Texture perception in product design

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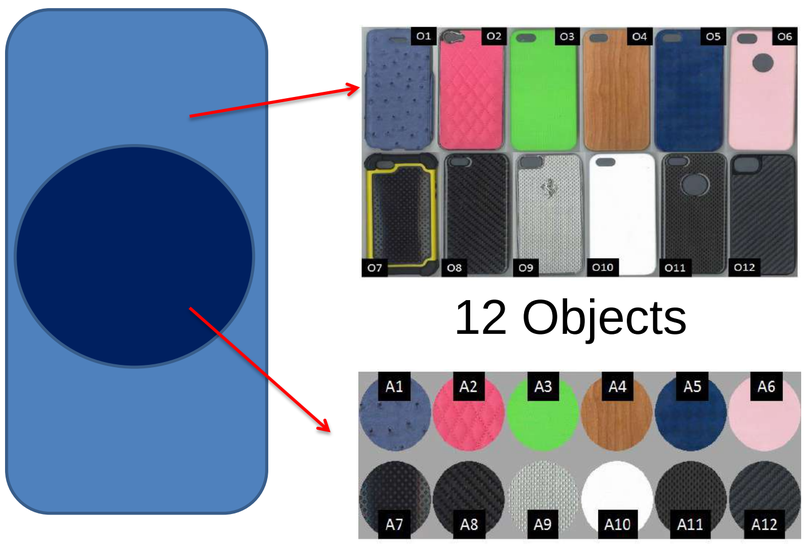
Perceived texture is a synthesis of physiological and psychological response and impression to the geometrical configuration and physical-chemical attributes of the surface or the bulk of materials/objects [1]

Are materials identified in an object and « anonymous » materials perceived the same? A case study.

In projective mapping, both numerical and textual data are collected. Are those two dataset consistent?

Dataset

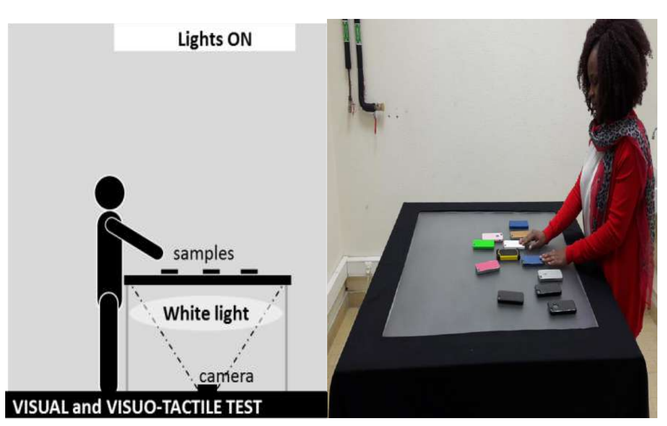
Phone cover cases

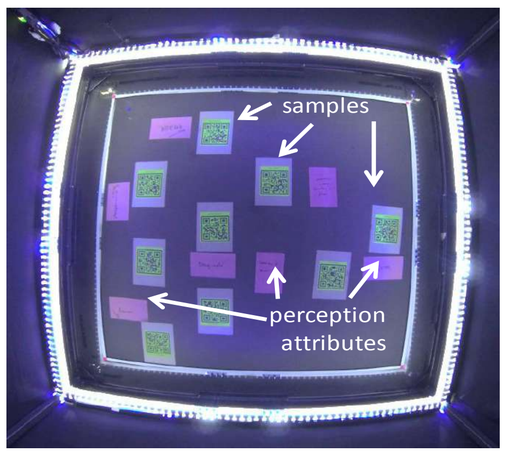


12 Objects

12 « anonymous » materials

Perception characterization





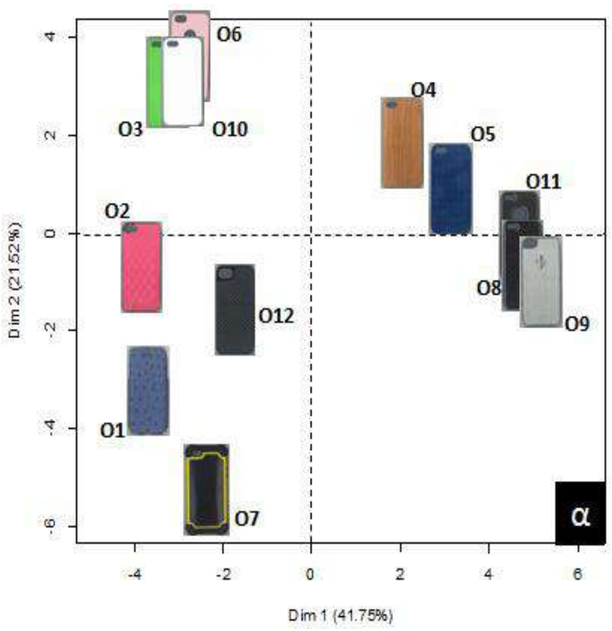
Projective mapping (visuo-tactile) using Nappomatic setup [2] : 23 assessors arrange the samples according their own perceived similarities and differences and then are asked to give descriptors

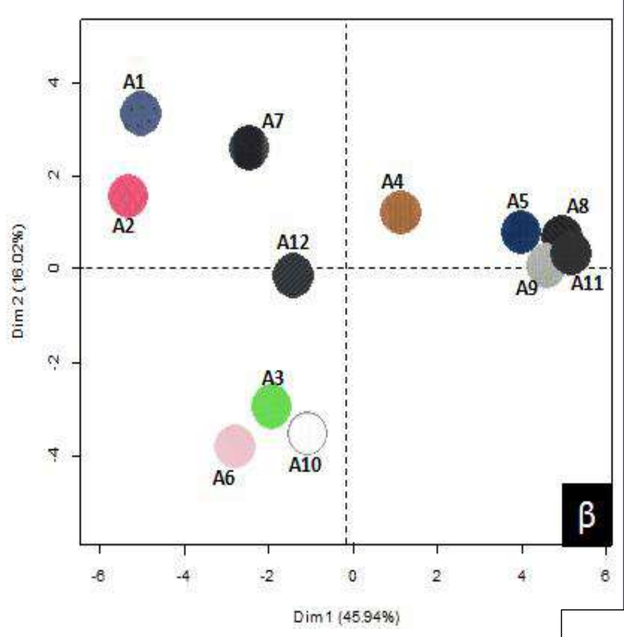
Results

Numerical data

Distances from projective mapping

RV coefficient = 0.93, p-value = $3.79.10^{-5}$





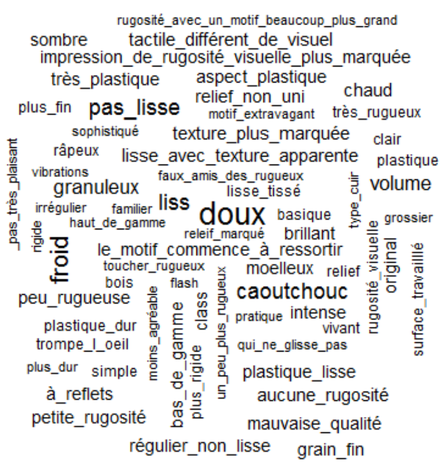
Textual data

Descriptors from projective mapping

130 words for texture-object; 137 words for anonymous-texture

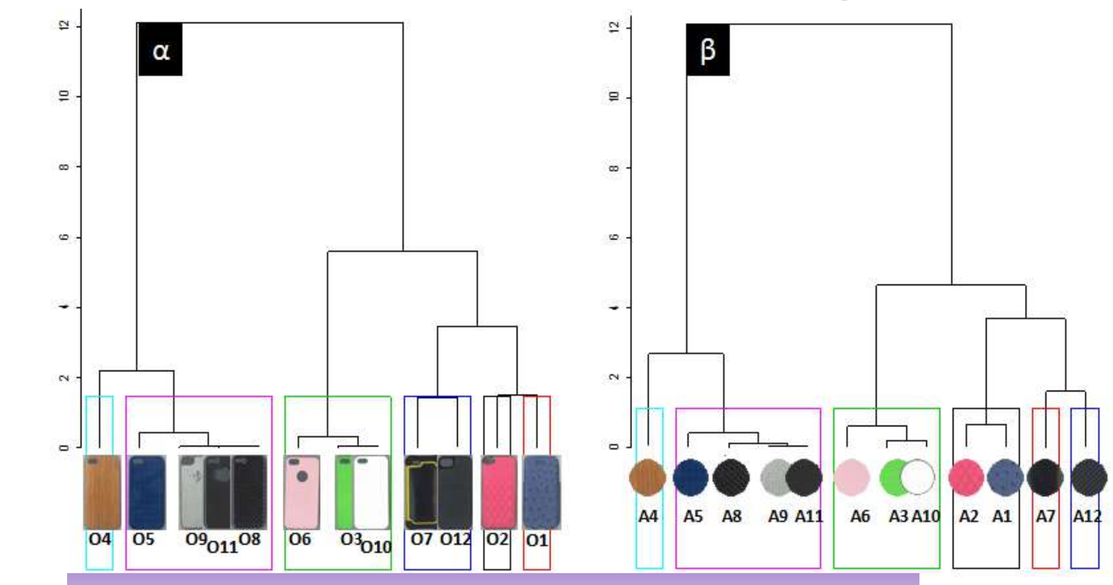
240 differents words for the merge dataset

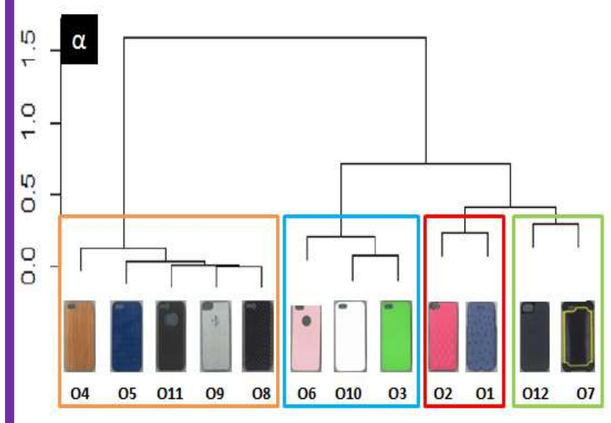
Texture-object word cloud

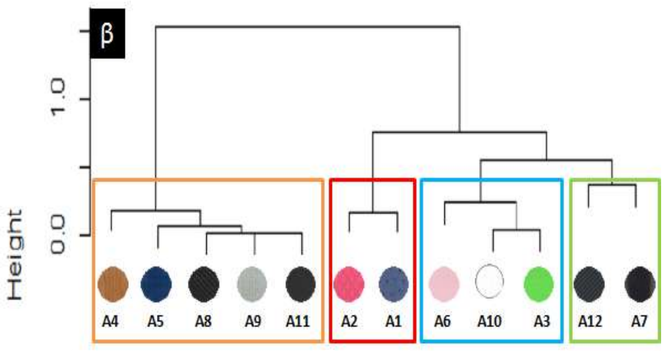


Anonymous-texture word cloud

Hierarchical Clustering VS Hierarchical Clustering







Conclusion

- The texture-object is perceived very similar than the anonymous-material
- Textual data can be used to discriminate material's texture the same way as numerical data

INSPIRING INNOVATION SINCE 1816

[1] Zuo, H., Hope, T., Castle, P., & Jones, M. (2001). An investigation into the sensory properties of materials. 2nd International Conference on Affective Human Factors Design, 500–507

[2] Faucheu, J., Caroli, A., Del Curto, B., & Delafosse, D. (2015). Experimental setup for visual and tactile evaluation of materials and products through Napping® procedure. In *International Conference on Engineering Design 2015 (ICED 2015)* (Vol. in press).

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