The format/layout is just an example (not a template). Feel free to use your own format.

Assignment 3: Reconstruction

Group 08: Albert Einstein (123456); Isaac Newton (234567); Thomas Edison (345678)

Introduction

Describe the objectives of the assignment, an overview of your method, result, and conclusion. Present a reading guide of your report. The report is suggested to be as concise as possible. There is no lower bound, as long as everything is made clear. All figures, tables, and diagrams do not count towards the page length of the report.

Methodology

Describe the methods you used to come to the result. You're encouraged to describe your method using equations, flowcharts, and pseudocodes whenever necessary. Adding pictorial explanations when dealing with geometric algorithms is often necessary. Do not provide a step-by-step guideline of which buttons you clicked in software, but explain the methodology (i.e., mathematics & algorithms).

Implementation Details

Provide details on how you implemented your method, e.g., which programming language and third-party libraries did you use? What are the obstacles and how did you tackle them? Provide hints and links to the methods you have used, datasets, guidelines on how to build and run your program to reproduce your results.

Results & Discussion

Provide screenshots of your results and discuss them. Topics of discussion are (for instance): differences between methods, the effects of the parameters, what could have been done to improve your results, where you think it went wrong (if your results seem incorrect).

Division of the tasks

Give a brief description of who did what in doing the assignment. This must include an estimated percentage of individual contributions *[numbers must sum up to 100%]*. In case more than one person worked on the same subtask, please elaborate on how you collaborated on it.

This is an example

Albert Einstein (30 %)

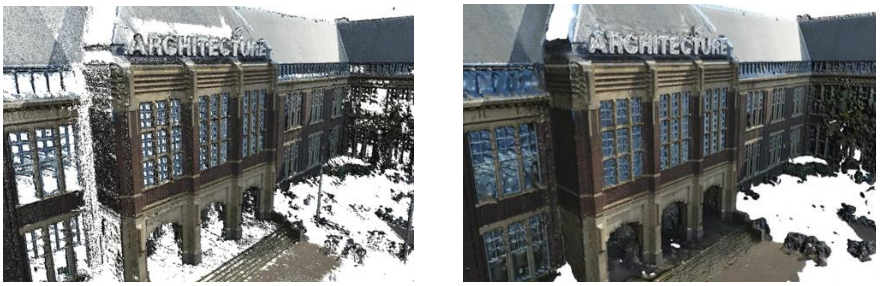
- Prepared and pre-processed the point clouds, i.e., taking photos, run SfM and MVS, cropping the buildings from the messy point clouds, and normal estimation;
- Ran the code written by Thomas Edison and wrote the "Results" section of the report.

Thomas Edison (50 %)

- Implemented an invariant of the 3D reconstruction algorithm introduced in the lecture.
- Wrote the "Abstract", "Introduction", "Methodology", and "Conclusion" sections of the report.

Isaac Newton (20 %)

- I created some helper functions and was also present when discussing the code, but in total, I wrote less code than my groupmates did. To compensate for this, I put in some extra work on the report. Nevertheless, others deserve more credit for this assignment.



(a) Input point cloud. (b) Smooth reconstruction result

Figure 1. Surface reconstruction.

References

[1] Edelsbrunner and J. Harer, Computational Topology, an Introduction. 2010.

[2] C. Tremblay, "Mathematics for game developers," 2004.