I AM AN INSTRUMENT

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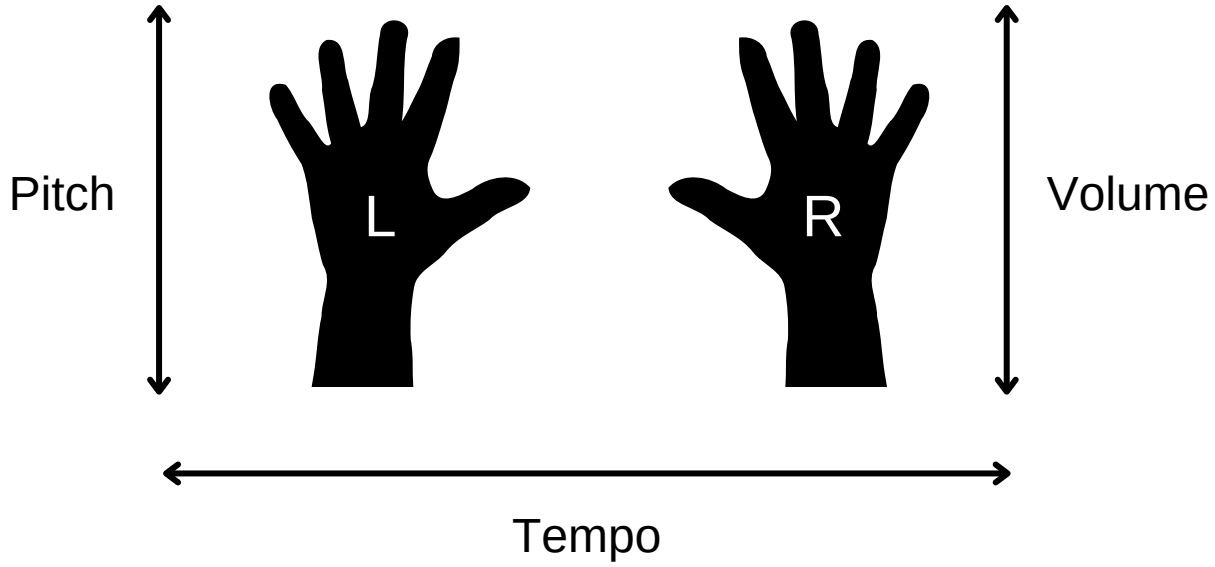
I Am An Instrument is an interactive sound-art installation that uses computer vision to map gestural data to a generative music algorithm, facilitating the creation of music in new and meaningful ways.

A generative audio feedback system serves as the basis for the sound generation module. This module is derived from Curtis Roads' *Granular Synthesis*, a process by which the changing combination of thousands of micro-acoustic events known as grains are used to form animated and complex soundscapes. Laban Movement Analysis, a method used to describe and interpret all varieties of human movement, enabled the unique physical representation of three contrasting instruments by four movements. By means of a single RGB camera, a pose detection model infers 75 three-dimensional skeletal coordinates on the user, passing this data to a machine learning algorithm which classifies incoming pose data into one of the four gestures. Parameterisation of the sound module allows the user to affect the pitch, tempo, and volume of the selected instrument.

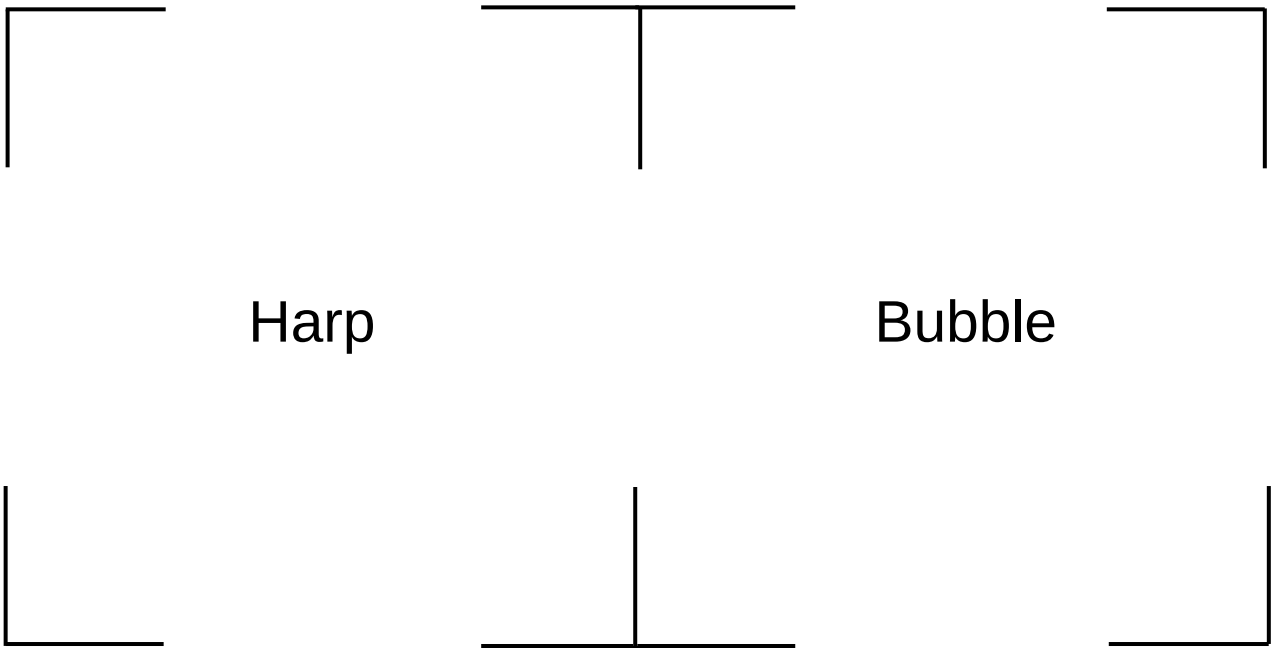
The user can select between two interaction methods: through use of hand positions to affect the instrument parameters (tempo, pitch and gain), or using gestures to identify an instrument and the execution of that gesture to control the instrument's parameters.

Hands

Pitch is controlled by height of the **left hand**
Volume is controlled by height of the **right hand**
Tempo is controlled by **horizontal distance between hands**



Instrument is selected by **user location**

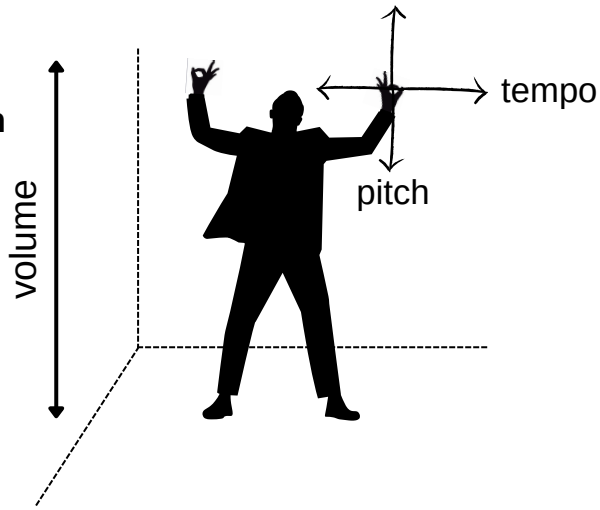


Gestures

Bubble instrument is activated by **flicking**
Harp instrument is activated by **floating**
Wave instrument is activated by **punching** or **kicking**

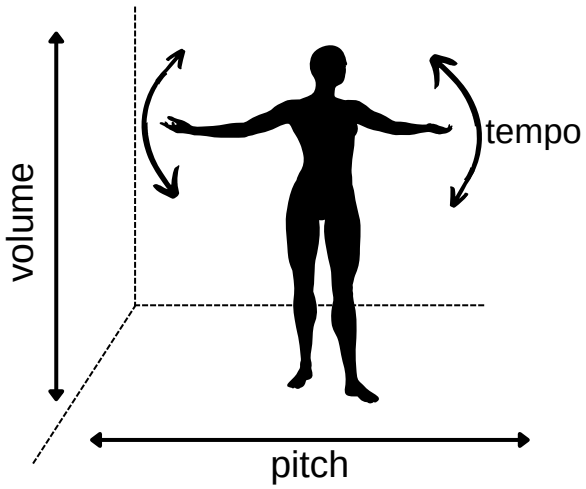
Bubbles (flick)

Tempo affected by **horizontal hand location**
Pitch affected by **vertical hand location**
Volume affected by **user height**



Harp (float)

Tempo affected by **arm angle**
Pitch affected by **user location**
Volume affected by **user height**



Waves (punch/kick)

Tempo, pitch and volume unaffected