UNIVERSITÉ DE BOURGOGNE

Master IN COMPUTER VISION AND ROBOTICS

PROJECT REPORT - SOFTWARE ENGINEERING

PROJECT TITLE: " 3D Scanner "

Group NAME
Group 2

COORDINATOR
Yohan Fougerolle

Centre Universitaire Condorcet - uB, Le Creusot

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Introduction

This report includes key information about the task that have been done successfully during the last week in addition to the task on which we are currently working on with future plans and backup.

- **Optimization of the Code:** We wrote a separate class with UI for streaming Point cloud data from Kinect V2, which was a part of the optimization of the code. Furthermore, we linked GUI with the main code. We are now working to finalize the Class Diagram.
- **Interface of Intel Real Sense R200:** We have successfully interfaced Intel Real Sense R200 sensor with Qt by running a simple example which detects certain features of the camera. But still we have some difficulties in displaying the point cloud data. In order to overcome this problem, one of our sub-teams is working on displaying and saving point cloud data from Intel Real Sense R200 as well as exploring more features of the said sensor.
- **Point Registration, ICP:** We have completed research on Point Registration techniques and currently, we are working on implementing the ICP algorithm on the Point Clouds we obtained from Kinect v2.
- **Planar Surface Removal:** Work on writing the module for removing the Planar Surface is still in progress.
- **Gantt Chart:** We have drafted a Gantt Chart for the entire duration of the project. Link: https://1drv.ms/x/s!AjvOjyimCj_djHSQ-PQVnTJ6Hf_8

Tasks for the Following Week

- **Optimization of the Code:** We will finalize the Class Diagram, and integrate the class for ICP in the main code.
- **Interface of Intel Real Sense R200:** Obtain and save a Point Cloud from the Intel Real Sense and, if possible, perform ICP on the obtained data.
- **Point Registration, ICP:** To obtain a coherent 3D point cloud, obtained after the application of ICP to the acquired Point Cloud.
- **3D Construction:** Begin implementing the Meshing algorithms on the Registered Point Cloud such as Marching Cubes, Marching Triangles, among other triangulation algorithms.
- **Planar Removal:** Sepideh shall deliver a seminar explaining the possible techniques employed as well as how to implement them.
- **Compression Algorithm:** Implement Compression algorithms on the Data for ICP.
- **GUI:** As defined by the Gantt chart, the main focus shall be displaying the Point Cloud Data acquired by Kinect directly and that after being processed through ICP.

Week 7	People
Interface of R200	Zain, Wajahat
Implementation of ICP	Marc, Omair, Wajahat
GUI	Yamid/Thomas/Mohit/Julia
3D Construction	Leo/Utpal
Seminar on Planar Surface Removal, Module writing for Planar Surface Removal.	Sepideh
Optimization of Code	Carmen, Marc

Response to Observations

What if something turns to vinegar? For instance, how would you manage if, for some unexpected reasons, one or several key tasks are strongly delayed? For instance, how would you manage if, for some unexpected reasons, one or several key tasks are strongly delayed? Do you have any backup plan?

In case we fear that one of our teams will fail to complete the task in the required time, our backup plan is to merge two teams together in order to increase the human resources which will help us power through the issue.

Do you have any backup plan? How are you able to decide/evaluate/assess all the listed tasks will be successfully achieved?

We are still trying to figure out how to efficiently monitor progress and take remedial measures beforehand. Currently, our strategy is to hold a weekly meeting and take updates about the assigned tasks from each team member. In the weekly meeting, we discuss the progress, redefine our heading as per the situation.
Other than this, we have also formed sub-teams which are responsible for a specific task for a week. Working in small teams allows for better collaborative work such that if one person gets stuck, the others can help him or her out of the situation. This helps keep things on schedule.

GitLab Link:

https://gitlab.com/Akhtar52/3D-Scanner-VIIA/tree/master