

Proposition for a tutorial workshop

« Touch Analysis Methods »

2024 June 30 afternoon

Purpose

In the context of the French Cluster dedicated to tactile sense, (GDR CNRS TACT 2033), different skills are combined (cognitive science, psychology, material science, mechanics, electrical engineering, ...) with the same purpose, the comprehension of tactile perception. The goal of this tutorial is to give an overview of the different methods of analysis and to illustrate them through concrete studies involving several partners of the cluster, i.e. several complementary approaches.

The following methods will be considered from the brain to the finger: cognitive psychology (perception analysis), electroencephalography (brain activation analysis), microneurography (analysis of the peripheral nerve impulses), and tribology (friction and friction induced vibrations between the skin and a surface). The purpose will be illustrated by examples of studies including tactile devices.

Program

The program includes 5 presentations, each of them relying on an interdisciplinary approach. Different studies and methods used with their complementarity will be presented (foreseen list of speakers).

- **Introduction to Cognitive psychology** (David Gueorgiev, CNRS-Sorbonne University)
Example of hands-on experience
 - Perception analysis from a tactile device – David Gueorgiev (CNRS-Sorbonne University)
- **Introduction to tribology** (to be confirmed)
Examples of hands-on experiences combining **tribology** (finger/surface mechanical interaction) and **cognitive psychology (psychophysics)**:
 - Influence of finger spanning direction on finger/surface mechanical interaction and perception – Jenny Faucheu (Ecole des Mines de Saint Etienne)
 - Textile fabrics tactile simulation from a tactile device – Benjamin Weiland (University of Haute Alsace) and Betty Semail (University of Lille)
- **Introduction to EEG** (Laurence Mouchnino, Aix-Marseille University)
Examples of hands-on experiences Combining **tribology** (finger/surface mechanical interaction), **cognitive psychology** and **EEG** (brain activation):
 - Influence of surface texture on finger/surface mechanical interaction brain activation and perception – (Laurence Mouchnino, Aix-Marseille University)
 - Evaluation of textile fabrics tactile simulation from a tactile device – Jenny Faucheu (Ecole des Mines de Saint Etienne).
- **Introduction to Microneurography** (Mariama Dione, Aix-Marseille University))
Examples of hands-on experience:
 - Skin mechanoreceptor activation from a tactile device – Betty Lemaire-Semail (University of Lille) and Mariama Dione (Aix-Marseille University)