**DFM Plug-In for SolidWorks**

**Minimum requirements for software**

1. Parts in SolidWorks (SW)
2. Designer clicks button for design suggestions
3. Plug-in how analysis results
   1. Picture from SculptPrint (Created volume and tool path)
   2. Warnings with DFM guidelines and design suggestions
   3. Suggested changes of CAD model
4. Designer chooses to accept automatic changes or not?
   1. Yes, update the CAD model
   2. No, do not apply the automatic changes
5. Designer adjusts the part based on feedback
6. Iterate the steps 3-6 until
   1. No problematic features identified
   2. 3 iterations are done

**Features beforehand**

1. Analysis results from SP
   1. Created volume
   2. Tool path
2. FDM evaluation
   1. Analysis results from Cura (Pictures)
   2. Analysis results in SW
3. Analysis results in SW
   1. Design warnings and recommendation in text
   2. Problematic features highlighted on CAD model
4. Suggested values of tolerances for the parts
5. Tolerance check with assembled parts

**Programmer’s Duty**

1. GUI for SW plug-in
   1. Tolerance inputs
   2. Button for design suggestions
   3. Pop-up windows for results
      1. Show pictures
   4. Annotations on part models with DFM guidelines and design suggestions
2. GUI for researchers’ responses
   1. Select tolerance responses
   2. Highlight features with problems
3. Python script for SP

Part 1:

* 1. Input CAD model
  2. Import tool catalog
  3. Make cylinder stock
  4. Create volume

Part 2:

* 1. Select tool
  2. Create pass
  3. Export the picture created volume and tool path from SP

**Researcher’s Duty**

1. Prepare parts for case studies
2. Tolerance requirements for each part
3. Pictures from SP/Cura for first round of analysis
4. DFM guidelines and design suggestions for each part
5. Suggested changes of CAD models

**Weekly Schedule**

Week 1 5/29

1. Explore Xometry and DFMXpress, get familiar with existing software
2. Learn coding for SolidWorks
3. Explore SolidWorks’ capability with feature recognition

Week 2 6/4

1. Develop the first dialog box for user’s side

DFM Tool

Units

Tolerances (+/-)

Analyze

Drop-down list:

inch

mm

1. Create feedback dialog box
2. Create UI framework for researcher side