IEA Anthropometry Technical Committee
Chairs: Karen Bredenkamp, Magic Leap, USA & Sandra Alemany, Instituto de Biomecanica Valencia (IBV), Spain

Objective

The objective of the IEA technical committee on anthropometry is to improve the understanding and sharing of anthropometry knowledge. We try to achieve this goal through stimulation of high-quality anthropometric research, test and evaluation, development of anthropometric tools and dissemination of knowledge and data.

Structure

The IEA technical committee consists of two co-chairs and members which typically also joint the group's LinkedIn group. There are currently 427 members (Jun 2021) in the LinkedIn Group. The TC chairs will currently typically meet 1time per year. The committee will meet a minimum of once every 3 years during each IEA conference.

Goals for 2022/2023

1) For TC chairs to meet at least every 2 months
2) Provide webinars or training sessions on Anthropometry every year
3) Encourage more TC members' involvement through introducing sub-committees who can contribute to webinars or training sessions in focused areas of interest

Webinars for 2022:

Arranged by the World Engineering Anthropometry Resource (WEAR) group in collaboration with Anthropometry TC and shared with the Anthropometry TC members.

Date	Title	Description	Presenter
16th February 2022	How to create a 3D body avatar: A review of methodologies and potential applications	Human body metrics have become a significant source of product innovation to industries where consumer fit, comfort and ergonomic considerations are key factors. This is especially the case for fashion (e.g. footwear or apparel), health (e.g. orthotics or prosthetics), transport and aerospace (e.g. seats or human-machine interfaces), and safety (e.g. protective equipment or workstations) among others. In the last few years, emerging businesses using 3D body data (e.g. garment and footwear customization, size recommendation, health monitoring) are using the 3D body avatars as a human centric approach to offer new services adapted to consumer personal data. This webinar will do a review of: 1) different methods to create 3D body avatars: body scanning, body capture with a phone and generation of 3D body avatars from measurements and 2) applications of 3D body avatars.	Sandra Alemany, Head anthropometry Research Group at Institute of Biomechanics of Valencia (IBV)

Date	Title	Description	Presenter
16th March 2022	Move4D: Capture and processing of body avatars in motion	Nowadays, 3D body scanners are used in many industrial and health applications. Typically, a single body scan of a person minimally clothed in A-pose is obtained to get measurements or 3D surfaces that are used to develop a garment, a helmet or an orthotic device. However, the use of most of these wearable products also involves human motion. To cope with this need, different technologies have been developed over past years to obtain 3D scans over time (so-called temporal 3D scanners or 4D scanners). The ability to process a 3D scan is essential to obtain accurate metrics and “clean” and complete 3D models that facilitate product design and virtual simulation. The automatic processing of markerless human 3D scans is not trivial, especially in non-standard poses. It becomes even more challenging in the case of processing a series of 3D scans of humans performing real-life or sports movements. This webinar will be focussed on the capture and processing of 3D body scans in motions. Potential applications will be also introduced.	Sandra Alemany, Head anthropometry Research Group at Institute of Biomechanics of Valencia (IBV)
20th April 2022	Predicting Fit with Soft Avatars	3D avatars used in the apparel industry are hard. They do not behave like real human bodies and do not change shape in response to the garments. This is a major challenge for use of 3D technologies for predicting fit, especially for close-to-body garments such as intimates, athletic apparel, swimwear, and footwear. I will describe how high quality virtual fit testing can be achieved using VitalFit, a virtual fit testing platform developed by Vital Mechanics. The soft avatar technology was initially developed at UBC, in a multi-year effort to capture not only the 3D shape of a human body but also its physical properties, including elasticity, soft tissue volume, and how the body responds to touch with garments and other objects. The project has measured more than a hundred human participants, from diverse populations, and created the world's first database of soft tissue properties. These tissue properties are used in finite element (FEM) models of the human body and its interaction with garments. In parallel efforts, we are also measuring physical properties of real garments, and realistic tissue movement during dynamic activities. Existing patterns developed in garment CAD systems can now be simulated with soft avatars. I will present results of this process in creating personalized digital avatars and evaluating the fit of close-to-body garments.	Prof. Dinesh K. Pai Professor of Computer Science at the University of British Columbia

Date	Title	Description	Presenter
18th May 2022	Virtual Fitting	The percentage of clothing sales using dedicated websites is rapidly increasing to the expense of sales in physical clothing stores. This process is accelerated due to the COVID pandemic. In a physical shop the customer can fit a garment and leave with a fitting garment size. In web shopping, however, the customer has to indicate which size is desired. Due to vanity sizing, absence of body dimension awareness and inconsistency in size indications in garments, the customer often gets clothing by mail that is not fitting. Several companies provide the service to send multiple clothing sizes and offer free returns. This is an expensive and environmental unfriendly solution. Virtual fitting may reduce the number of undesired returns. The customer submits a 3D scan (or a 3d model based on objective or subjective information on body dimensions) to the manufacturer that fits the garment on the virtual body or model to select the correct size. Several software packages offer this capability, such as Lectra, Vidya, Clo3D or Optitex. Fit assessment can be assisted by calculation of the volume between garment and body, visualization of stretch in the garment or visualization of a transparent garment over the body. Batch processing is possible and new developments in dynamic fit evaluation have been started. Currently, however, good scientific research validating the tools and results is still lacking. In the presentation, an overview will be given regarding the current status, mainly based on military research, with a discussion regarding prospects for the civilian market.	Prof. Hein Daanen Head of the physiology section of the department of human movement sciences, Vrije Universiteit Amsterdam, director of master human movement sciences, and director of the company Sizing Science
September 2022	TBD		

Planned sub-committees:

No	Subgroup	Name	Country
1	Human modelling	Sofia Scatagfini; Belgian Military Hospital Quen Astrid Royal Miltary Academy	Belgium
2	Athropometry in developing countries	Sarah Banatyne; Ergonomics Engineering	South Africa
3	Anthropometry and fit	Daisy Veitch, Smart Dummies and Kathleen Robinette, Fit Metrics	Australia, USA
4	3D Anthropometry and Virtual fitting	Prof Hein Daanen, Vrije Universiteit Amsterdam	Holland
5	DHM	Matt Reed, University of Michigan, USA	USA
6	Database and accuracy	Matthew Parkinson, University of Pennsylvania and Makiko Kouchi	USA, Japan