Department of Computer Engineering

Human Body Size Estimation

BE Major Project – 1 (Semester VII)

by

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A. Work completed in Mini Project (Sem VI):

In Semester VI, we finished the documentation part of our project, Human body size estimation. We read many research papers out of which the top 5 relevant ones were included in our Project Report. We also started developing the core logic for our project and started structuring the project from scratch.

We submitted our project report to our **Project Guide - Mr. Ashraf Siddiqui**, which was then reviewed and approved by him. We also submitted a presentation for review which focused on delivering the idea of Human body size estimation effectively. The presentation was approved, in the meantime we proceeded towards executing our ideas.

B. Planned work for Sem VII:

a) **Problem Statement:** To develop a webapp which captures a photo and estimate the user's body measurements by classifying it into different sizes based on size chart.

b) **Project Modules:**

   i.   Obtaining User input through camera module.
   ii.   Mapping of input image onto 3-dimensional model using 3D human reconstruction.
   iii.   Extracting body measurements from the reconstructed model.
   iv.   Classification of measurements based on size chart.

Obtaining User input through camera module:

Initially, if the user wants to buy cloths online, he has to capture the image through webapp's camera by following the instructions given. Then the image will be captured if the conditions are satisfied or else user will be asked to recapture it.

Mapping of input image onto 3-dimensional model using 3D human reconstruction:

We will encode the 3D mesh of a human body using the Skinned Multi-Person Linear (SMPL) which will create realistic 3D model of the human body that is based on skinning and blend shapes and is learned from thousands of 3D body scans. So, this model will reconstruct the 3D human model.

Extracting body measurements from the reconstructed model:

> For extracting body measurements from reconstructed 3D model, we will be using Anthropometric body reshaping techniques.

Classification of measurements based on size chart:

The measurements obtained from extractions are fed into classification model which will be trained based on different body constraints such as (chest, waist, etc) for classifying it into different sizes.

c) **Requirements:**
   i. Pretrained dataset
   ii. SVM Classification model
   iii. Python libraries such as OpenDR, OpenCV, Numpy which would be used majorly for CV.

d) **Monthly planning for Semester VII:**

Month	Plan
July	Dataset preparation
August	a) UI Designing for webapp, b) Converting 2D Image to 3D Model
September	a) Extraction of Anthropometric measurement from 3D model obtained. b) Implementation UI design
October	a) Implementation of Classification model based on measurements obtained. b) Integration of model into webapp

e) **How will the Graphical User Interface be implemented?**
   i. The GUI for the web application will be designed using HTML, CSS and JS
   ii. The GUI backend will be developed Python.