# 𝑓rom 𝒑iano to 𝒑iano

## Microgestural implementation for the creation of an expressive keyboard interface.

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## Background

Musicians spend a great deal of time practising their instrument. As a result they develop a unique set of microgestures that define their personal sound: their acoustic signature. (Tits et al., in ICMC Proceedings 2015, pp.102) This personal palette of gestures has been identified as one of the most distinctive aspects of piano playing and is rarely considered in new digital keyboard instruments. (Hemer et al., in Procedia Manufacturing, 2015 pp.6329)

This research bases itself around the concept of the instrument as a communicative vehicle: in order to convey expressiveness the musician must attain fluency with the instrument itself. (Tanaka, in Trends in Gestural Control of Music, 2000)

Taking into account current interface developments, such as Roli Seaboard and TouchKeys, there is a need to develop digital instruments able to convey expressiveness in a musical manner. The analysed interfaces have achieved this goal by modifying the keyboard interface in order to accommodate physical ways of transforming microgestures into control parameters.

## Aims and Methodology

This research aims to achieve a high level of expressivity without changing the keyboard instrument itself or requiring additional technique, using Google's Soli, a radar based motion capture device.

The presented research proposes to create an interface for expressive digital performance based around musicians' needs and technique. This will enable classically trained musicians to easily approach electronic and digital interfaces, applying their already learned gestures to new environments.

Throughout the creation of technology probes, that will enable a continuous evaluation of the system during all the steps of its development, and user experience questionnaire, the interface will be tailored to the musician itself. A deeper quantitative analysis will be obtained from the interpretation and observation of the raw sensor data when performing microgestures.

## Outcomes

The outcome of this research will enable musicians wider control over digital sound processing, by implementing gestural sound control drawing upon pre-learned technique.

Further observations will be conducted to identify which musicians will mostly benefit from the interface analysing their musical background, level of expertise on the instrument and familiarity with digital instruments and music environments.

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