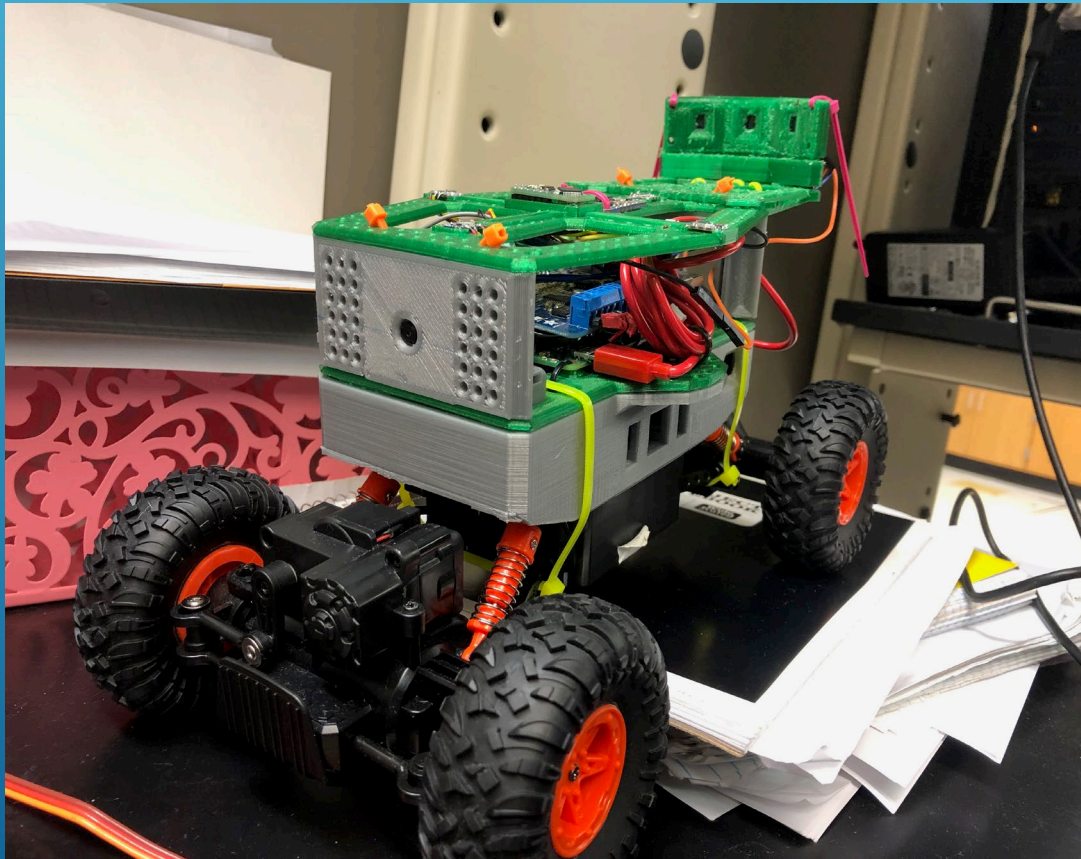


FILAMENT USED IN INDUSTRY

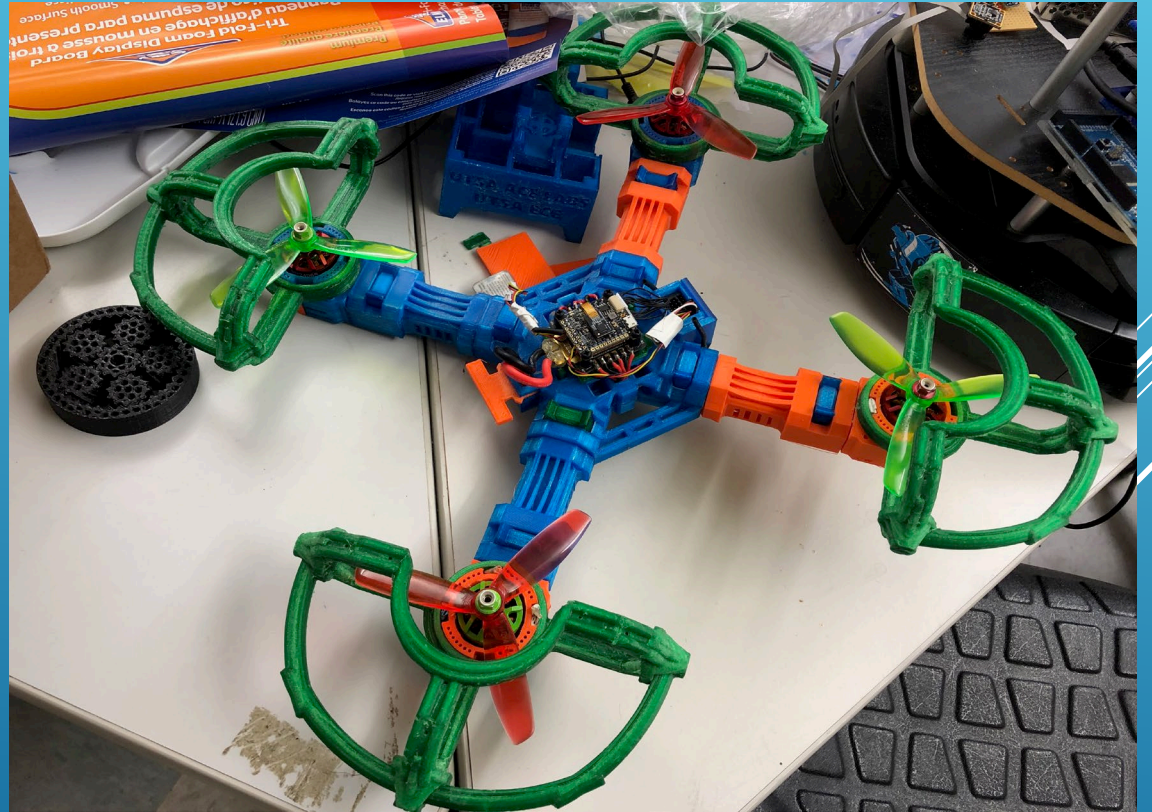
- ▶ PolyPropylene (PP): is processed in packaging and ropes
- ▶ PolyOxyMethylene (POM): is processed in the automotive and machine building industry
- ▶ PolyEtherImide (PEI): is processed in medical and chemical instruments
- ▶ PolyAmid (PA) aka Nylon: is processed in textile and in machines
- ▶ PolyEtherEtherKeton (PEEK): is processed in the medical, aerospace, aviation and chemical industry
- ▶ PolyCarbonate (PC): is processed in CD's and DVD's, in the construction industry and light industry



EXAMPLES

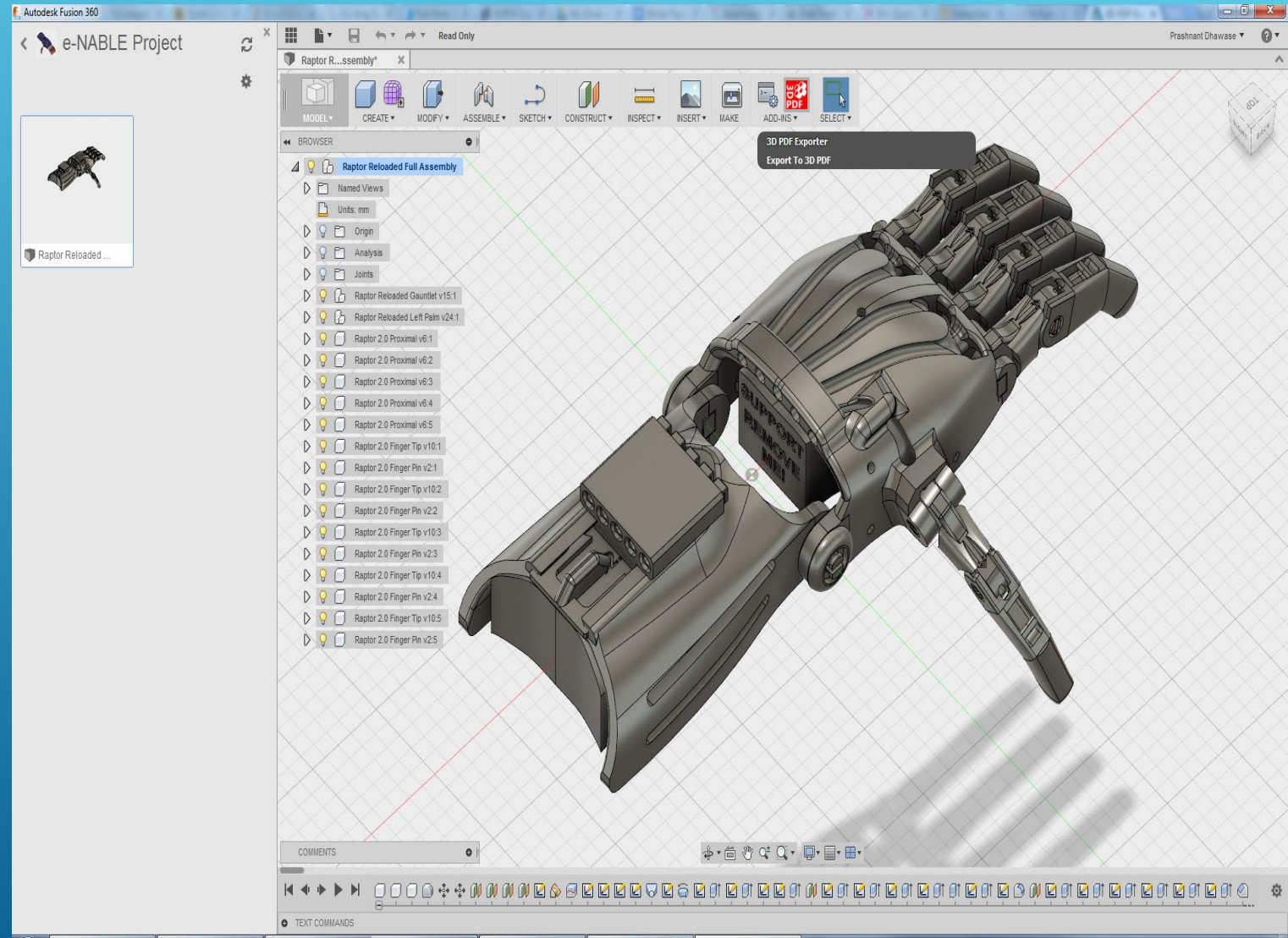


EXAMPLES



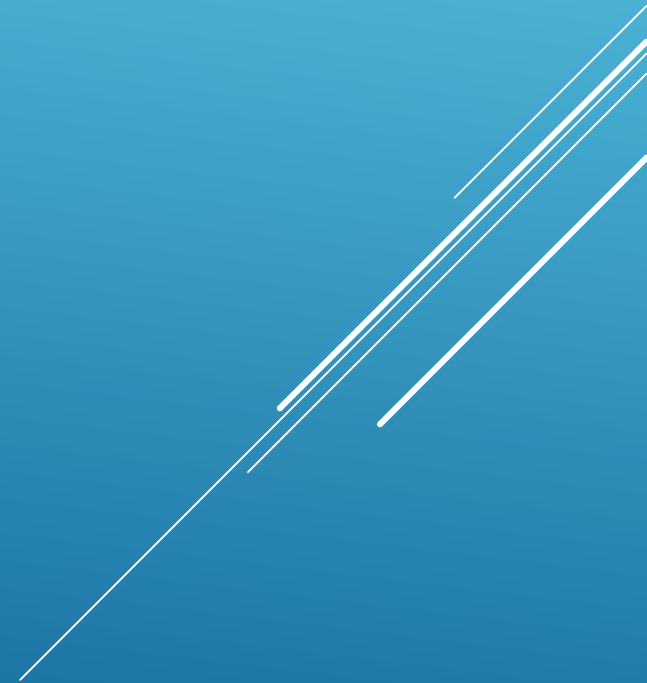
3D MODELING

- ▶ Cura
- ▶ Fusion 360
- ▶ Solidworks
- ▶ AutoCAD
- ▶ CATIA

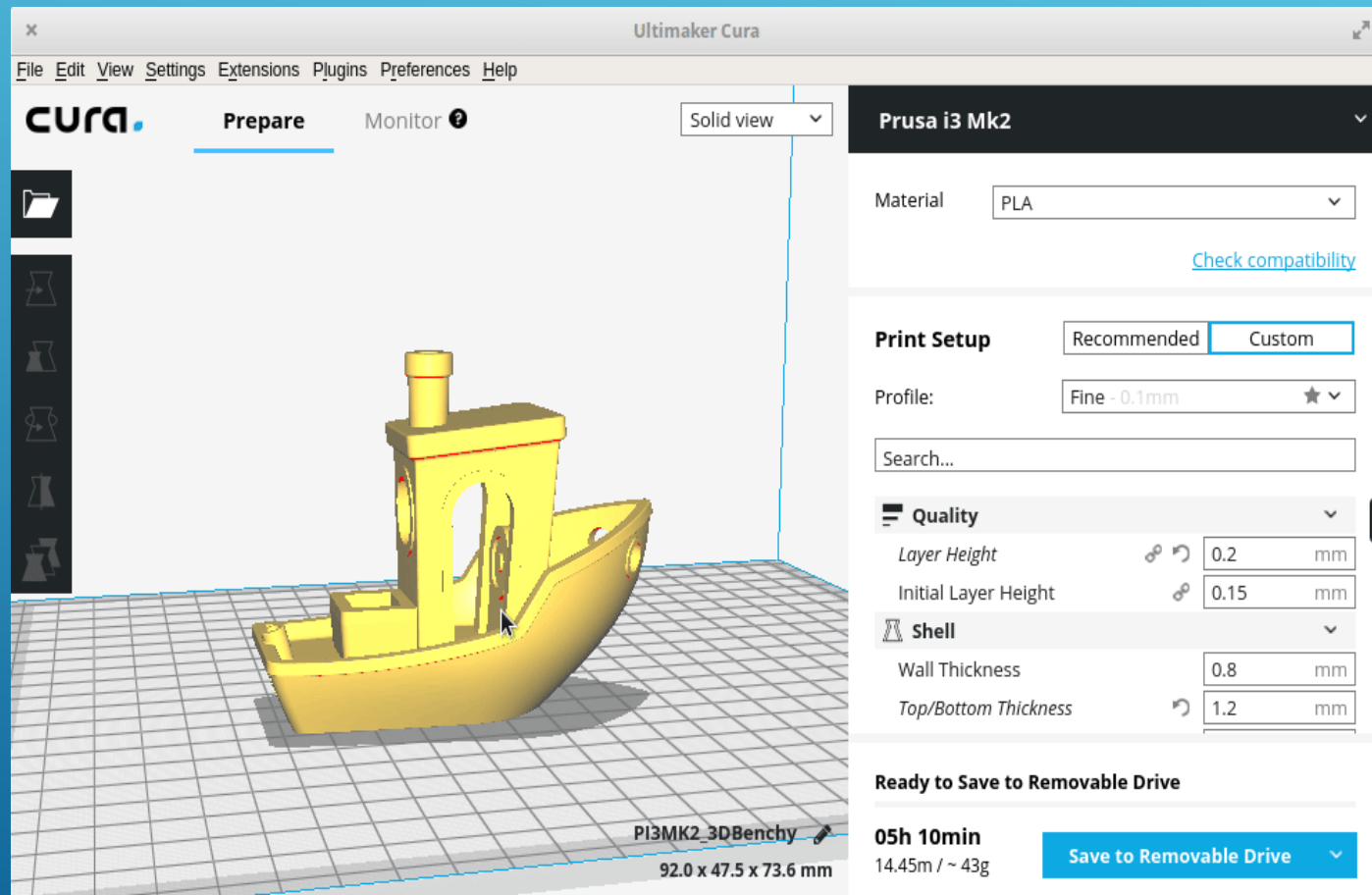


CURA 4.0 OPEN SOURCE SOFTWARE

- ▶ Cura prepares a model for 3D printing. Also, it's open source, which means that original source code is made freely available. Additionally, Cura contains an algorithm such that optimizes 3D printing by finding the quickest path.



CURA FILE TYPES



- File Types for 3D Printing

- OBJ
- 3MF
- STL

- File Types for 2D Printing

- BMP
- GIF
- JPG
- PNG

WEBSITES TO DOWNLOAD STL FILES

1. Cults
 2. Thingiverse
 3. YouMagine
 4. Pinshape
 5. MyMiniFactory
 6. GrabCad
 7. Autodesk 123D
 8. 3Dagogo
 9. 3DShook
 10. Instructables
- 
- A decorative graphic consisting of several parallel white lines of varying lengths and orientations, located in the bottom right corner of the slide.

CUSTOMIZATION TOOLS

Scale

X	38	mm	100	%
Y	86	mm	100	%
Z	104	mm	100	%

Snap Scaling
 Uniform Scaling

Ultimaker Original

Material: PLA

[Check material compatibility](#)

Print Setup

Recommended Custom

Profile: Settings_1mmNozzle_Cura3

Search...

Quality

Layer Height: 0.2 mm

Shell

Wall Thickness: 1 mm

Top/Bottom Thickness: 0.6 mm

Infill

Infill Density: 20 %

Infill Pattern: Cubic

Material

Printing Temperature: 230 °C

Flow: 100 %

Speed

Print Speed: 50 mm/s

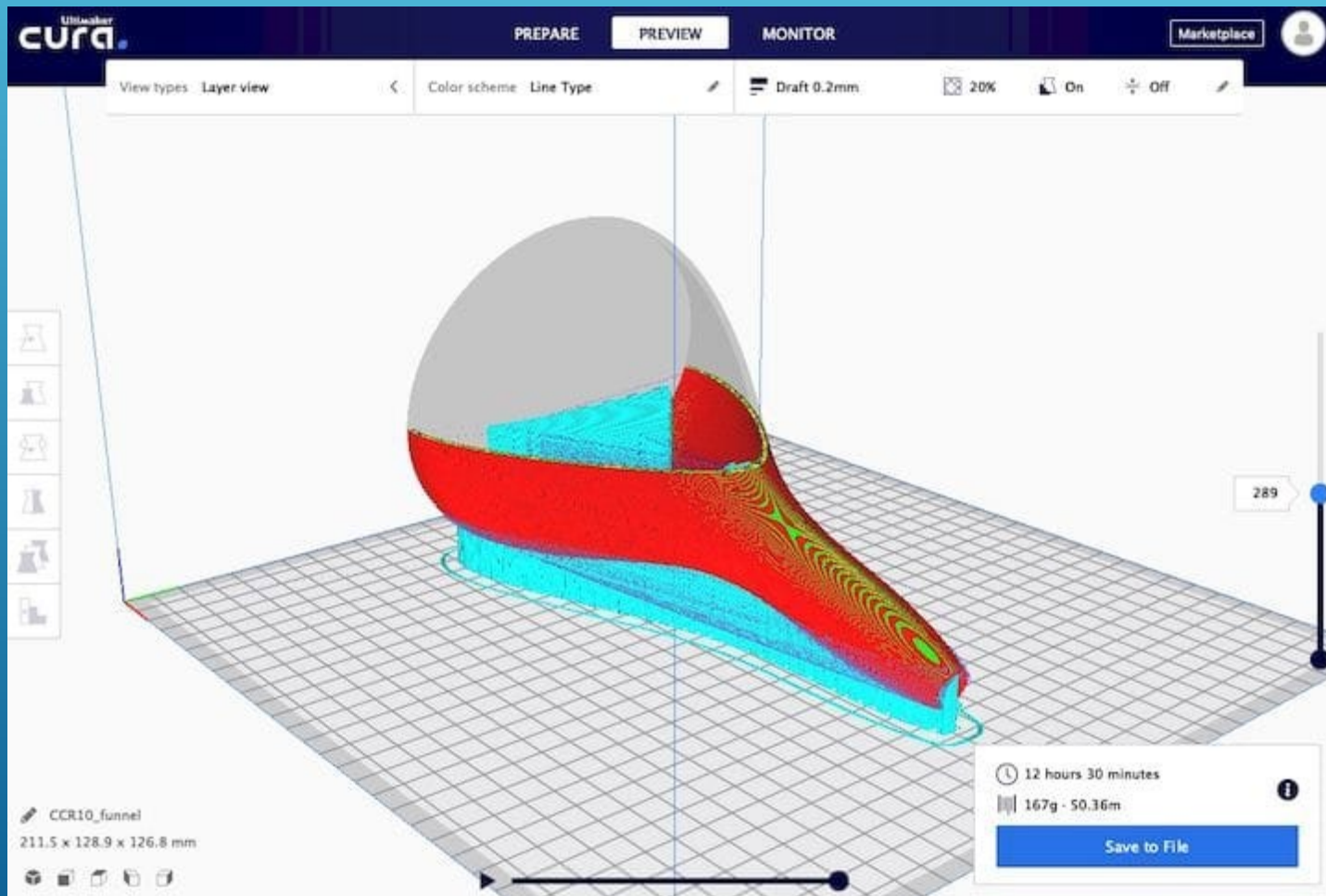
Ready to Save to File

02h 12min
Print time
7.70m / ~ 60g

Save to File

UMO_Zueri_loewe
88.0 x 86.0 x 104.0 mm

PREVIEW



- Slicing feature
- Support option
 - ON/OFF
 - What time of material
- Printing height
- Infill density
 - Infill pattern
- Printing speed
- Estimated printing time


GCODE

- ▶ **Gcode:** "Geometric Code." Instruct a machine, when, where, and how to move geometrically in 3 dimensions.

▶ Ex)

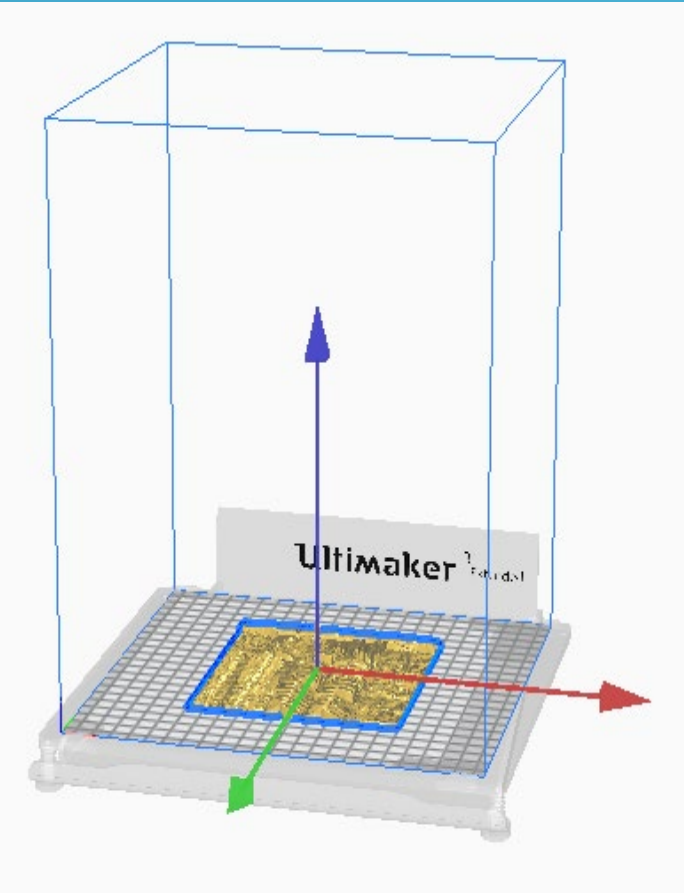
```
G1 X99.743 Y97.444 E0.40960
G1 X100.304 Y97.219 E0.48214
G1 X101.011 Y97.004 E0.57081
G1 X101.151 Y96.991 E0.58769
G1 X101.340 Y96.950 E0.61089
G1 X101.876 Y96.878 E0.67579
G1 X102.069 Y96.869 E0.69898
G1 X102.069 Y91.739 E1.31458
G1 X109.740 Y91.739 E2.23510
G1 X113.169 Y93.365 E2.69049
G1 X113.169 Y96.819 E3.10497
```

```
G1 X-9.2 Y-5.42 Z0.5 F3000.0 E0.0377
```



- ▶ **Interpretation:** move towards X=-9.2, Y=-5.42, and Z=0.5 in a straight line at a feed rate of 3000.0 while extruding 0.0377 mm of material.

VISUAL GCODE



- Where x is Red
- Y is Green, and
- Z is Blue

THANK YOU!

