Musical Instrument Building

with I-CubeX

by Axel Mulder

Contents
1. What is I-CubeX?
2. What is Live?
3. I-CubeX + Live demo
Sensors & Interface, Software and Support

http://ICubeX.com
Sensors, Interfaces & Software since 1995
Sensor technologies

- Piezo-resistance (FSR, straingauge)
- Piezo-electricity (also PIR)
- Ultrasound TOF
- RF TOF (radar)
- Bio-potentials (EMG, EEG, EOG)
- Hall effect
- Electro-magnetic field (capacitance, inductance)
- Electro-optical (camera, LED)
- Microwave radiation
I-CubeX basics

Let me show you that live ...

See also http://icubex.com/about
Interfaces

- Wi-microDig: wireless
- USB-microDig: USB
- microDig: MIDI
- Digitizer: MIDI, hi-res
microDig
MIDI sensor interface

8 inputs, 10 bit resolution, 1562 Hz sample rate (max), I²C capable
USB-microDig
USB sensor interface

8 inputs, 10 bit resolution, 6250 Hz sample rate (max), I²C capable
Wi-microDig
Wireless sensor interface

8 inputs, 10 bit resolution, 5760 Hz sample rate (max)
100 meter range (Bluetooth class 1), I²C capable
I-CubeX applications

- Music
- Dance
- Installation Art
- Exhibit Design
- Game Dev
- Biomechanics
- Behaviour Research

*need picture!*
I-CubeX origins

PhD goal

Enable creation of musical instruments that can be adapted to motor skills a performer may ..

.. already have eg. cellist changing to trumpet

.. prefer eg. novice prefers cellist gestures, but trumpet sound

.. be limited to eg. dwarf wanting to play upright base

>> Virtual Musical Instruments

PhD “experiment”: SoundSculpting
Sound Sculpting

Axel Mulder
Sidney Fels
Kenji Mase

ATR MIC Research
What is Live?

- Made by Ableton, Germany
- Sequencer
- Sampler
- Tracks: MIDI, audio
- Extendable: VST, Max for Live
- Controllable: MIDI, keyboard
I-CubeX + Live demo

- Touch, Spin2D (sensors)
- USB-microDig (digitizer)
- Dig4Live (Max for Live device)
- Pan flute + Resonator (sound model)

>> eDidgeridu