

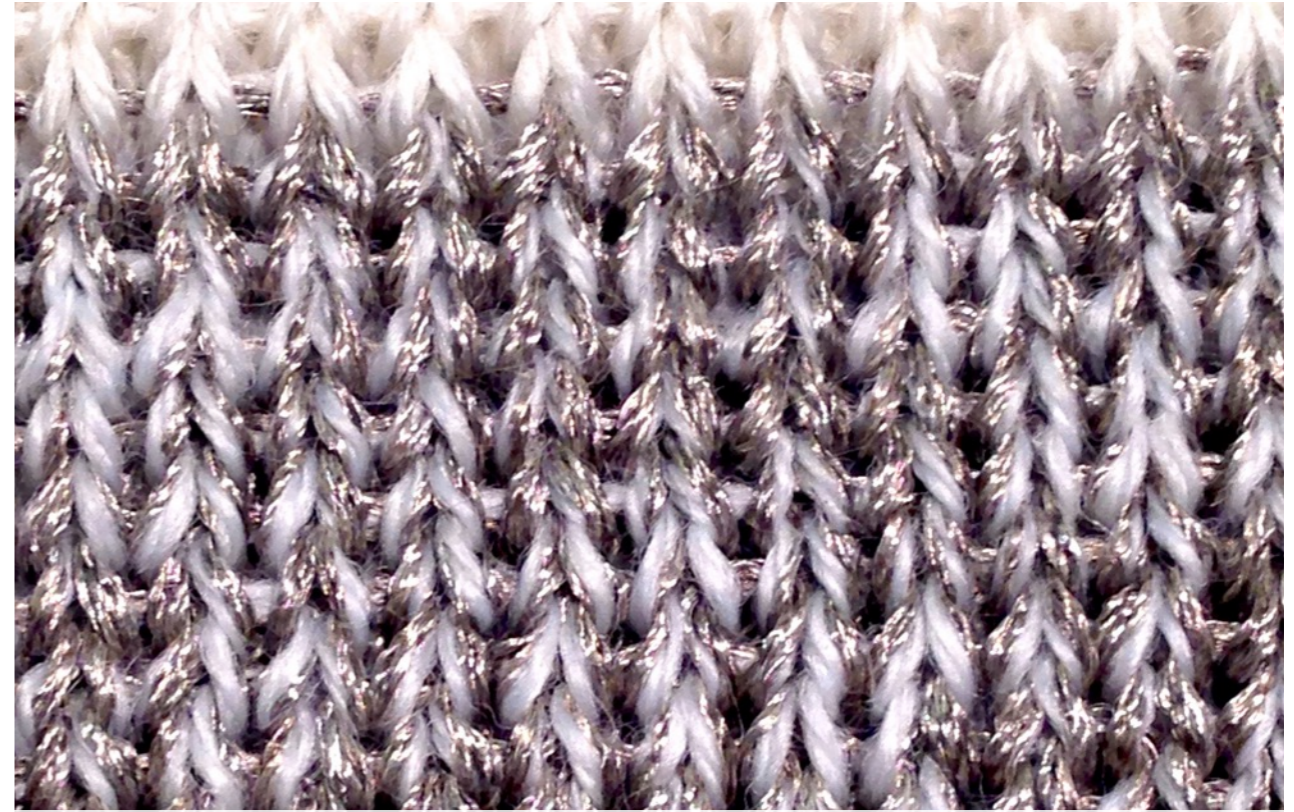
Smart Arse: Textile Pressure Sensing in Trousers



Sophie Skach

Cognitive Science Research Group
Media & Arts Technology Centre for Doctoral Training
School of Electronic Engineering and Computer Science
Queen Mary University of London

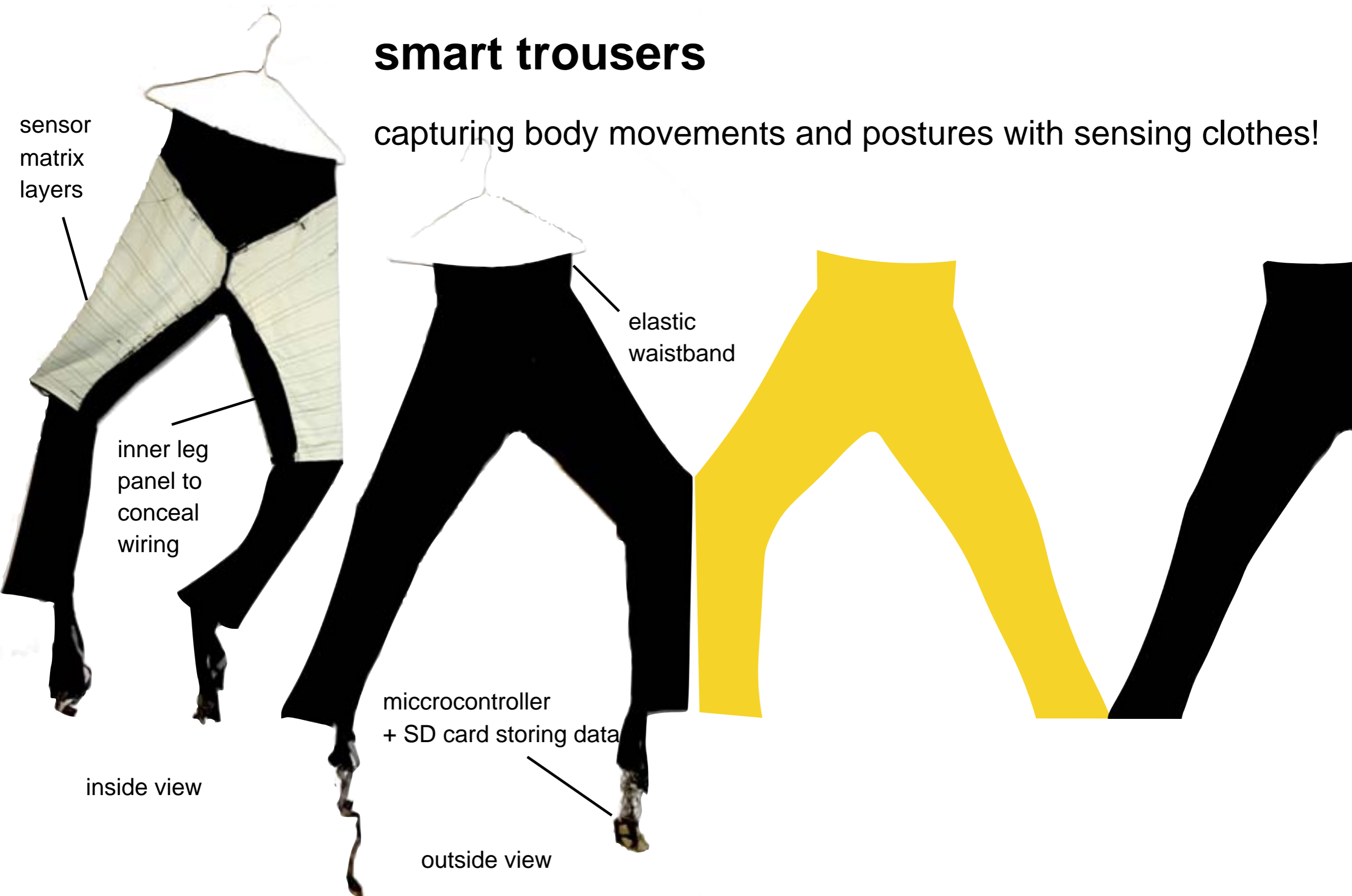
textile sensing systems in clothing



unintrusive, familiar material closest to our skin, following our movements
wearable, ubiquitous interface
appropriate body centric sensing surface

smart trousers

capturing body movements and postures with sensing clothes!

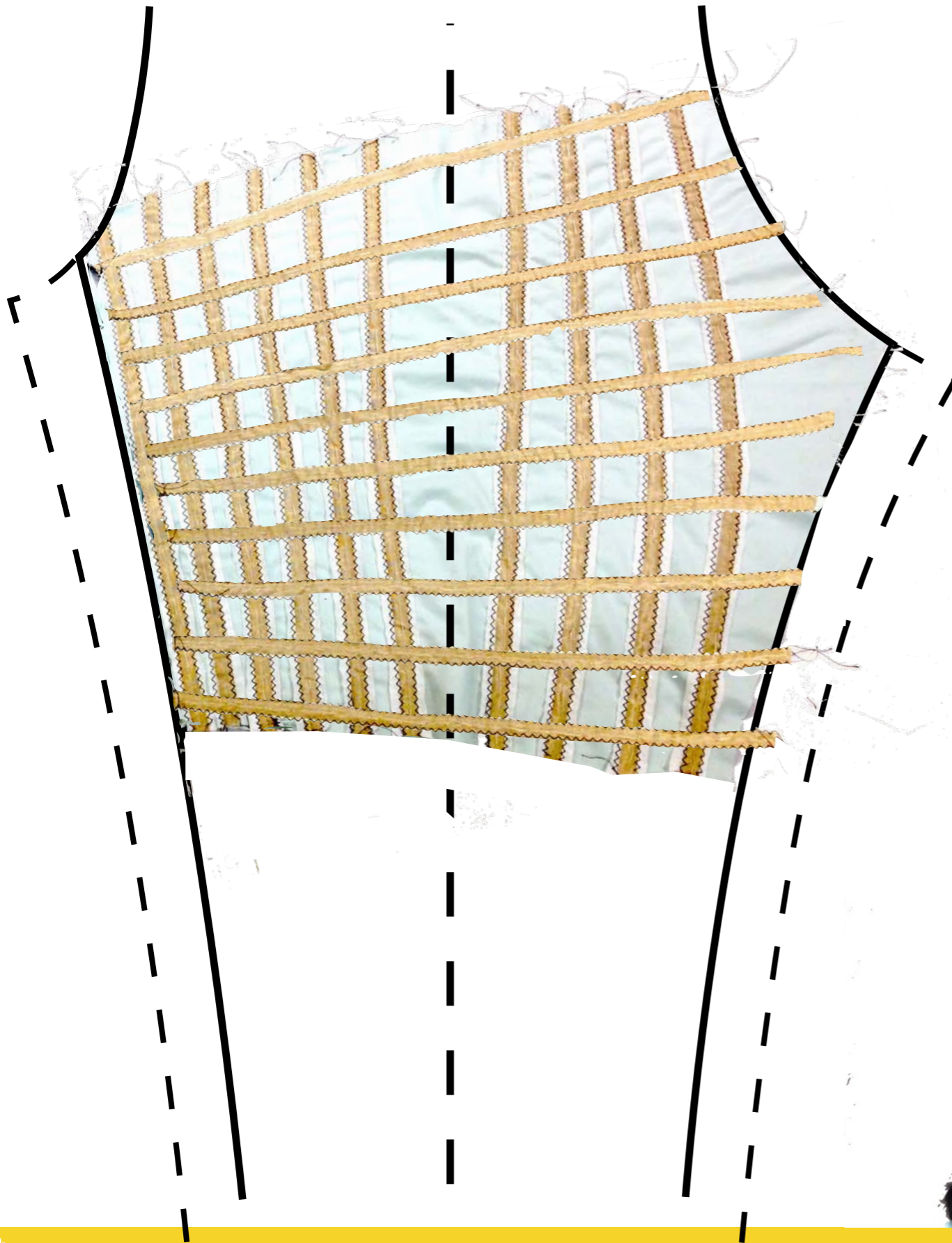




conductive, elastic jersey knit fabric

textile 10x10 pressure sensor matrix, embedded in custom made trousers

conductive and resistive layers around thighs and buttocks

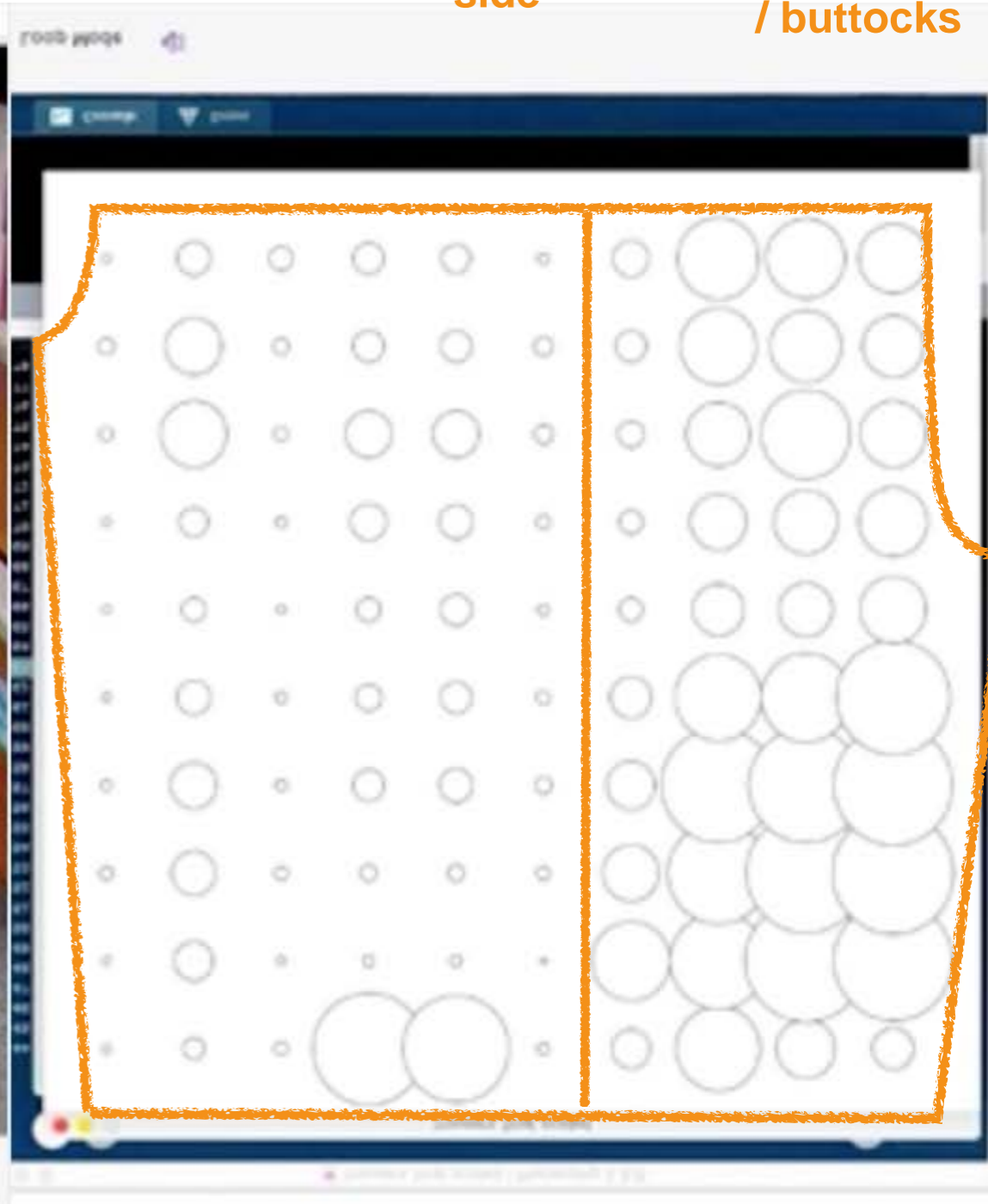




front / crotch

side

back / buttocks



knee

side

back thigh

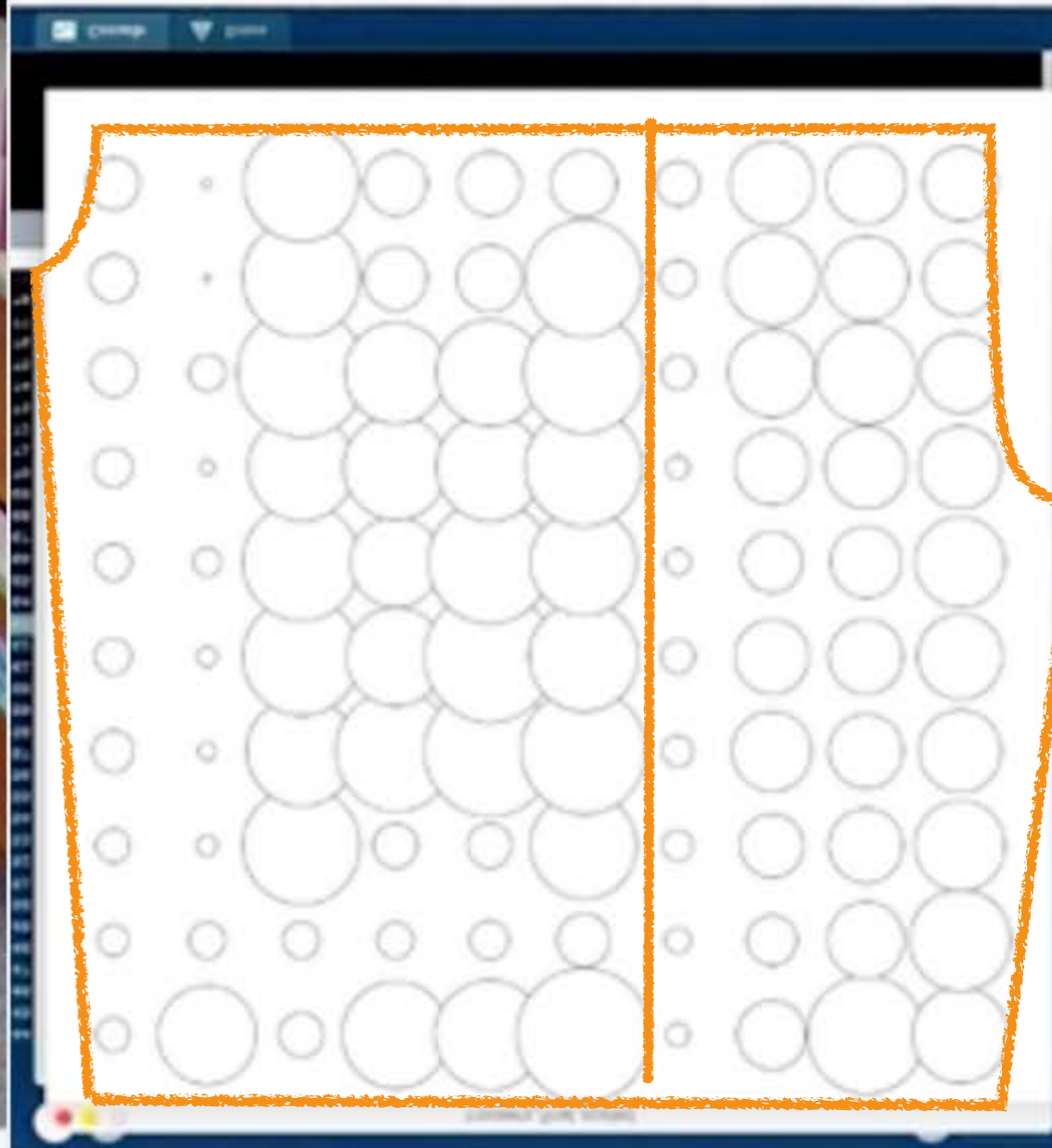
example of pattern distributions of different leg crossing postures (1)



front / crotch

side

back / buttocks



knee

side

back thigh

example of pattern distributions of different leg crossing postures (2)



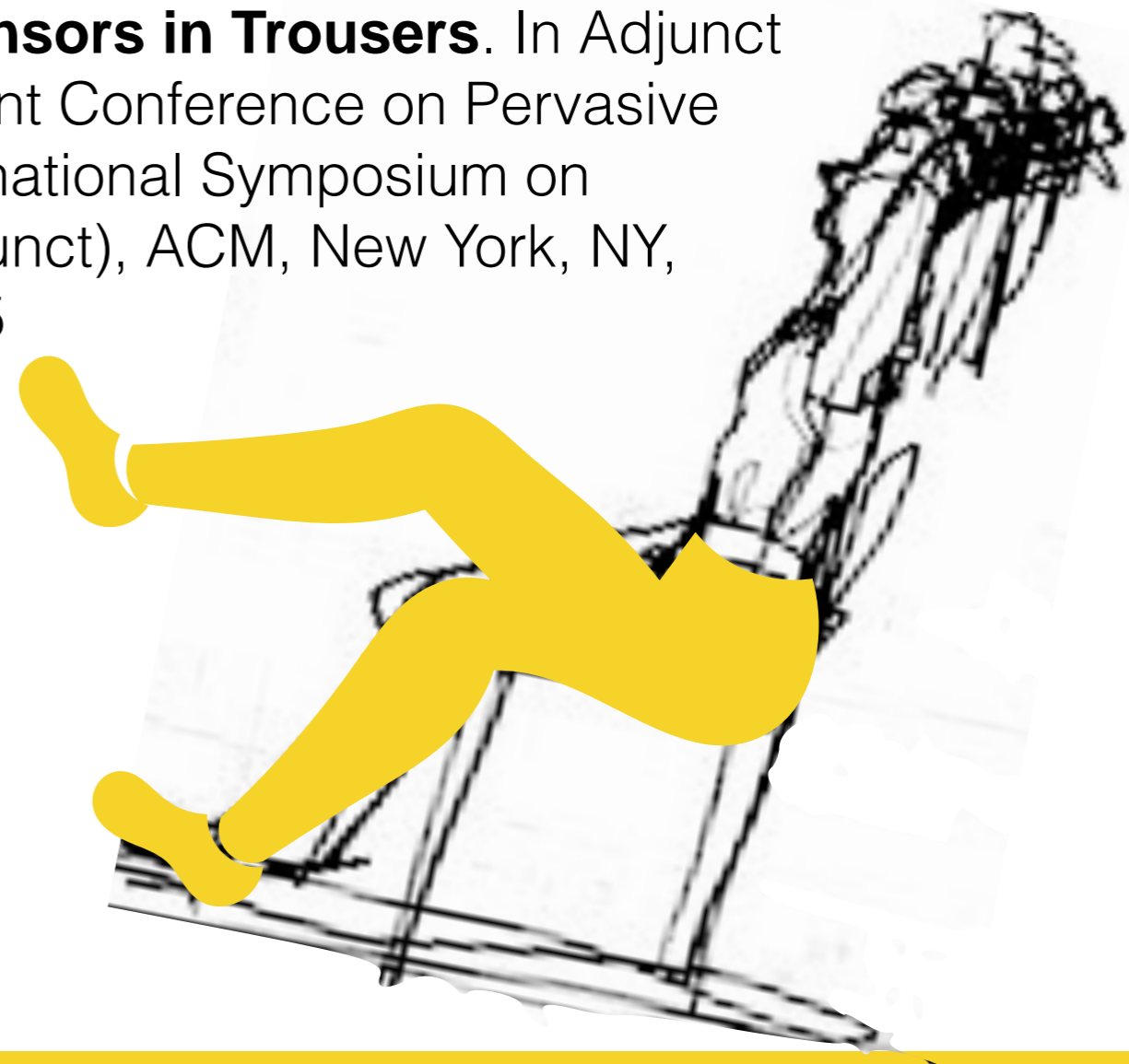
user studies: spontaneous interaction, classifications of different conversational states



trousers detecting who speaks, laughs, listens...

Sophie Skach, Rebecca Stewart, and Patrick G. T. Healey. 2018. **Smart Arse: Posture Classification with Textile Sensors in Trousers**. In Proceedings of the 20th ACM International Conference on Multimodal Interaction (ICMI '18). ACM, New York, NY, USA. <https://doi.org/10.1145/3242969.3242977>

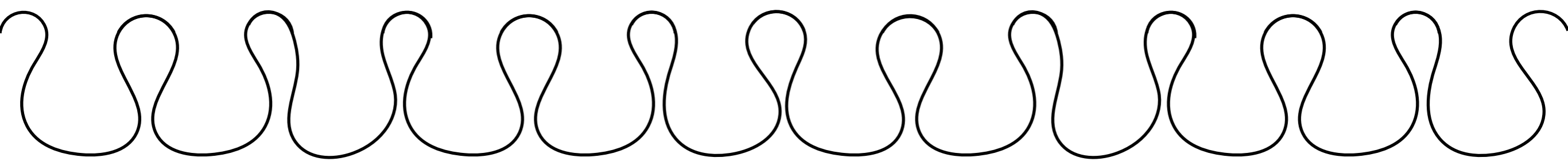
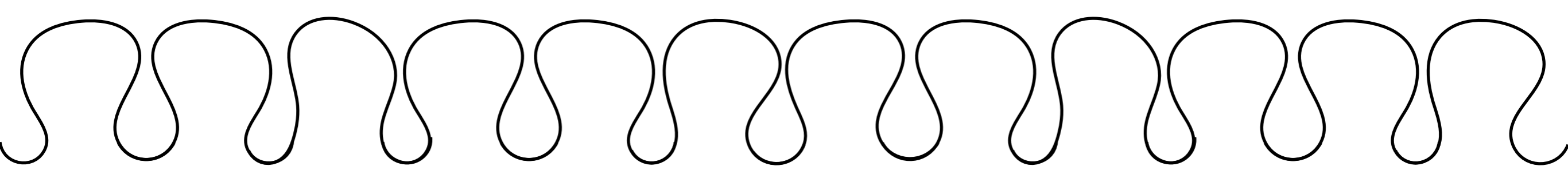
Sophie Skach and Rebecca Stewart. 2019. **One Leg at a Time: Towards Optimised Design Engineering of Textile Sensors in Trousers**. In Adjunct Proceedings of the 2019 ACM International Joint Conference on Pervasive and Ubiquitous Computing and the 2019 International Symposium on Wearable Computers (UbiComp/ISWC '19 Adjunct), ACM, New York, NY, USA. <https://doi.org/10.1145/3341162.3343775>



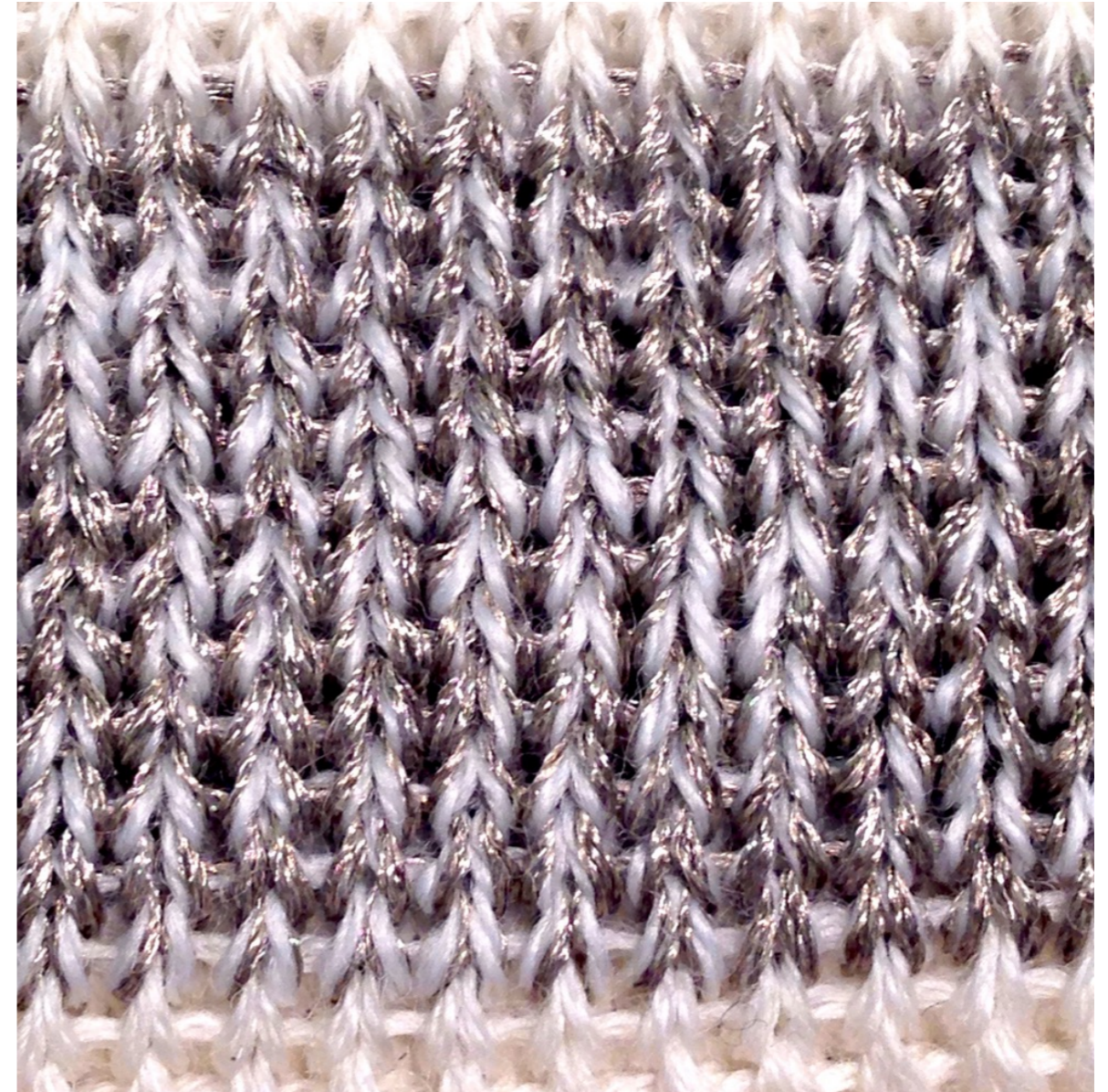
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s.skach@qmul.ac.uk



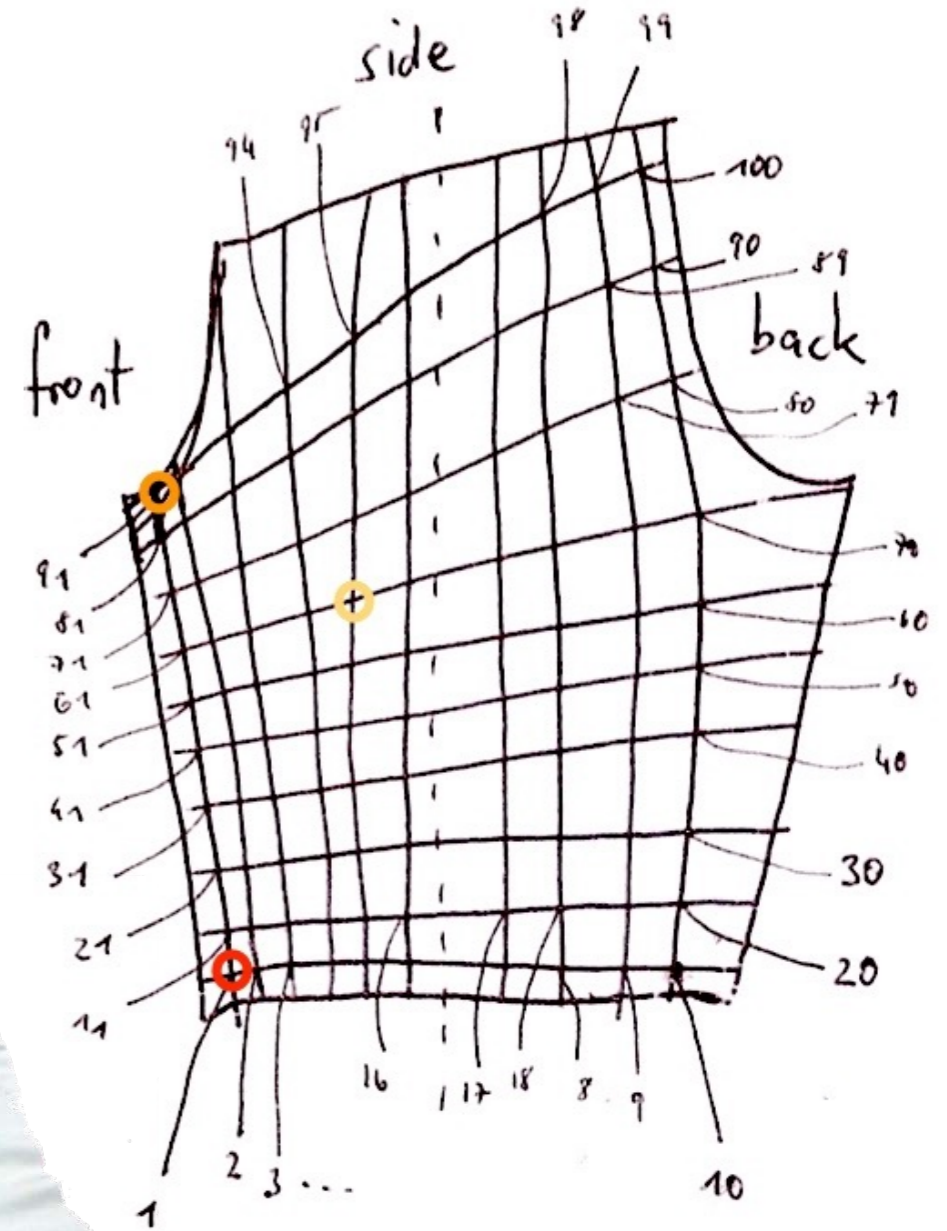
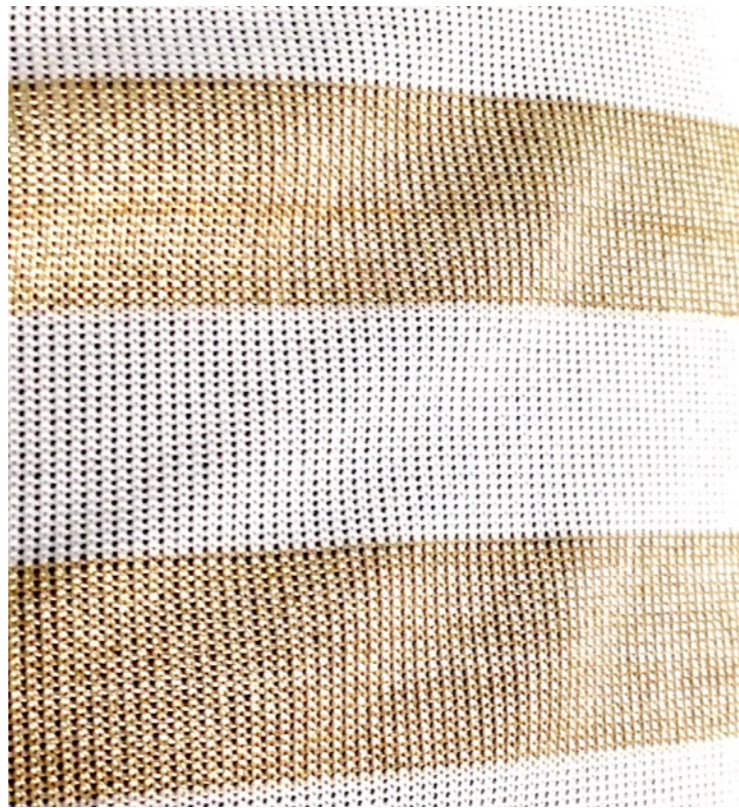


textile sensing systems in clothing

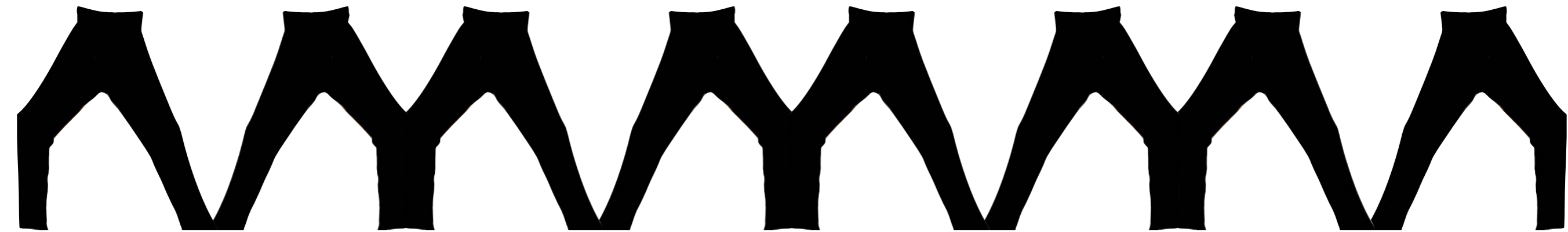








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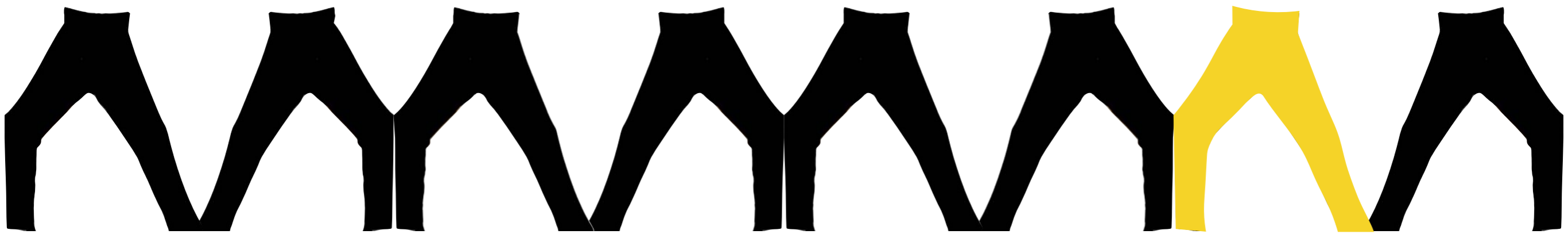
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- Analysis: Machine Learning approaches
- Random Forest classification, 10 fold cross validation, stratified data



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