

## From the Body with the Body: Performing with a Genome-Based Musical Instrument

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### Abstract

**INTRODUCTION:** In this paper we present Silico, a new Digital Musical Instrument which ideally represents the performer itself. This instrument is composed by two parts: an interface (a sensor glove), which relies on the movements of the performer's hand, and a computational engine (a set of patches developed in Max 7), which generates sound events based on the genomic data of the performer.

**OBJECTIVES:** We want to propose a new reflection on the relation between the body and musical instruments. Moreover, we aim to investigate the voluntary and involuntary aspects of our body, intended as a starting point for a musical performance. As a metaphor of these two layers, we used here the hand and the genome of the performer.

**METHODS:** We have investigated our objectives through the whole design process of a Digital Musical Instrument, using a practice-based approach.

**RESULTS:** Our system is a multilayered composed instrument which maps its computational part and its interface on the performer's body. Silico can be used as a standalone musical instrument to generate music in real time.

**CONCLUSION:** Our works shows a new path about the use of genomic data in a musical way, as a new perspective of human-computer interaction in a performative contexts.

**Keywords:** human genome, interaction design, Digital Musical Instrument.

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### 1. Introduction

The human genome is the genetic material in each cell of a human body. Since its discovery in the 90s, musicians and sonic artists have been attracted to use it as a mean to generate sound [1, 2, 3]. Different authors have developed different methods to sonify the genome, but they all tend to rely on direct mapping between some genome data and the sonic output.

In this paper we propose a fresh look to using genome for musical purposes, by presenting Silico, a DMI, whose computational engine is based on the

genome of the performer, while the interface is based on the hand of the performer. Our proposal is to use the genome as a basis to design a new instrument rather than to directly mapping to sound parameters. To do this, we rely on the typical computational engine/interface distinction that characterises Digital Music Instruments (DMIs) [4]. In particular, we propose to use the genome to define limits in the computational engine of a DMI that can then be played through an interface. The two elements of the instrument constitute a multilayered representation of the dichotomy between the body as what we inherited, that we cannot change, and the body as the tool that allow us to act: the engine represents the genome, the inherited material that constitutes the body, and the interface is

















