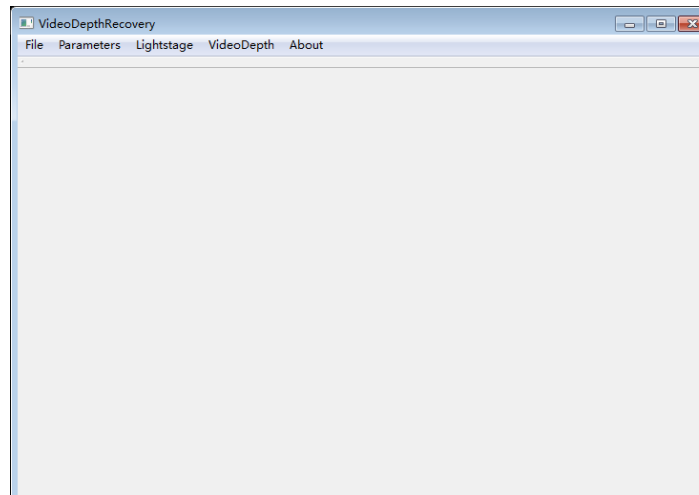# User Guide
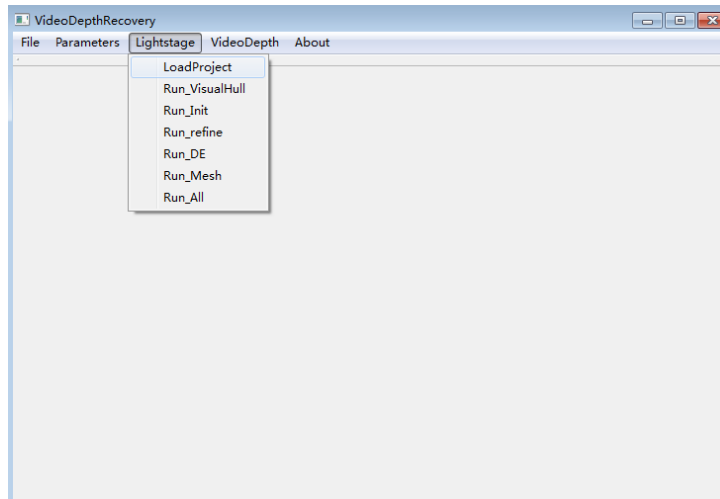
1.Open the "Debug" folder under "Exe&Data", Inside are some executable program and related dll.double click "LightStage.exe" to run.

2.The main interface should as following after runing the exe.

3. Under the main menu, there are several main module functions of Lightstage based 3D Reconstruction.

（1）**LoadProject:** Loading the image data and camera parameters captured by Light Stage device; Meanwhile the mask of each frame will be acquired and saved in the corresponding folder;

（2）**Run_VisualHull:** Taking using of camera parameters and mask to get the VisualHull;

（3）**Run_Init:** using the VisualHull as the constraint , conduct depth initialization fro each frame;

（4）**Run_refine:** based on the initialized depth, using spacial constraint and Bundle Optimization to optimize the depth;
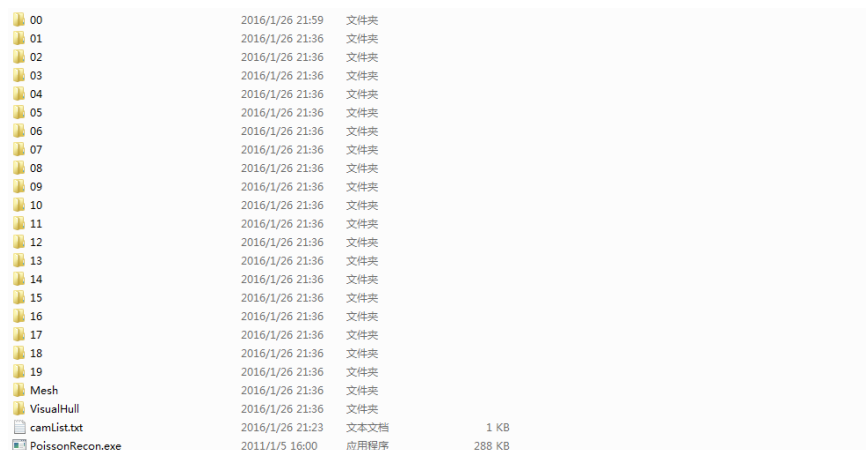
（5）**Run_DE:** Using Depth Expansion for further optimizing depth in sub-pixel level;

（6）**Run_Mesh:** Based on the depth results, using confidence to sample the point cloud, and using 'possion Recon' to get the 3D model(mesh);

（7）**Run_All:**Conered all steps except LoadProj, include Run_VisualHull, Run_Init, Run_refine, Run_DE, Run_Mesh.

Run lightstage.exe, there are two ways to get the final results, as mentioned above, you can either run step (1) ~ (6) or step (1) (7) .

4. Image data and camera parameters are listed under "Data\Ls_Data" :

（1）PossonRecon.exe：After get the depth map and point cloud, possion recon executable program can be used to get the 3D model (mesh file)

（2）camList.txt: It contains camera parameters from 20 cameras:

```
..\Data\Ls_Data\00\00.cam
..\Data\Ls_Data\01\01.cam
..\Data\Ls_Data\02\02.cam
..\Data\Ls_Data\03\03.cam
..\Data\Ls_Data\04\04.cam
..\Data\Ls_Data\05\05.cam
..\Data\Ls_Data\06\06.cam
..\Data\Ls_Data\07\07.cam
..\Data\Ls_Data\08\08.cam
..\Data\Ls_Data\09\09.cam
..\Data\Ls_Data\10\10.cam
..\Data\Ls_Data\11\11.cam
..\Data\Ls_Data\12\12.cam
..\Data\Ls_Data\13\13.cam
..\Data\Ls_Data\14\14.cam
..\Data\Ls_Data\15\15.cam
..\Data\Ls_Data\16\16.cam
..\Data\Ls_Data\17\17.cam
..\Data\Ls_Data\18\18.cam
..\Data\Ls_Data\19\19.cam
```

(3) Data folder 00-19 store image sequence and camera parameters of 20 camera. For example, folder 00 store the image sequence and camera parameters of :
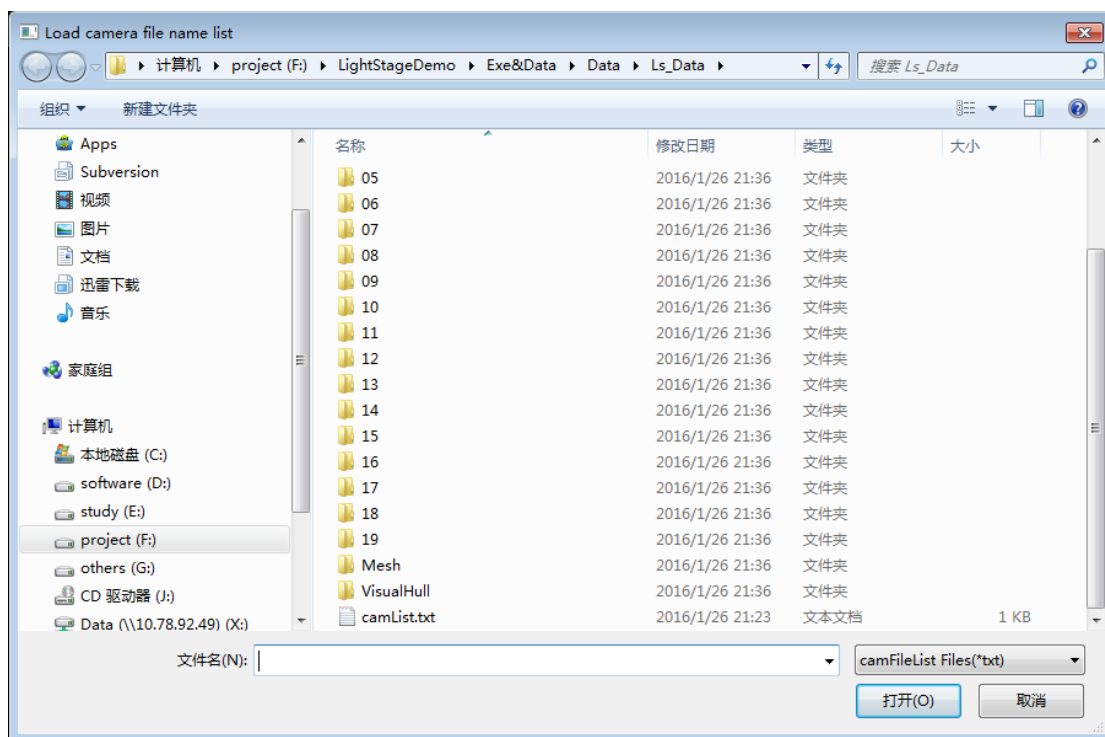

(4) "VisualHull" folder contain the generated VisualHull file(.ply).

(5) "Mesh" folder contain the generated mesh file (.ply and .npt).

5. Run the software:

Click 'LoadProject' as show in step3, enter into 'Ls_Data' folder, double cilck 'camList.txt'

Loading the image data and camera parameters, then using two ways to get the final results, run step (7) or step (2) ~ (6).

6.Runing results

Under each camera folder, three will be the generated masks (.png) ; VisualHull flies under the 'VisualHull' folder (.ply) ; 3D models under the 'Mesh' folder (.npts 和.ply).