Bi-Weekly Report 3

3D Reconstruction File Damaged Parchment

Date: 17th November 2017
Team 35
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OVERVIEW

We are finally able to compile parchment flattener, PMVS and use the web app to get a 3D mesh. After the meeting with Prof Tim Weyrich, we agreed upon getting the whole pipeline working before Christmas. Currently we are still encountering several issues with compiling and debugging as sometimes the library path cannot be found, or the program crashes unexpectedly. Therefore, we plan to dedicate more time to the project in the next two weeks.

MEETING SUMMARY

We had a fruitful discussion with Prof Tim Weyrich on Tuesday and he suggested some solutions for the individual's part.

1. For Sergio's part, Prof Weyrich suggested the use of docker and VMware to compile in Linux if we cannot get Bundler and PMVS running on Mac Os.
2. For Wanyue's part, Prof Weyrich pointed out that the cause of the error message related to octree is that the input images are not enough. The whole dataset which he shared with us using Dropbox should be used.
3. For Ionut's part, Prof Weyrich suggested debugging using Xcode

We have also learnt some technical terms in 3D Reconstruction. For example, point cloud is represented by x and y in space, which is not a triangle mesh. As the output of PMVS is a point cloud, we still need Meshlab to do postprocessing to obtain a 3D mesh. Prof Weyrich also explained his shade removal algorithm, which could be added to the pipeline in the later stage.

TASKS COMPLETED

1. We have finished the compilation of the Parchment Flattener, although the executable program crashes when trying to upload images.
2. We have successfully created a 3D mesh with 3D Web Reconstruction using the sample data provided by Professor Weyrich
3. We have compiled PMVS2. We have not tried however to create a 3D mesh using PMVS2 and Bundler.

PLAN FOR NEXT TWO WEEKS

- We must determine if our overall target will be to produce an executable program or to create a web service to run the processes.
- We should have all individual parts of the pipeline working with the sample datasets. We should also compare the results, along with other aspects to consider, and decide if we will continue using PMVS + Bundler or 3D Web Reconstruction.
- We will work towards achieving a complete pipeline, using rather PMVS and Bundler or 3D Web Reconstruction (preferably try both). The pipeline must take the sample dataset as input and produce the flattened result as output.
- If the previous goals are met, we will start working on the web application/executable and compiling the software we will use on a external server if the web application is chosen.

REFLECTIONS

Wanyue: For the first week, I tried every pipeline available in the 3D Reconstruction website using a test set of 3 images. However, I always got back the same error message. I found some related source code and research paper, yet, I still could not understand what octree meant. Only after meeting Prof Weyrich, I realised that every image in the dataset was from a different viewpoint of the same parchment. Therefore, a test set of 3 images were definitely not enough. To improve the efficiency, I should email Prof Weyrich or Aron more frequently whenever I encounter errors which I have no clue about. Next, I plan to spend more time researching the background of 3D reconstruction and understand what each component of the pipeline is doing. Also, I plan to get started on server-side scripting.

Ionuț: With the aid of Aron I managed to finish compiling ParchmentFlattener. However, I realised that when I tried to open the application file, the program would crash right after I would input the .obj files. I was advised by the professor to use XCode instead in order to see where the errors come from. Initially I struggled with a foolish mistake caused by some XCode settings, then I ran into a EXC_BAD_ACCESS error that I've been trying to figure out. So far enabling Zombie objects and creating an analysis of the project haven't been much of a help, but I'm positive I can figure it out soon. If I get this working in due time I'll carry on with ParchmentTexture.

Sergio: I have been compiling PMVS and Bundler during the past few weeks. In this process, I had to deal with what initially seemed like an endless series of dependency errors, which Professor Tim Weyrich and Aron Monszpart help me with. Now, I will be making them work with the sample datasets and also trying to begin building the pipeline.