3D Scanning Software

User Manual

Group 3

Contents

1   General Information

The software application allows you to capture 3D models of an object or a person, using Microsoft Kinect camera. The application grabs frames which are read as point clouds, and allows user to choose the registration and meshing process.

2   Program Workspace

2.1   Software overview

The graphical user interface consists of five tabs: **Read, Load Kinect, Register, Meshing** and **Save**.

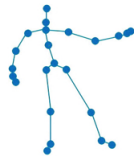## Read

The Read tab lets the user load already saved point cloud (.pcd) files. The user can choose a folder containing .pcd files and run the registration and messhing commands. See details in The Reading tab on page 3.

Load Kinect

The Load tab consists of visulizer screen and lets the user grab frames as .pcd files. See details in The Load Kinect tab on page 4.

Register

The Register tab lets the user choose between four different options for registering the point clouds. See details in The Register tab on page 5.
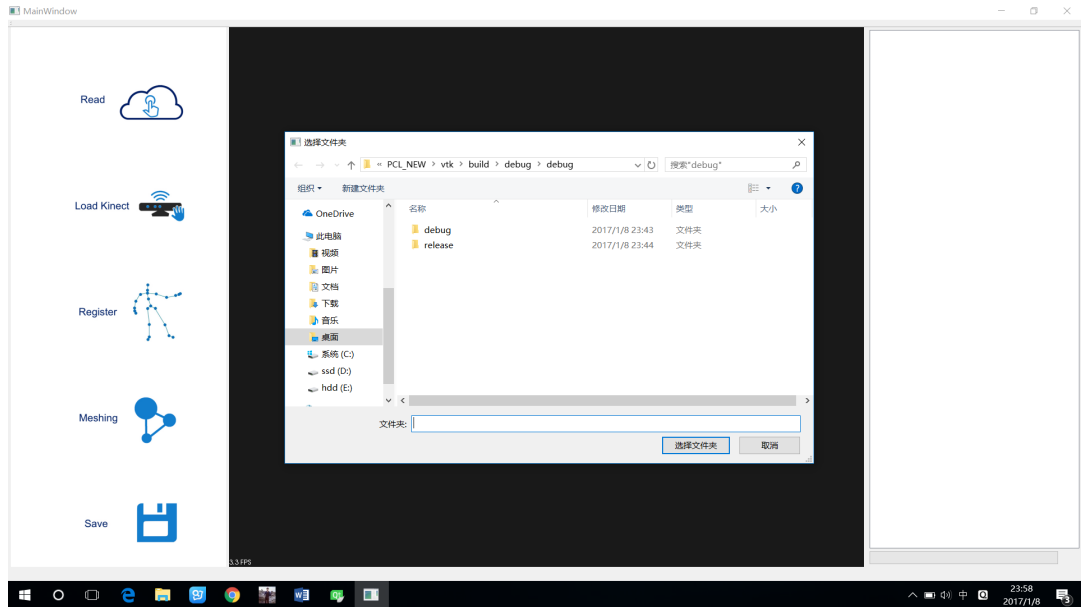
Meshing

The Register tab lets the user choose between four different options for meshing. See details in The Meshing tab on page 6.

Save

The Save tab lets the user to save the 3D textured meshes. See details in The Save tab on page 7.

2.2   The Read tab

The Read tab takes the user to the read window consisting of a dialog box for the user to select a folder with .pcd files.

2.3 The Load Kinect tab

The Load Kinect tab takes the user to the load window which consist of a section for adjusting parametars and three buttons: record, stop and go back (on the left), visualizer (in the middle) and the captured frames as .pcd files (on the right).

2.3.1 Adjust the Parameters

In order to adjust the parameters of the red box follow the next steps:

1. To adjust the mimimum value of the X, move the slider to the wanted value

2. To adjust the maximum value of the X, move the slider to the wanted value

3. To adjust the mimimum value of the Y, move the slider to the wanted value

4. To adjust the maximum value of the Y, move the slider to the wanted value

4

5. To adjust the mimimum value of the Z, move the slider to the wanted value

6. To adjust the maximum value of the Z, move the slider to the wanted value

When all the parameters are set, click on the radio button **Confirm Parameters** to save the values.

2.3.2   Capturing Frames

To start capturing frames press the **Start** ▶ button.

To stop capturing the frames press the **Stop** ■ button.

To go back in the Main Window press the **Go Back** ↩ button.

The captured frames will appear on the right, accessible by clicking on them.

2.4   The Register tab

The Register tab takes the user to the register window consisting of four radio buttons for each registering option.

- **ICP with normals** - preforms registration using ICP depending on normals of the correspondances

- **One ICP** - performes registration using ICP depending on distances between correspondances

- **Two ICPs** - performes registration using two ICPs, one for initial alignment and the second for fine alignment

Select one of the options and click on the **Done** ✓ button to preform the registration.

To go back in the Main Window press the **Go Back** ← button.

2.5   The Meshing tab

The Meshing tab takes the user to the meshing window consisting of three radio buttons for each meshing option.

- **Greedy Projection Triangulation** - performs triangulation using Gready Projection Triangulation

- **Poisson Reconstruction** - performs triangulation using Poisson Reconstruction

- **Grid Projection** - performs triangulation using Grid Projection

Select one of the options and click on the **Done** ✅ button to preform the meshing.

To go back in the Main Window press the **Go Back** ↩ button.

2.6 The Save tab

The Save tab takes the user to the save window consisting of a dialog box for the user to choose a directory to save the file.