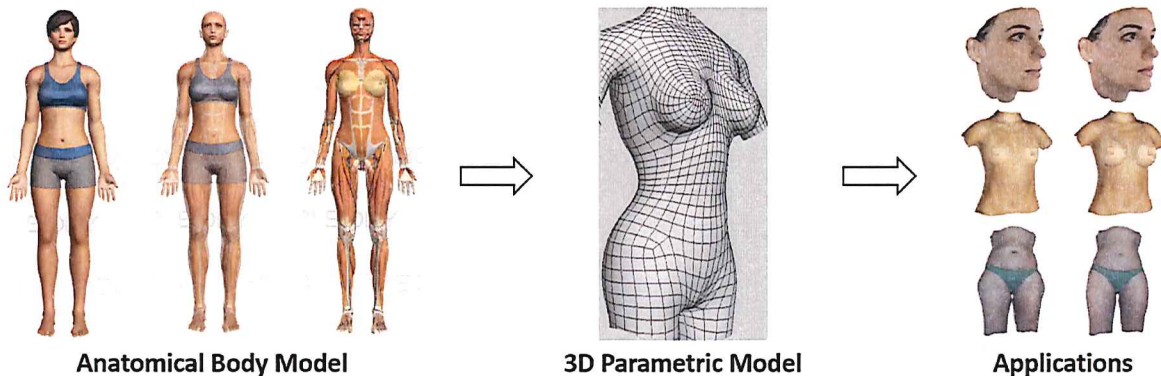


Semester Thesis**Inferring Human Body Parts and Correlations from Images, Pointclouds and Meshes****Introduction**

Human body models have been crucial in the last decade for inference and synthesizing tasks. They find applications everywhere. A human body shape or pose is used in health monitoring, virtual cloth fitting, virtual avatars for virtual and augmented reality and medicine. Since a full body consists of its parts, in order to learn more expressive transformations, modelling of each part separately becomes a necessity. While there have been works applied to faces and hands, the upper torso has received little attention. Here, we focus on **inference, modelling and mapping** of the **the upper torso**, with applications in medicine.

Task Description

The semester thesis consists of the following steps :

- Get acquainted with the relevant literature in the field of body shape (upper torso) modelling/fitting and 3D reconstruction as well as with the code of a previous student that consists of :
 - Retrieving pointclouds of various body parts from sprites utilizing SfM
 - Creating upper torso mesh and fit it to the retrieved pointclouds
 - Learning a parametric (PCA) model from the created dataset of fitted meshes
 - Fit model to new pointclouds
- Cluster the meshes based on characteristics/labels extracted during image extraction
- Learn mapping (between models) before and after procedure applied to the mesh
 - In mesh or/and image space (corresponding to a certain mesh)
- Manually annotate landmarks of captured real images (men/women) and fit meshes
 - From PCA model or Make human model

Remarks

A written report and an oral presentation conclude the thesis. The thesis will be overseen by Prof. Markus Gross and supervised by Endri Dibra (ETH).

Start: 27th of November 2017
End : 27th of May 2018