

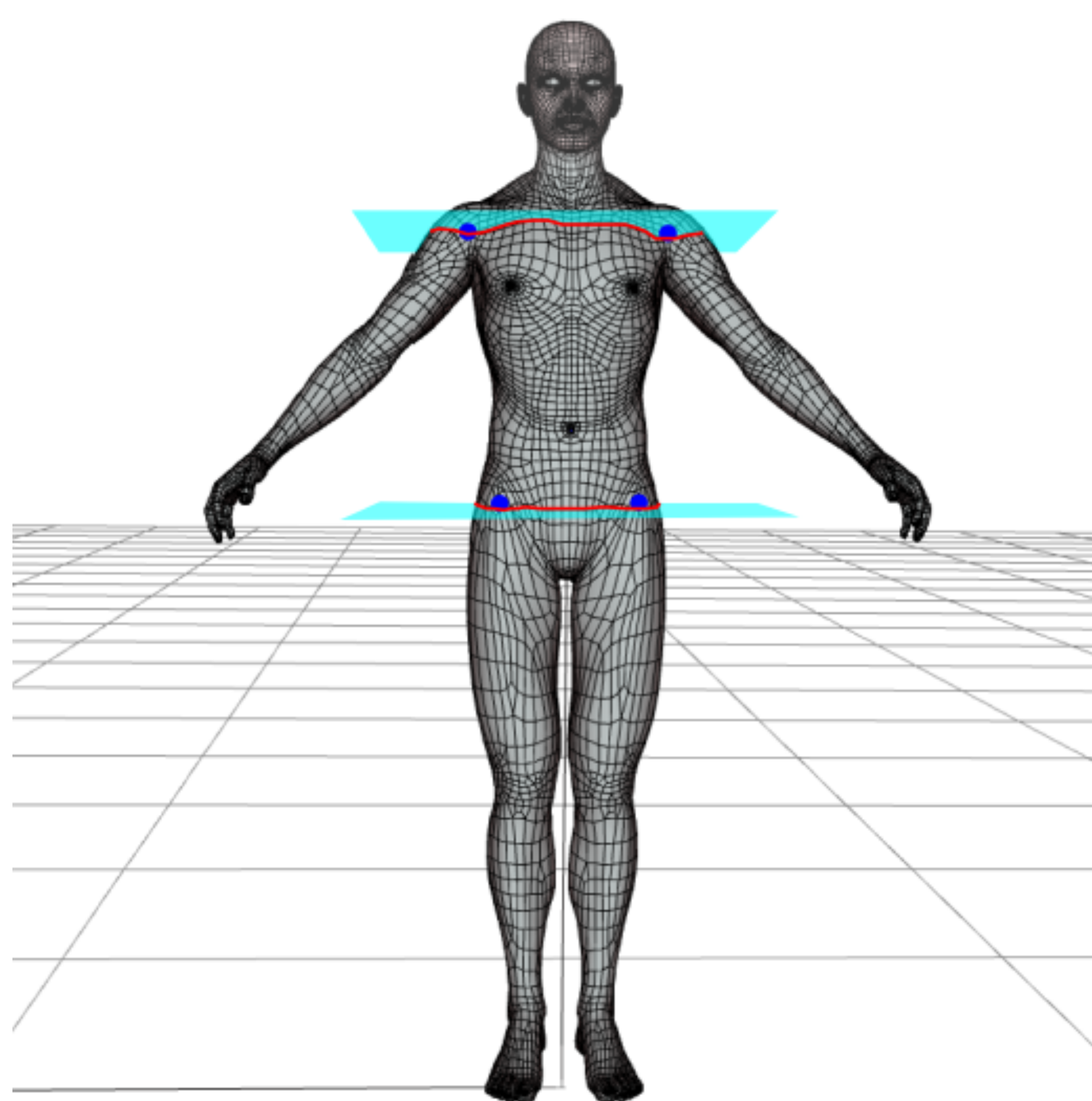
# Unobtrusive body contour estimations via depth camera

## Body Estimation & Interpretation

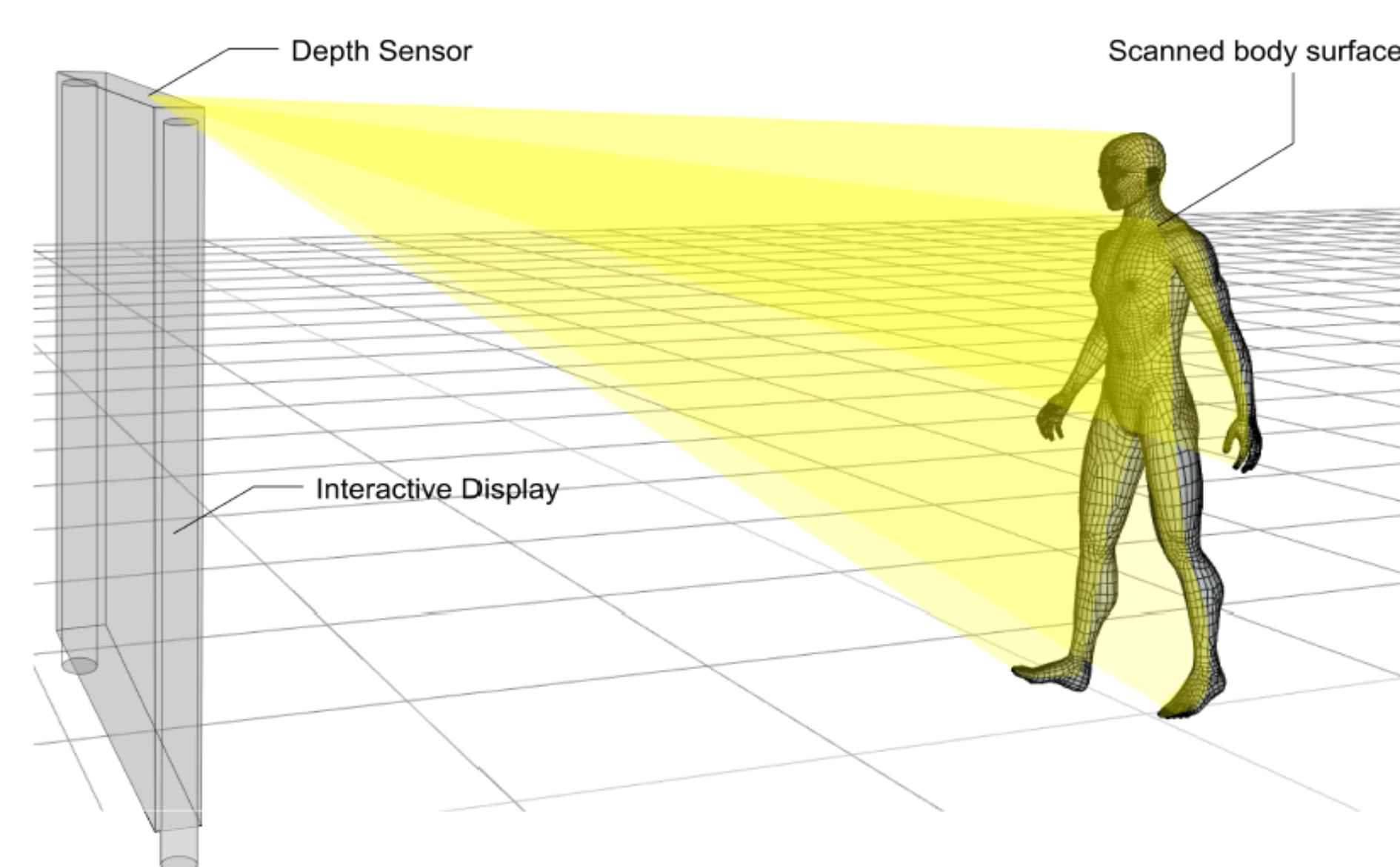
Context Sensitivity in interactive public display scenarios **can do more than mere presence detection**. The more detailed the input, the higher is the potential to increase system performance and the level of interaction control. Especially for installations of digital kiosks, automatic gathering of detailed information is very valuable. Unobtrusive **body estimations** allow a system not only to suggest suitable clothes, but may also be **used for interpretation of interests** like sportiveness.

It presents an approach towards **smart people sensing for detailed estimation of body proportions**. The system can be used as **input for interactive counseling applications (Recommender Systems)** with the goal to create algorithms for accurate estimation of body proportions **using a depth sensor**.

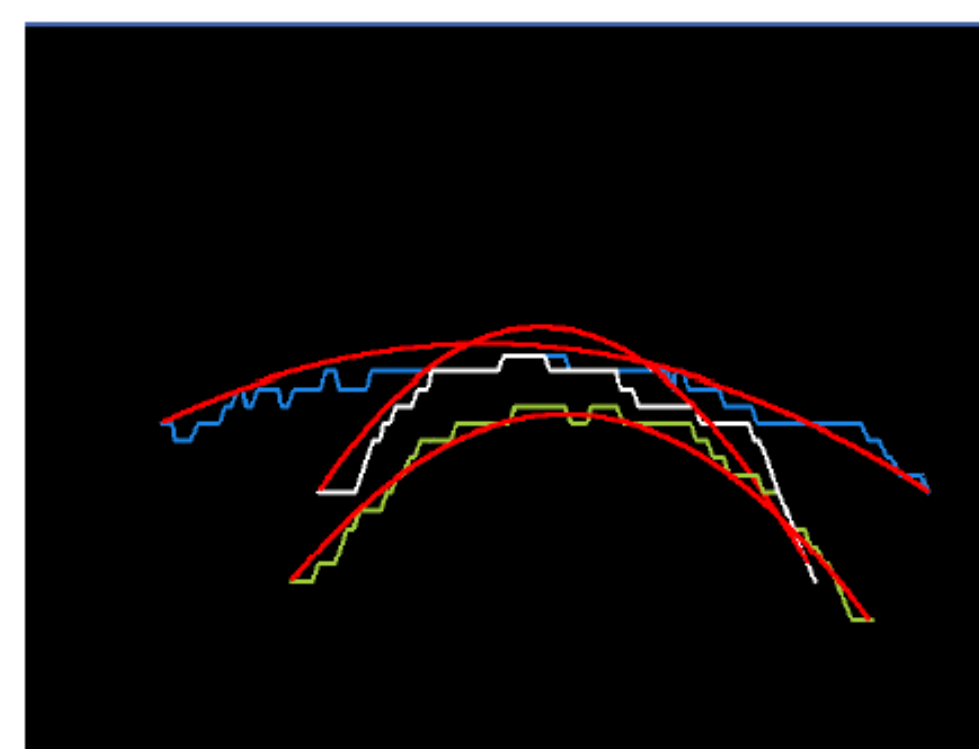
## Data Acquisition, Body Posture Detection, Taking Body Measures



To obtain realistic body measurements from a depth camera, we perform lateral cuts of the human body at interesting markers

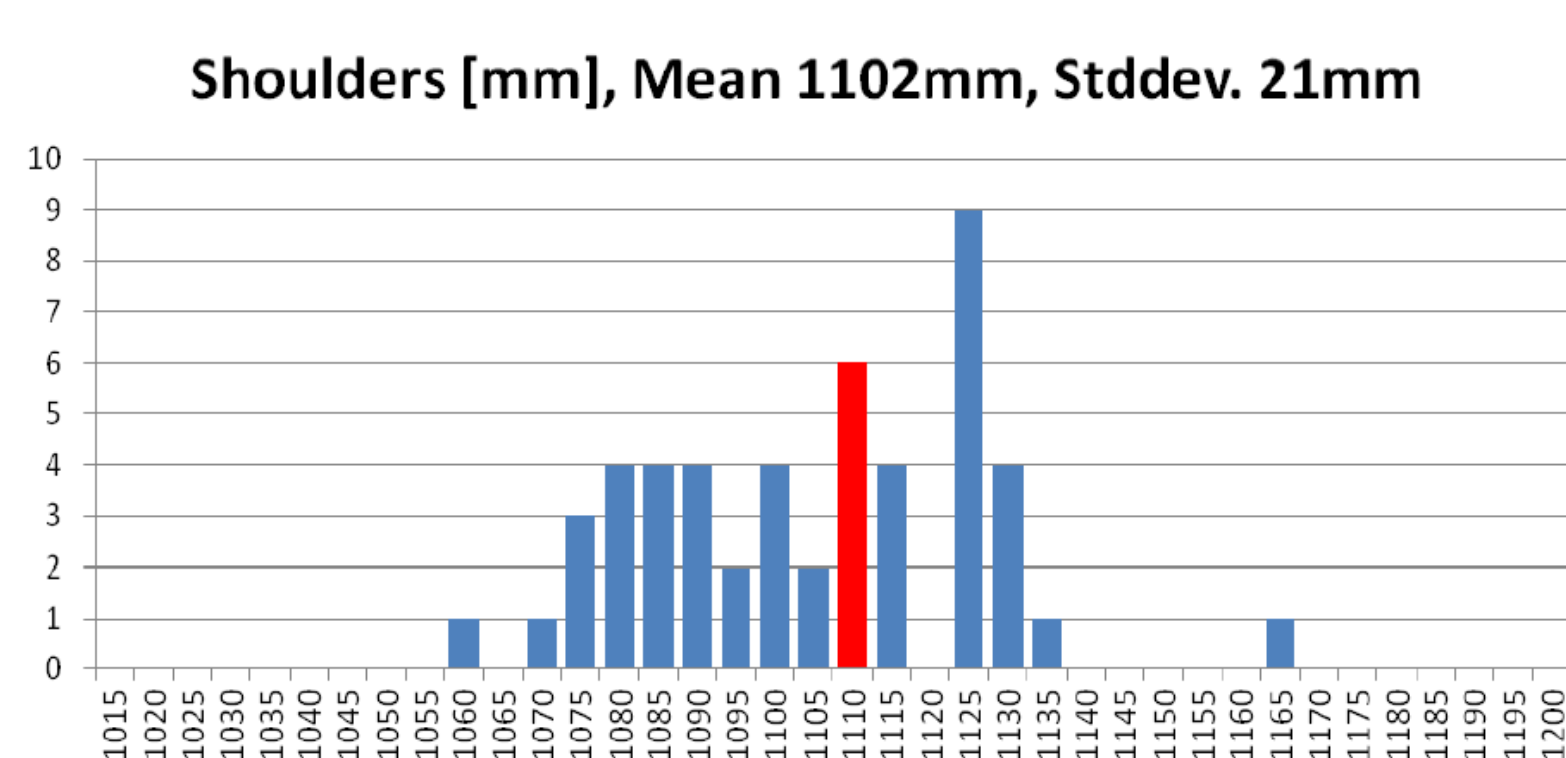


We use the depth sensor which is integrated into our interactive display system to scan people in its environment. The infrared laser rays of the depth sensor can only analyse surface structures, thus are used to cover the side of the body which is directed at the display.



Measurements were performed, namely for shoulder span (blue), waist span (white) and hip span (green). The fitted curves prove to very well estimate and smoothen the detected values.

## Results



Measurement Accuracy Shoulder Span

In this work, we have developed processes for **unobtrusive measurements of bypassers of interactive public displays**. The gathered data can be used for any application for which body posture data is necessary or helpful. Noise sensor data has been levelled out via linear regression curve fitting methods, **resulting in acceptable accuracy results** for non-medical, **out-of-home applications**.

- Applied Engineering
- Prototyping
- Production



Recommender System based on body contour estimations

## Acknowledgements

Industrial research project with Schlaraffia - RECTICEL Schlafkomfort GmbH



**SCHLARAFFIA**  
Wir leben Schlaf. Seit über 100 Jahren.

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