NII International Internship program

Segmented Fusion

Week2-3

20170911

Sylvia

Advisors: Prof. A.Sugimoto

Ass.Prof. D.Thomas

Last Meeting

- Previous discuss
  - “Stitched Puppet”
  - Pipeline
  - The concept of improvement
- Plan for this week
  - Study Inoe’s slides
  - Read codes
  - Use Kinect and get new data
  - Run the “Stitched Puppet” code

Presenter: Sylvia
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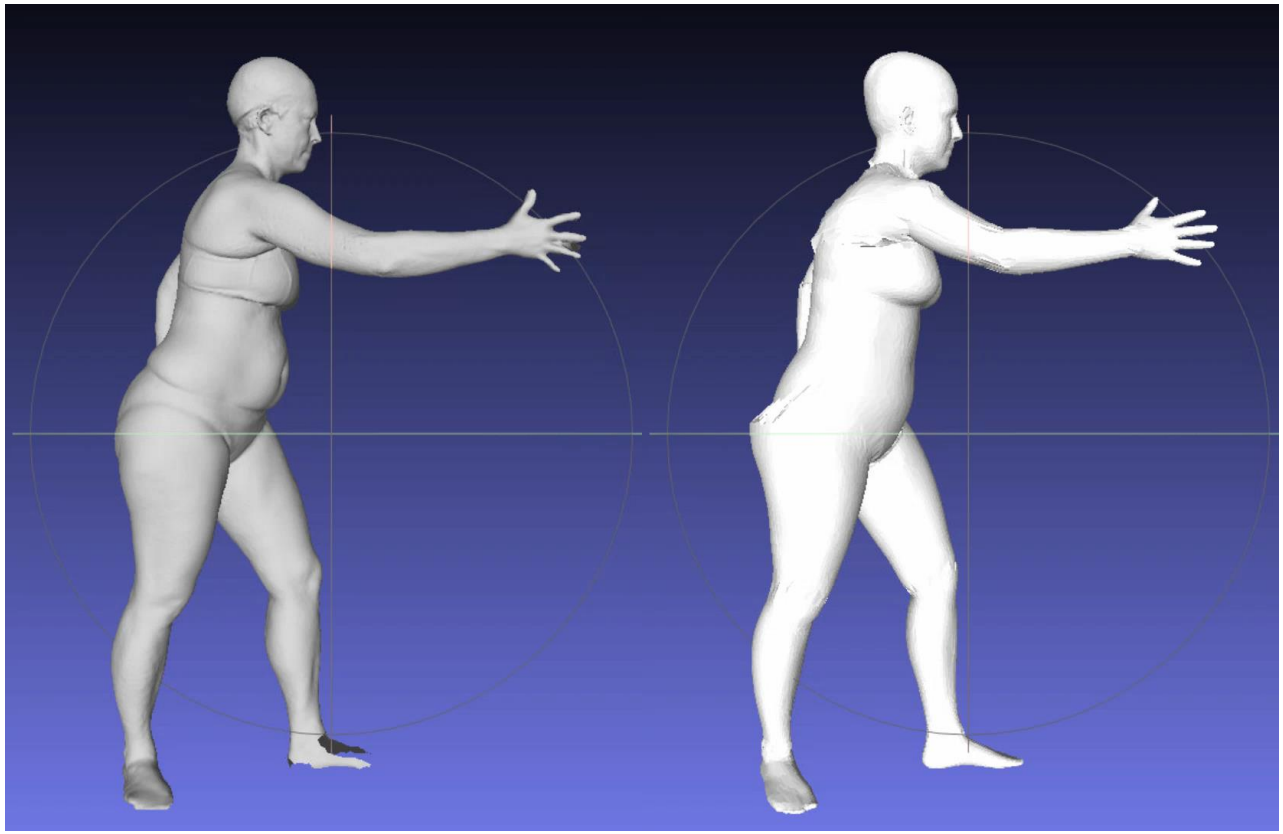
Stitched Puppet

- 3D reconstruction



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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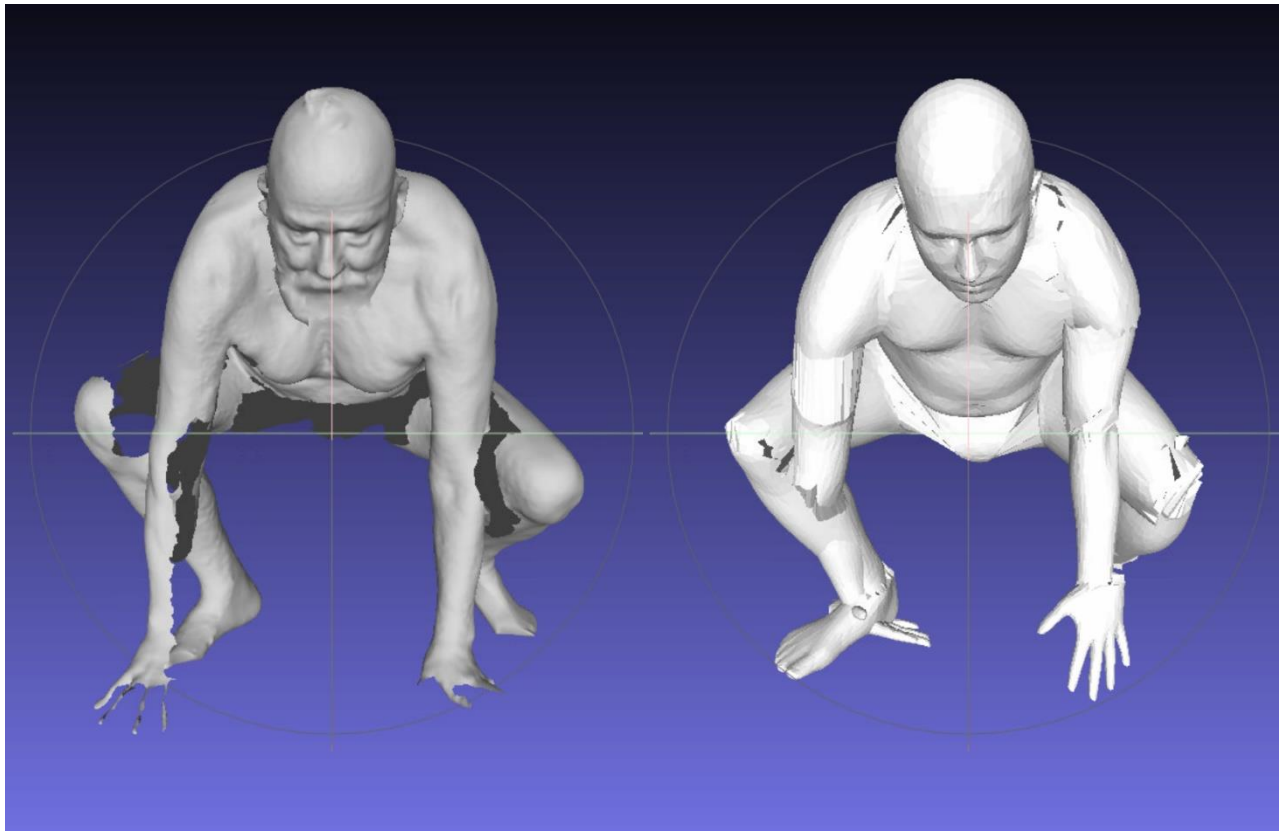

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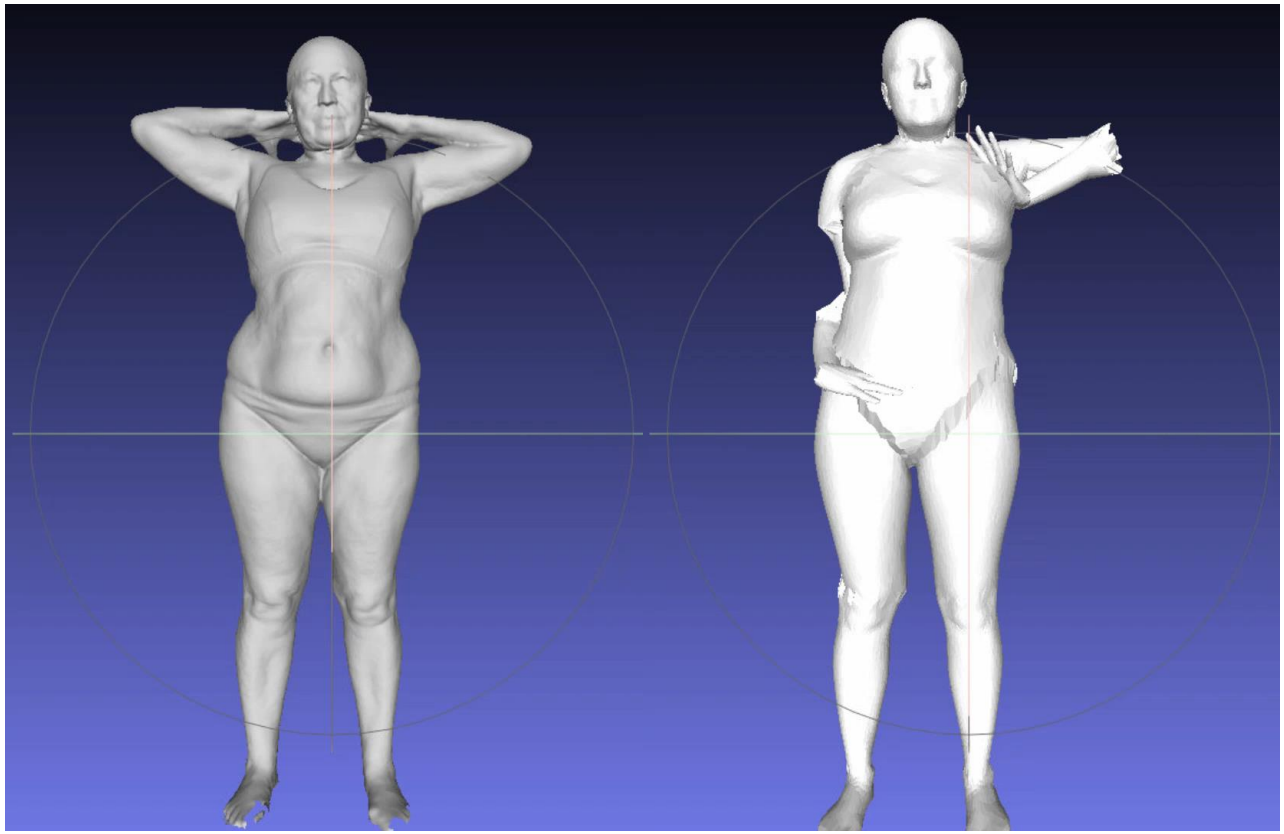

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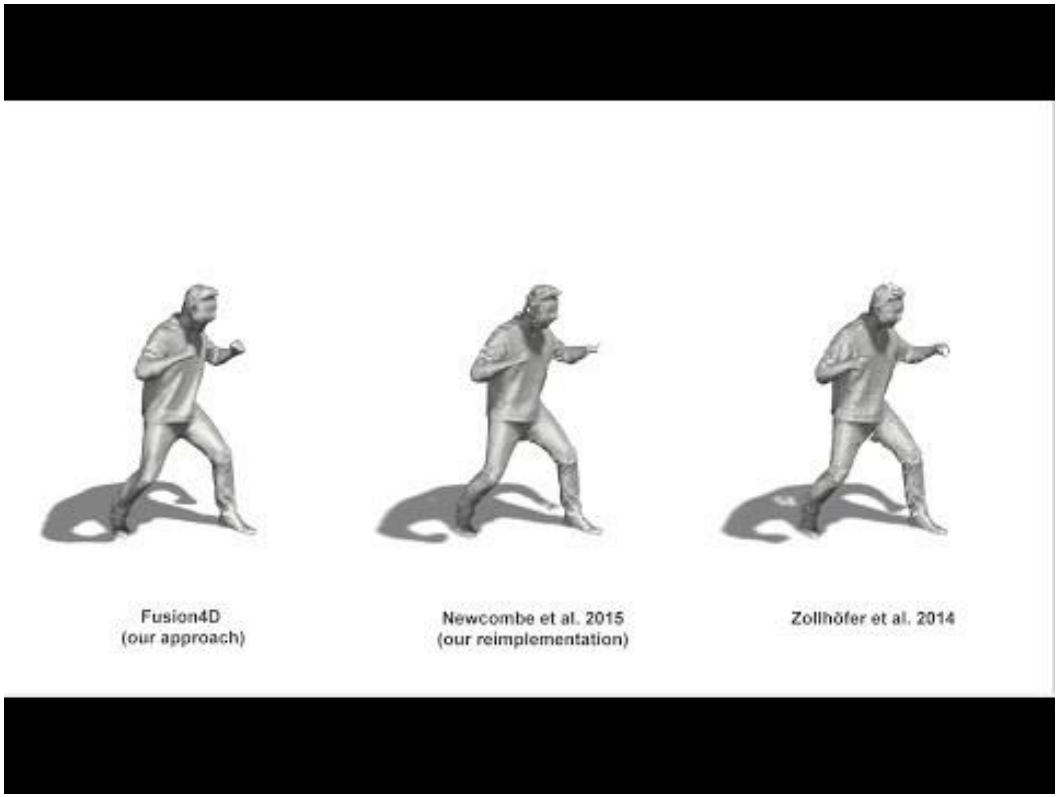
4DFusion



Dou, Mingsong, et al. "Fusion4d: Real-time performance capture of challenging scenes." *ACM Transactions on Graphics (TOG)* 35.4 (2016): 114.

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Code

- The cropped depth image should include pre-processing(like BF).
- The means of ***side*** in different functions are conflicting.

segmentation.py armSeg()

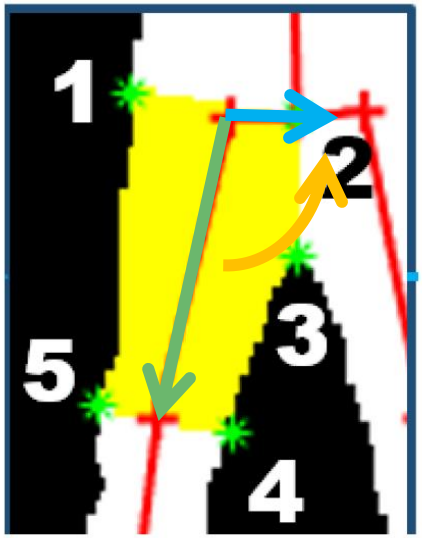
```
# create the upperarm polygon out the five point defini
if side != 0 :
    ptA = np.stack((intersection_elbow[0],intersection_
    self.upperArmPtsR = ptA
else:
    ptA = np.stack((intersection_elbow[1],intersection_
    self.upperArmPtsL = ptA
bw_upper = (A*self.polygonOutline(ptA)>0)
```

segmentation.py legSeg()

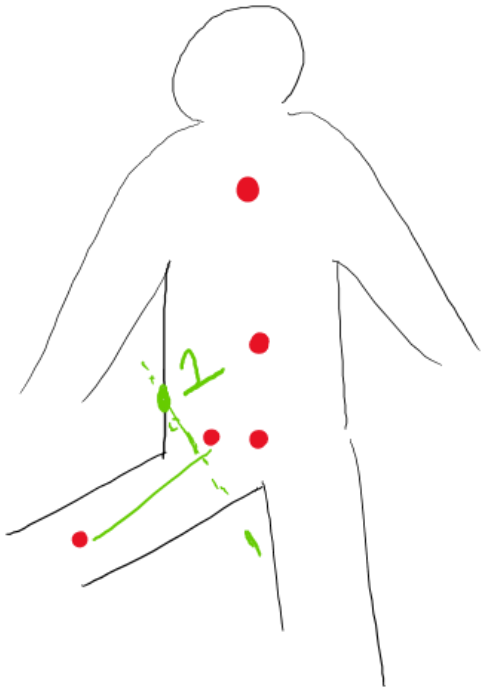
```
if side == 0 :
    self.calfPtsR = ptA
else:
    self.calfPtsL = ptA
```

Code

- In the function **GetBody()** and **GetHand()**, the indexes of junction should minus 1.
- The angle condition in the function **legSeg()**.



(b) Upper leg



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Code

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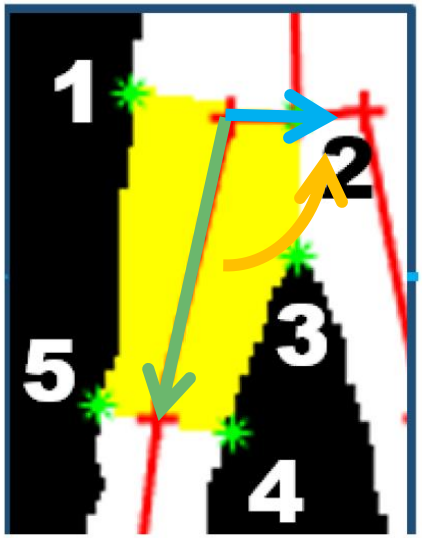

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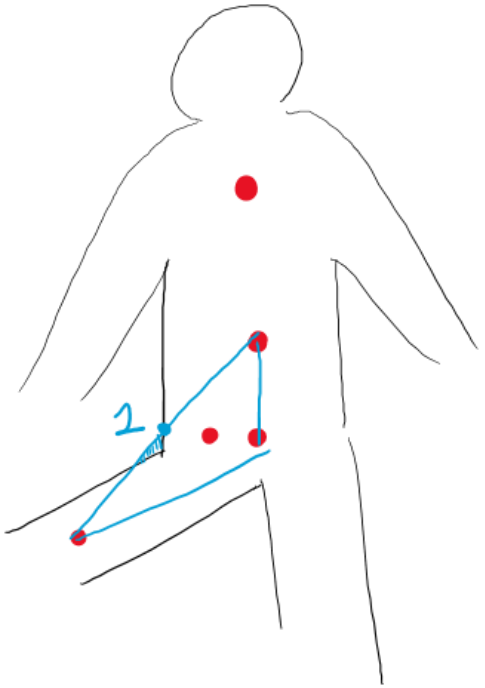

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Code

- In the kernel function **FuseTSDF()**, what is the ***convVal*** doing?

```
TSDF[idx] =  (short int)(round(((prev_tsdf*prev_weight+dist)/(prev_weight+1.0f))*convVal));
```

- Volume should be initialized in the local coordination.

```
# Compute the dimension of the body part to create the volume
Xraw = int(round(LA.norm(self.RGBD.coordsGbl[bp][3] - self.RGBD.coordsGbl[bp][0]) / self.VoxSize)) + 1
Yraw = int(round(LA.norm(self.RGBD.coordsGbl[bp][1] - self.RGBD.coordsGbl[bp][0]) / self.VoxSize)) + 1
Zraw = int(round(LA.norm(self.RGBD.coordsGbl[bp][4] - self.RGBD.coordsGbl[bp][0]) / self.VoxSize)) + 1
```

- What does the **RegisterRGBMesh_optimize()** do in the tracking.py?

Next step

- Modify the code
- Create new data