NII International Internship program

Segmented Fusion

Week1

20170828

Sylvia

Advisors: Prof. A.Sugimoto

Ass.Prof. D.Thomas

Last Meeting

- Previous discuss
  - Summary the project and concept of method
- Plan for this week
  - Fork the project on the GitHub
  - Run the codes
  - Study the codes
  - Study the paper “Stitched Puppet”
  - Study Inoe’s ppt and report

Presenter: Sylvia
Advisors: Prof. A.Sugimoto, Ass.Prof. D.Thomas

Stitched Puppet

- Propose a new 3D model of the human body which is both realistic and part-based.
- SP model is represented by a mean shape and two subspaces of shape deformations, which is learned by PCA, and two vectors of shape coefficients, which handle the variety of the shape deformations.
- Define the stitching potentials to glue parts together.

S. Zuffi and M. J. Black. The stitched puppet: A graphical model of 3D human shape and pose. In CVPR, 2015

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Progress

Pipeline

- Inputs: RGBD frames and skeleton
- Convert depth image into vertex and normal maps
- Segment into different body parts by using skeleton
- Compute the bounding box and get volume of each part
- Transform volume into the current coordination and fusing(TSDF and marching cubes algorithm)
- Stitch to get the mesh of the whole body
- Do rigid alignment of the mesh with the new current image

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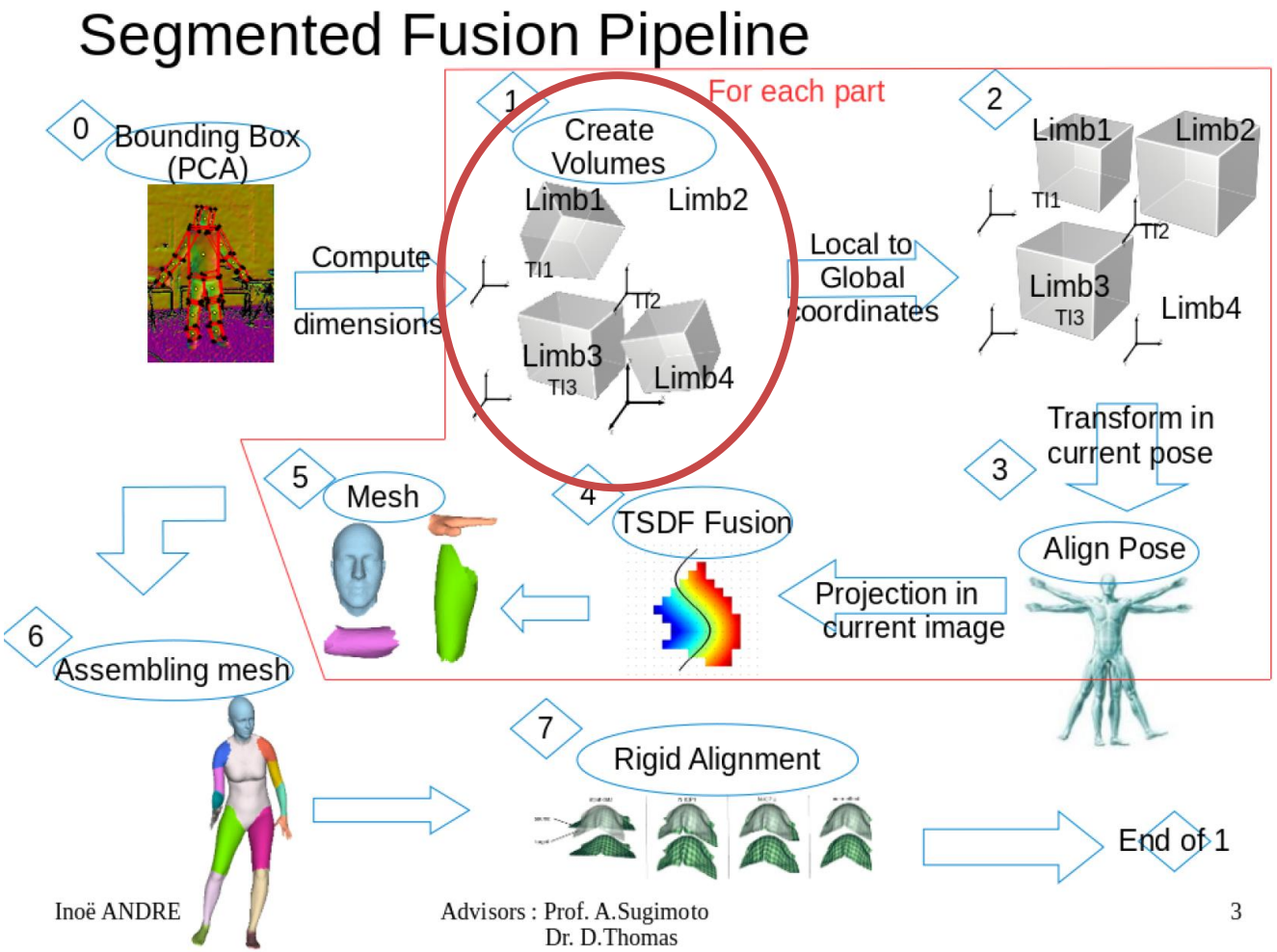
Problems



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Problems

- X, Y, Z are the length of each dimension of the volumn

$$\begin{cases} X = \lceil (||\mathbf{P2} - \mathbf{P0}||_2)/VoxSize \rceil, \\ Y = \lceil ((||\mathbf{P1} - \mathbf{P0}||_2)/VoxSize \rceil, \\ Z = \lceil ((||\mathbf{P3} - \mathbf{P2}||_2)/VoxSize \rceil \end{cases}$$

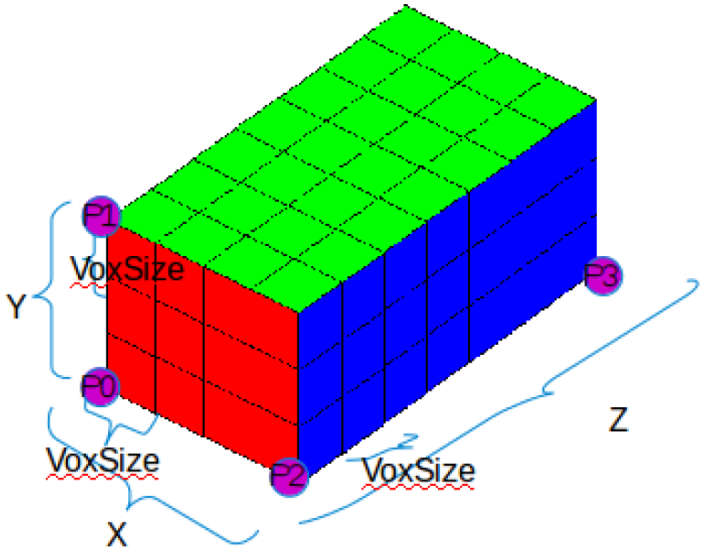

Figure 17: Representation of a body part volume

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Problems

- Is the depth image only be used in the segmentation?
- In the alignment process, what is “tracking part by part” meaning?
- Why the system put the “rigid alignment” in the last step, and what is the purpose?

Next step

- Study the codes
- Study the Inoe's ppt