View Reviews

Paper ID
25

Paper Title
CALVIS: chest, waist and pelvis circumference from 3D human body meshes as ground truth for deep learning

Reviewer #1

Questions

1. [Summary] Please summarize the main claims/contributions of the paper in your own words.
The paper presents a method to calculate chest, waist and pelvis circumference from 3D human meshes. The obtained data is then used as ground truth for training convolutional neural networks (CNN).

2. Is this paper relevant to an RFMI audience?
Not relevant

3. [Significance] Are the results significant?
Not significant

4. Are the problems or approaches novel?
Slightly novel

5. Is the paper technically sound
Technically invalid

6. Is the paper well-organized and clearly written?
Poor

7. [Detailed Comments] Please elaborate on your assessments and provide constructive feedback.
1)English and equations in the current paper are terrible. The authors need to improve the spelling, structure and presentation of the paper.
2) The authors used many abbreviation words without providing any explanation.
3) There are several typo errors.
For example:
pg 3 :
The SCAPE model[3] opened wide possibilities in the field. ??? which field ?
has been strongly influence --> influenced
no human body dimensions are computed of estimated.--> from the estimated model
do not require that level of detail. --> such level of detail
4) The authors used the SMPL generative human body model, developed in 2015 to synthesize 3D human meshes
5) pg 13, it is not accurate to say "The automatic annotation process took approximately 1 h 47 min in an enhanced modern personal computer." What are the characteristics of the computer ?
6) The description of the bloc diagram of the CNN Calvis-Net depicted in fig 6, page 12, is missed; The proposed CNN architecture is not convincing. No detail has been provided about the relation and the functioning of the weight, the convolutional and the FC layers.
7) The results are far from being convincible. Experimental results are with limited 3D articulated meshes. It would be better if some quantified indicators are used
(Accuracy assessment).
For all these reasons I do not recommend the paper to be published in RFMI

8. OVERALL SCORE
Reject

9. [Award] Should this paper be considered for an outstanding paper award
No

10. CONFIDENCE
Reviewer is knowledgeable in the area

Reviewer #2

Questions

1. [Summary] Please summarize the main claims/contributions of the paper in your own words.
a method to calculate chest, waist and pelvis circumference from 3D human meshes was proposed. It shows that this approach can be used to train a CNN by imputing synthetic images of humans and using the measurements calculated with CALVIS as supervision signal. Furthermore, a prototype CNN CALVIS-NET was implemented.

2. Is this paper relevant to an RFMI audience?
Relevant

3. [Significance] Are the results significant?
Not significant

4. Are the problems or approaches novel?
Not novel

5. Is the paper technically sound
Technically sound

6. Is the paper well-organized and clearly written?
Poor

7. [Detailed Comments] Please elaborate on your assessments and provide constructive feedback.
1). It is not clear how 8 images can be used to train CNN with ground truth of 3 measures.
2). It is not clear how novel the proposed measurement calculation is.
3). there is no comparison with existing methods

8. OVERALL SCORE
Weak reject

9. [Award] Should this paper be considered for an outstanding paper award
No

10. CONFIDENCE
Reviewer is knowledgeable in the area

Reviewer #3

Questions

1. [Summary] Please summarize the main claims/contributions of the paper in your own words.
Overall, the paper is very well written. However, the main contributions are not clear. The segmentation method is also too constrained as it requires the shapes to be a pre-defined position.

The paper should also try and compare with other existing segmentation algorithms. This is a very well studied topic, see for example:
https://scholar.google.com.au/scholar?q=3d+mesh+segmentation&hl=en&as_sdt=0&as_vis=1&oi=scholart

2. Is this paper relevant to an RFMI audience?
Relevant

3. [Significance] Are the results significant?
Not significant

4. Are the problems or approaches novel?
Slightly novel

5. Is the paper technically sound
Technically sound

6. Is the paper well-organized and clearly written?
Satisfactory

7. [Detailed Comments] Please elaborate on your assessments and provide constructive feedback.
See my comments above.

8. OVERALL SCORE
Weak accept

9. [Award] Should this paper be considered for an outstanding paper award
No

10. CONFIDENCE
Reviewer is expert in the area

Reviewer #4

Questions

1. [Summary] Please summarize the main claims/contributions of the paper in your own words.
The paper explores an alternative method to create dataset by using synthetic 3D mesh data (SIMPL Generative model) of the human body, for training a CNN. The paper focuses on the circumference of chest, waist, and pelvis.

2. Is this paper relevant to an RFMI audience?
Relevant

3. [Significance] Are the results significant?
Acceptable

4. Are the problems or approaches novel?
Slightly novel

5. Is the paper technically sound
Technically sound

6. Is the paper well-organized and clearly written?
Good

7. [Detailed Comments] Please elaborate on your assessments and provide constructive feedback.
Thank you for sharing the generated database.

8. OVERALL SCORE
Accept

9. [Award] Should this paper be considered for an outstanding paper award
No

10. CONFIDENCE
Reviewer is knowledgeable in the area

Reviewer #5

Questions

1. [Summary] Please summarize the main claims/contributions of the paper in your own words.

This paper presents a method to estimate three dimensions (i.e., chest, waist and pelvis circumference) of 3D human body meshes by using traditional geometric methods (e.g, 3D shape deformable model, mesh segmentation, key point (Axilla) detection, geodesic computation) to achieve the ground truth value and a CNN-based regression method.

2. Is this paper relevant to an RFMI audience?
Relevant

3. [Significance] Are the results significant?
Acceptable

4. Are the problems or approaches novel?
Slightly novel

5. Is the paper technically sound
Technically sound

6. Is the paper well-organized and clearly written?
Poor

7. [Detailed Comments] Please elaborate on your assessments and provide constructive feedback.
The main contribution of this paper is to computing the human body dimensions based on the geometric methods and meanwhile to testing the CNN-based regression method. However, I have the following concerns:
1. The experimental details related to the CNN-based method are missing. The detailed hyper-parameters used for CNN training and testing are missing.
2. There is no comparisons with other related methods. The error of 12mm achieved in this paper has no reference score.
3. Overall, I think the problem of 3D human shape measurement is a important task, and the geometric method used in this paper has a certain contribution to this task.
4. The presentation of this paper is not smooth.

8. OVERALL SCORE
Weak accept

9. [Award] Should this paper be considered for an outstanding paper award
No

10. CONFIDENCE
Reviewer is knowledgeable in the area

Reviewer #7

Questions

1. [Summary] Please summarize the main claims/contributions of the paper in your own words.
The authors present an original method for the measurement of
bust and wrist and pelvis circumference from a 3D mesh of the human body using convolutional neural networks (CNN). the advantage of the method used is that it is automatic on 3D meshes from eight meshes of the synthesized human body.

2. Is this paper relevant to an RFMI audience?
Relevant

3. [Significance] Are the results significant?
Significant

4. Are the problems or approaches novel?
Slightly novel

5. Is the paper technically sound
Technically sound

6. Is the paper well-organized and clearly written?

Good

7. [Detailed Comments] Please elaborate on your assessments and provide constructive feedback.
Very interesting work with a recent bibliographic study, nevertheless the experimentation part lacks comparative study with the existing one and especially in term of algorithmic complexity

8. OVERALL SCORE
Strong accept

9. [Award] Should this paper be considered for an outstanding paper award
Yes

10. CONFIDENCE
Reviewer is knowledgeable in the area