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Invited talk

Tactile perception and the role of friction-induced vibrations

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In everyday life, our senses allow us for interacting with the surrounding objects and environment. While sight and hearing are largely understood and mastered, the sense of touch is far away from being fully achieved. We know the "signals" at the origin of the hearing (acoustic waves), which can be recorded and reproduced, as well the signals at the origin of sight (electromagnetic waves), recordable and reproducible. On the other hand, the signals at the origin of touch are still not clearly identified, and thus impossible to be recorded and reproduced. While cognitive psychology allowed for linking the mechanical stimuli with acoustic and optical perception on humans, the lack in the identification of the tactile stimuli is still a barrier to overcome.

Recent works focused on frictional forces and vibrations induced by the scanning of fingertip on a surface, investigating the role of friction-induced vibrations on the discrimination of surface textures. Being tactile perception at the bridge between several fields, from tribology to psychology, passing by neuroscience and engineering sciences, the research is developed within a research consortium (GdR TACT) interconnecting different research laboratories within the different disciplines.