Final Project

for CS230/CS238

Score Policy

- Homework: 40%
- Project: 60%
  - Presentation: 20%
  - Code: 20%
  - Report: 20%
- Bonus: 10%

Requirements

Your program should:

- Import mesh of separated teeth of one individual with 32 model handlers. Deal with missing teeth correctly.
- Correctly perform Phong shading by supporting ambient, diffuse, and specular lighting in your chosen renderer.
- Calculate 3 orientation vectors for every tooth: v1 points from root to top of tooth, v2 points from lingual side(舌侧) to lip side (唇侧), v3 point at the direction of cross(v1, v2). Normalized all the orientation vector.
- Implement interaction with keyboard and mouse. There are 6 ways of transformation for one tooth. Choose a tooth and select a form of transformation, then drag with mouse or keyboard to increase/decrease the value of the specific form of transformation.
- Calculate the final transformation matrix of every tooth.
- Transplant the program from your PC to VR headset.
- (bonus)***Elective:*** Map the teeth with image textures provided by hospital. Create reasonable and aesthetic surface material effect respectively for tooth and soft tissue.

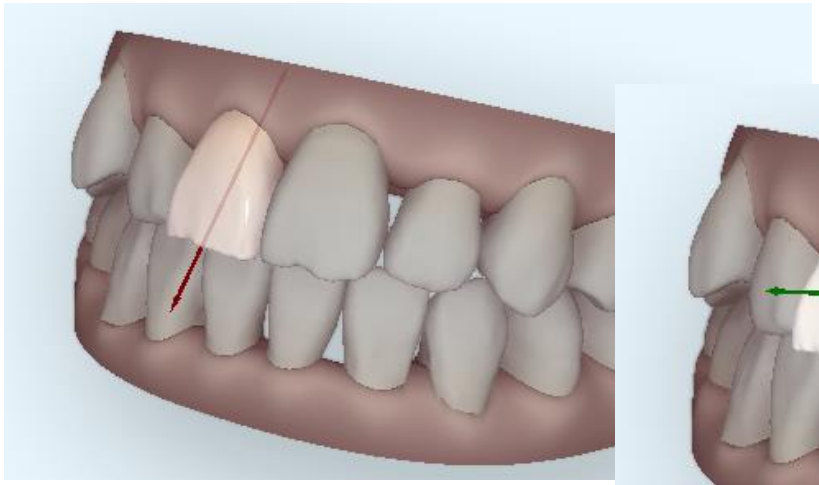
All requirements above accounts for evaluation of ***results(code, demo in pre & results in report)****.*

Requirements

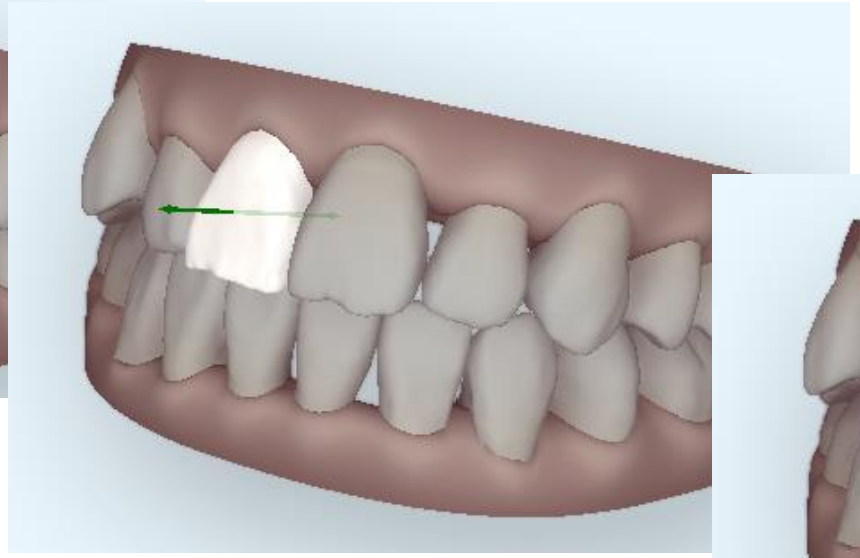
Models import and rendering

Requirements

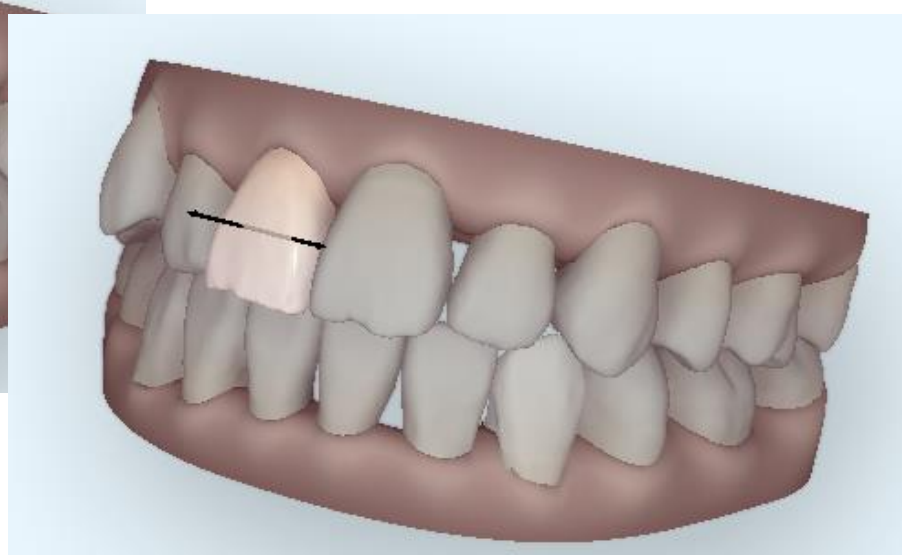
Orientation vectors



V_1: from root to top



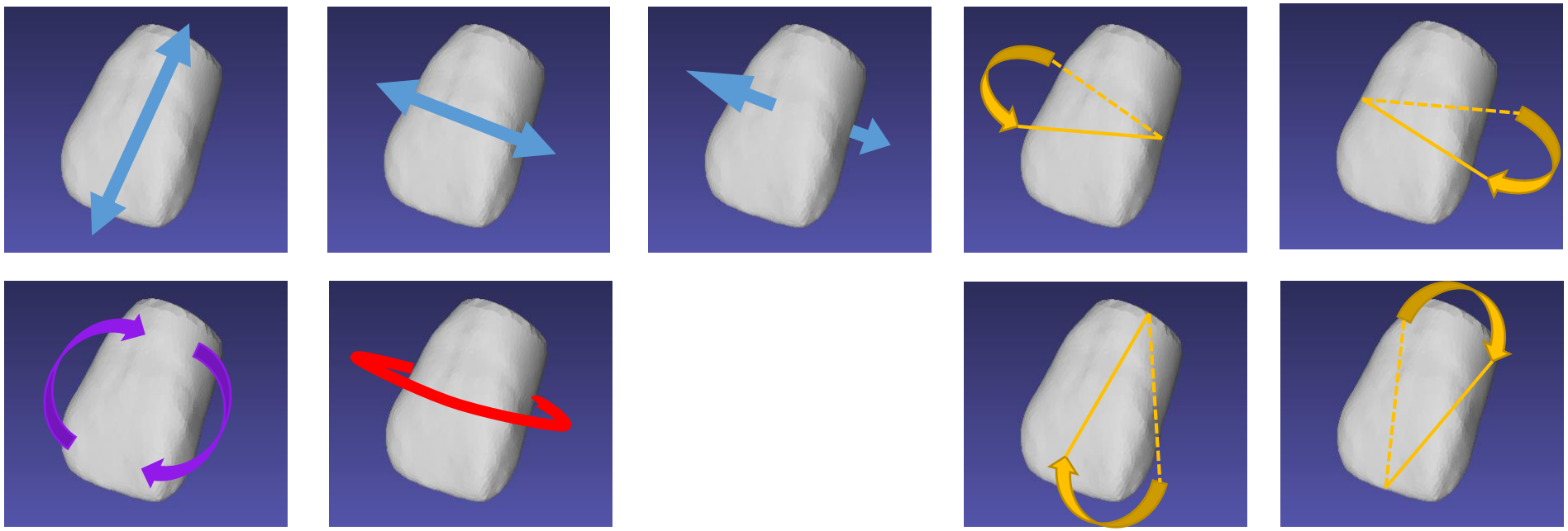
V_2: from lingual side to lip side



V_3: cross(v1, v2)

Requirements

Interaction



Requirements

Time Table

#	Date
1 Implementation	Week 2-7
2 Function test using assigned cases	Week 8-9
3 Online Q&A meeting	Apr 28th, 2019
4 VR Devices Adaptation	Week 10-12
5 Presentation	Week 12
6 Code/Report Submit Deadline	May 12th, 2019

- At week 8, each group will be assigned with different real cases, such as the video of tooth movement. You needs to reproduce the moving process with your own project.
- Your final submission should include:
  - **Report** for at least 4 pages that includes an itemized list of the functionalities that work and those that do not.
  - **Project code**. Use a *.readme* file to describe environment configuration and usage of your program in details.
  - **The result of case test**. According to given cases video, make movement on models and save the transformation matrix sequence.
- Send .zip or .rar file to email: virtualreality2019@163.com