3D Printing With Bio-materials

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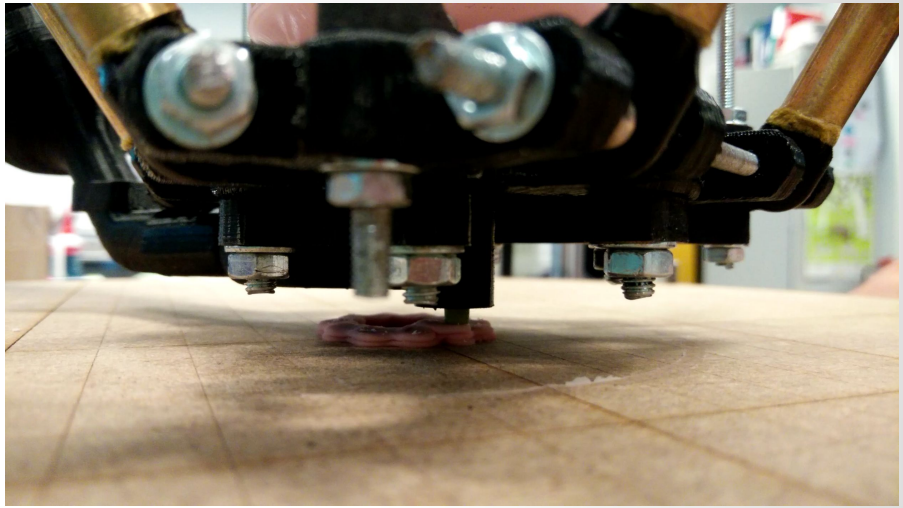
SINLAB

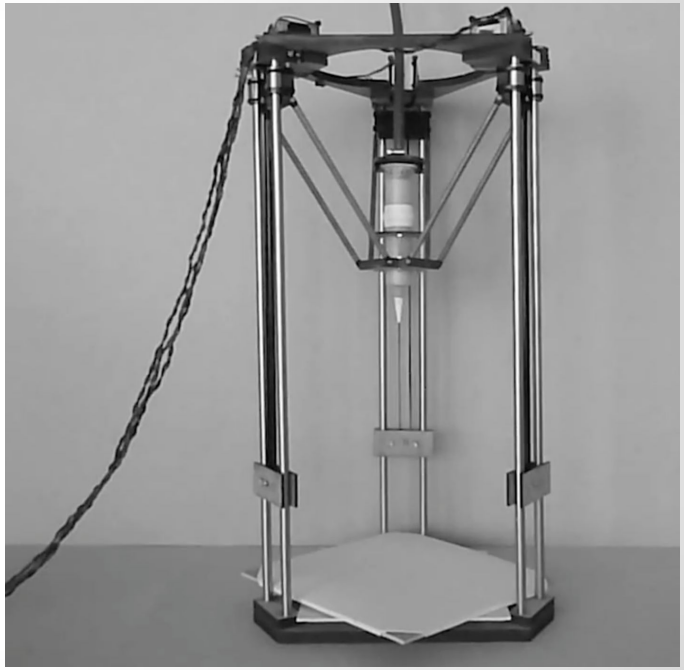
Outline

- Goal
- Hardware
- Software
- Material
- Issues
- Further development
- Demo



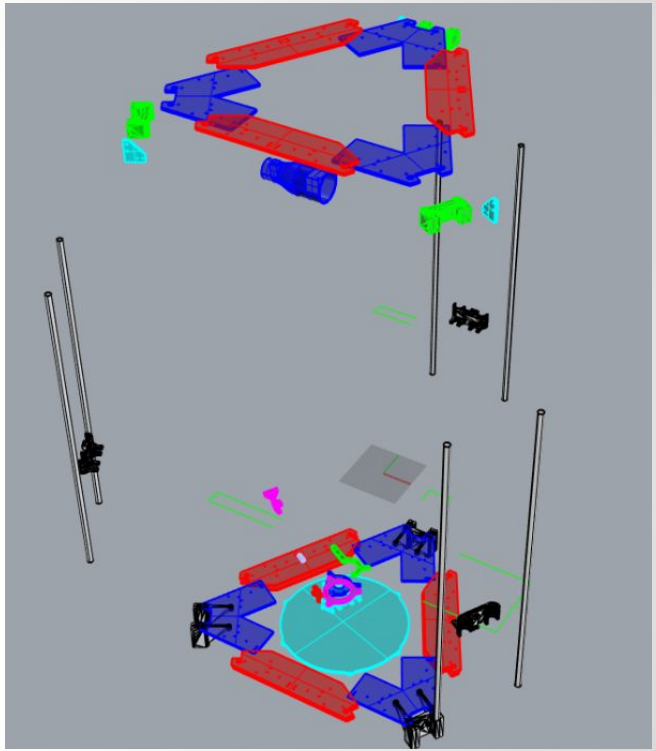
Goal

- improve existing printer
- new materials
- print different textures

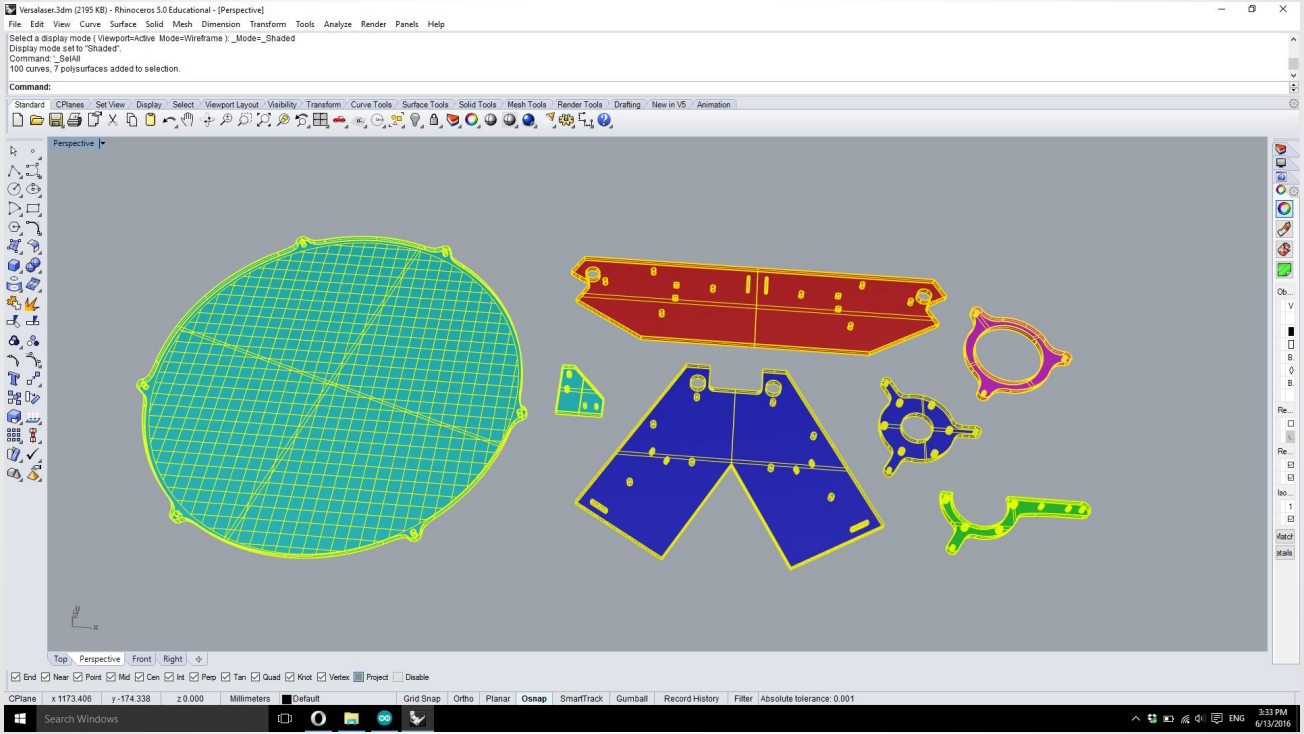


Hardware

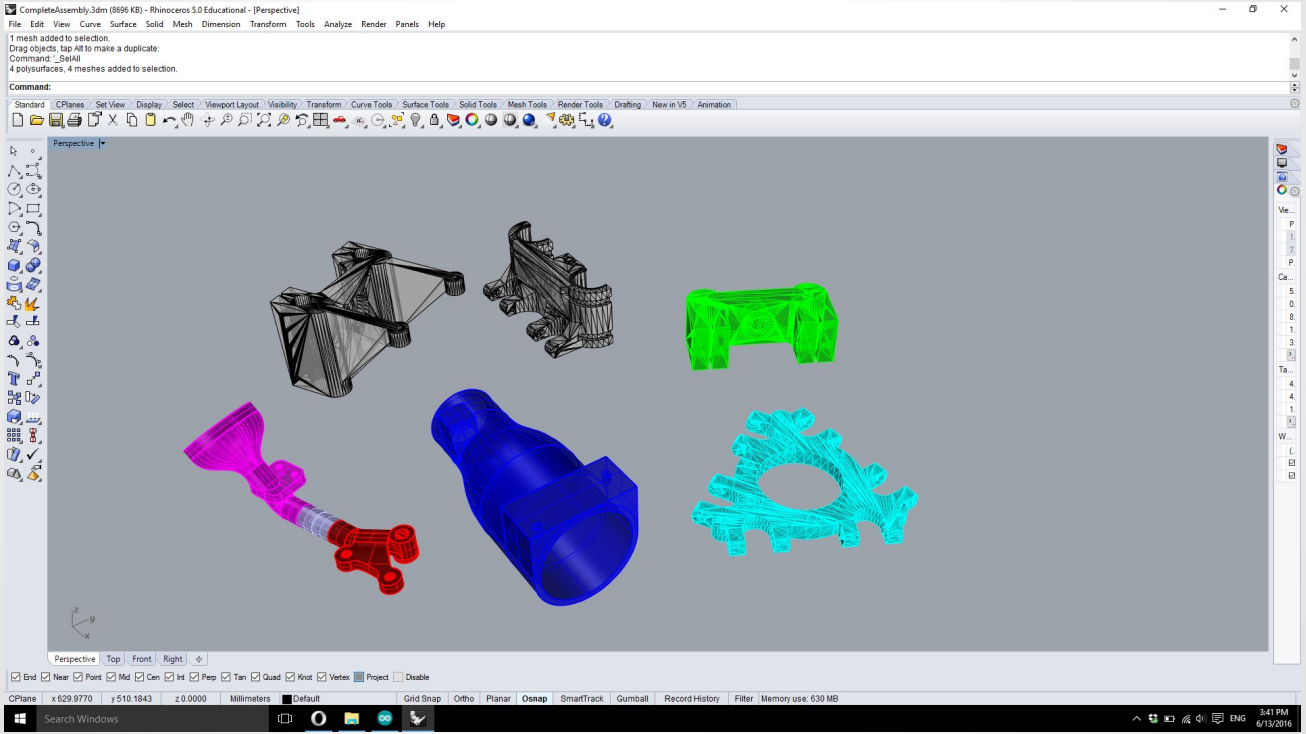
- Motors and sensors
- Air compressor
- Design with Rhino 5.0
- Cut with Versalaser
- Print with Makerbot Mini



Wooden pieces

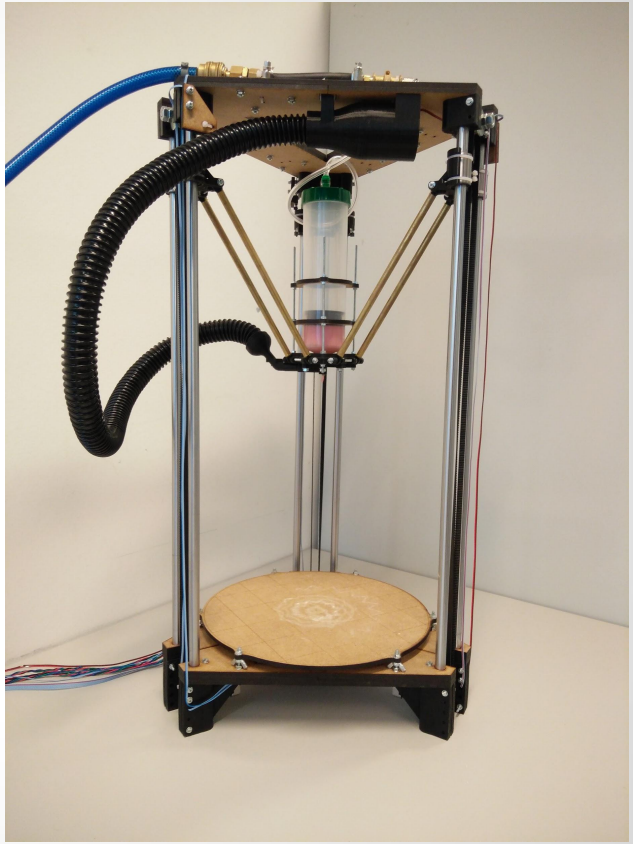


3d printed pieces



Specifications

- diameter: 18cm
- height: 31cm
- speed: 1-2mm/s
- precision: 0.2mm
- pressure: 4 bar



Material

- 100ml glue, 100g Maizena
- 4 spoons flour, 2 or 1 spoons salt and some water
- Food coloring

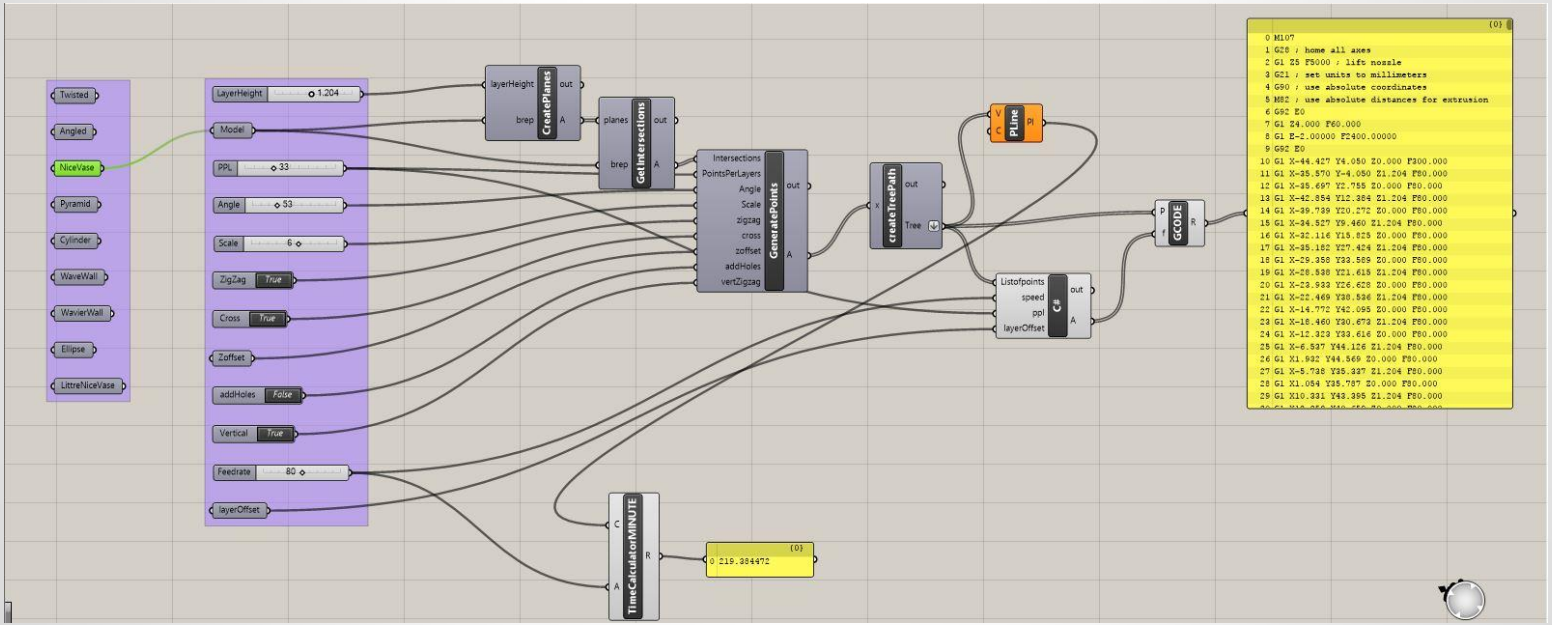
Software

- Rhino 5.0
- Grasshopper (plugin of Rhino)
- Arduino Marlin RC software

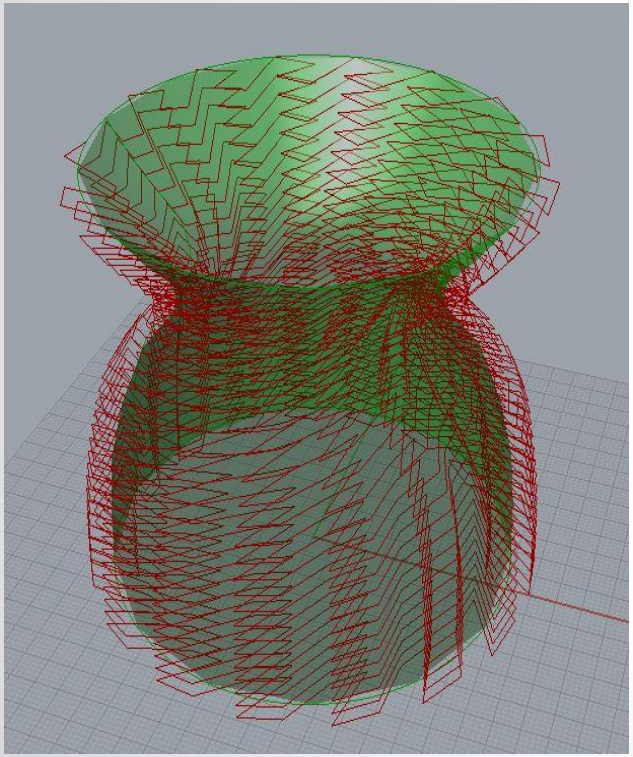
Custom slicer

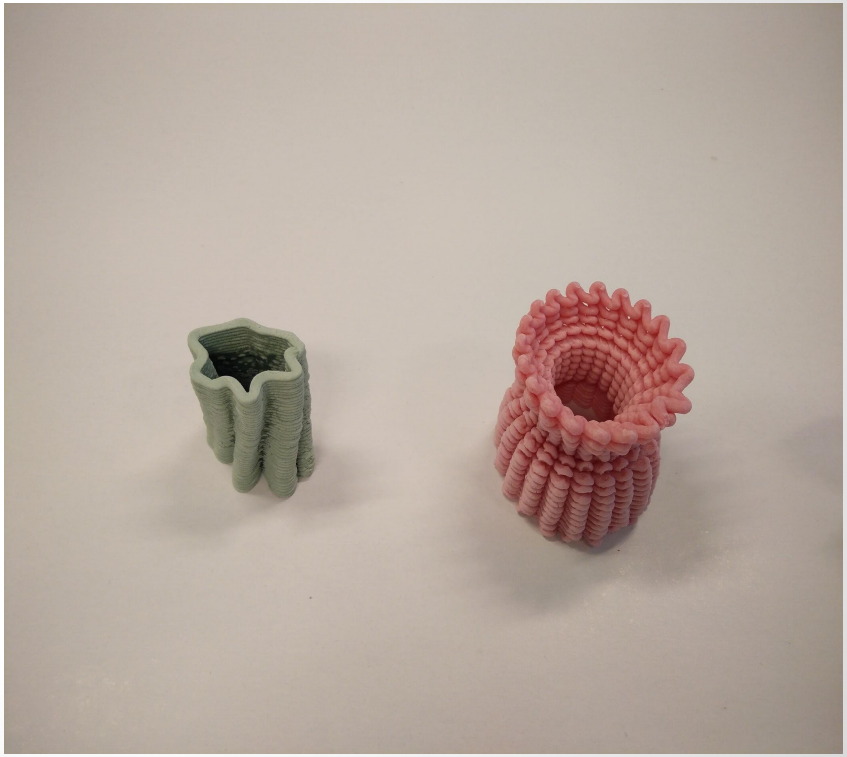
- Create different paths and textures
- Zigzag (horizontal / vertical / alternating / angle)
- Speed variable
- Layer height, layer offset

Slicer interface



Obtained results





Issues

- Makerbot Mini
- Printer calibration
- Material (2 different recipes)
- Printtime

Further development

- Use other extruders
- Other materials

Demo