Lab #3: Print 3D Model on the 3D Printer Remotely

Objective:

1. Learn how to process the 3D model before print
2. Study how to control the process and view the status of the print job remotely

Equipment:

- Computer: a generic computer with Windows system (Win 7 or Win 10) installed
- 3D printer: Ultimaker 3 Extended
- Software: Ultimaker Cura

Safety Rules:

1. Turn off power supply BEFORE disconnecting the power line.

2. Don't touch any power source when your hands are wet.

Step 1: Using Ultimaker Cura to process the 3D model

1. Open SolidWorks, and create a new part as the logo of TAMU in Fig. 1. Then save this file as the .stl format.
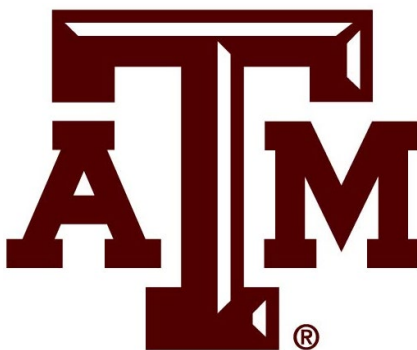

Figure 1: TAMU logo

2. Now that the logo design is complete, the next step is to put it together in the 3D printing slicer software. We will be using Cura as the software for orienting parts on the printer and selecting the color of each object. It also generates tool paths that the printer will follow to print the objects.
   1) Open Cura. If a menu pops up prompting for the printer, select the "Ultimaker 3 Extended"
      i. If a menu does not pop up, make sure the printer currently selected is "Ultimaker 3 Extended" on the top
      right corner
      ii. Otherwise, click the arrow, select the "Add Printer" option, and add "Ultimaker 3 Extended".
   2) To load the file from above, select "Open File" on the top left the corner and open the STL file containing the base of the keychain
   3) Using the "Rotate" tool on among the options to the left, rotate the part so the base is facing up. Uncheck the "Snap Scaling" option to allow for a more precise rotation
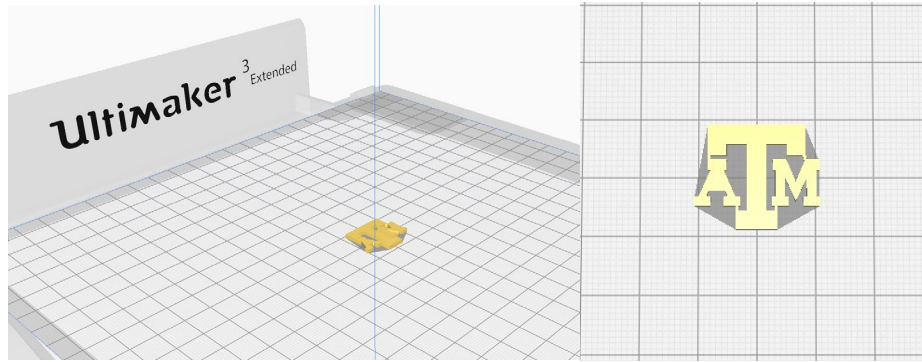   4) Save the file as a .gcode and upload it to the website

Figure 2: .stl file of TAMU logo in Cura

Step 2: Use the remote-control client to start printing

1. Open a browser and go to 18.14.19.40/3dprinter/index.php, try to print the TAMU logo.
2. After log-in, click "Choose file" to select the file which is sliced by Ultimaker Cura. Then click "Print" to start printing.

3. View the print job state, progress, total time and elapsed time. Then click pause to pause the print job, when the print job state is "paused", click Resume to resume the print job.
4. After the print heads and bed cooling down, carefully remove the TAMU logo from the build plate. Then follow the instructions on the screen of Ultimaker 3 Extended to make the confirmation.