

Tactile feedback: Investigating multitouch interaction in 2D

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Open for Master Thesis

Context: Friction reduction based tactile devices are able to change our perception of a flat surface. By using a vibrating plate, which oscillates in the ultrasonic range, its friction with a fingertip is reduced as if lubricated by a thin layer of air or oil. More advanced control can produce the illusion of touching rough surfaces, like the fishscales of a fish for instance.

In the current implementation of the device, piezoelectric actuators are used, because they can operate in the range of frequency, and result in lightweight and efficient tactile stimulator. However, the device is monotouch, and tactile feedback is controlled on a single fingertip, while most of tactile input devices are multitouch. Hence, more advanced devices are required to address multi-touch tactile interaction.

In his PhD dissertation, Sofiane Ghenna describes multimodal control and demonstrates that this control can actually produce 2-finger interaction. He also pointed out that additional modelling and control are needed.

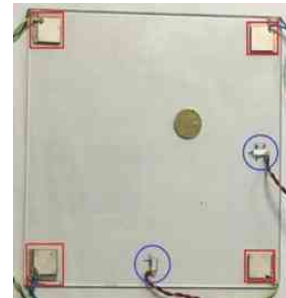


Figure 1 : a tactile feedback device, and a multitouch prototype

Objectives: a 2 fingers prototype is the main objective of the internship. A new design will be proposed, in order to obtain the required performance. The student will follow the manufacturing process of the device. Then, the control of the vibration will be studied. For that purpose, already existing blocks will be reused, in order to reduce the difficulty level of the study. Here, the study resembles that of rotating machines, so direct utilization of the master's courses is expected