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# Characterization of human skin properties with sounds. The music of the skin

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## Résumé

The friction properties of surfaces can be investigated via acoustic sensors that measure the noise generated during the sliding of the probe on the surface. This work presents a characterization of the human skin using a friction sensor, designed to measure the signal generated during the interaction between the finger of the experimenter and the skin of a subject. A panel of subjects with different skin characteristics (age, hydration, firmness) was measured and supervised learning algorithms were used to infer the typology from the labeled data and the signals of the sensor. Next, a sonification of the signals was designed to make audible the differences between the skin categories. The sonification is based on a sound synthesis of a bowed string musical instrument, the violin, which mimics the interaction of the finger with the skin and constitutes a relevant metaphor. From the synthesized sounds corresponding to different experimental conditions (before and after the application of a cosmetic product), hearing tests were performed with a panel of experts. Results show that noticeable differences between the sounds can be highlighted that could make possible to test the efficacy of a product and to promote it with an original musical universe.

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