Musical Instrument Building *with I-CubeX*

by Axel Mulder

Contents

Sensors & Interface, Software and Support

http://ICubeX.com

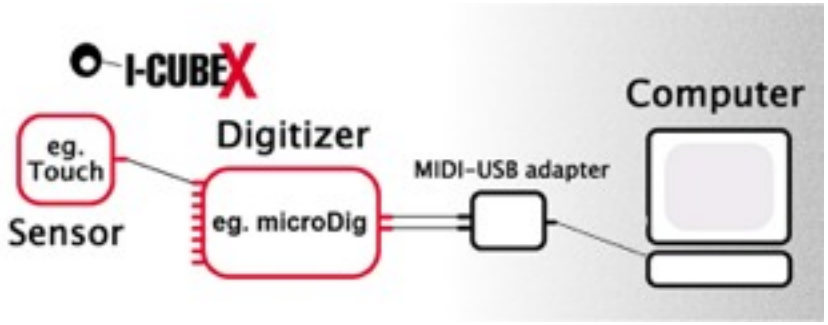
Sensors, Interfaces & Software since 1995

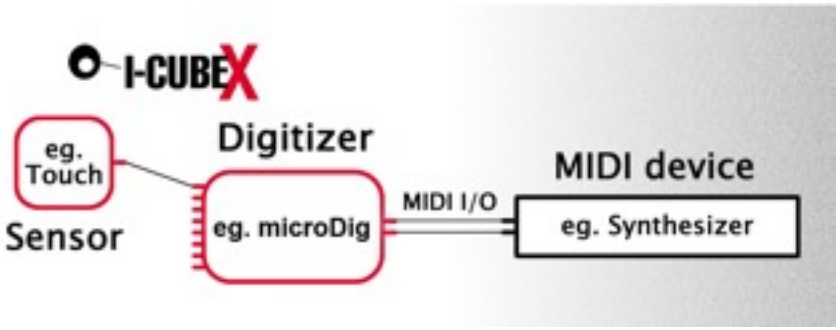
Sensor technologies

- 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

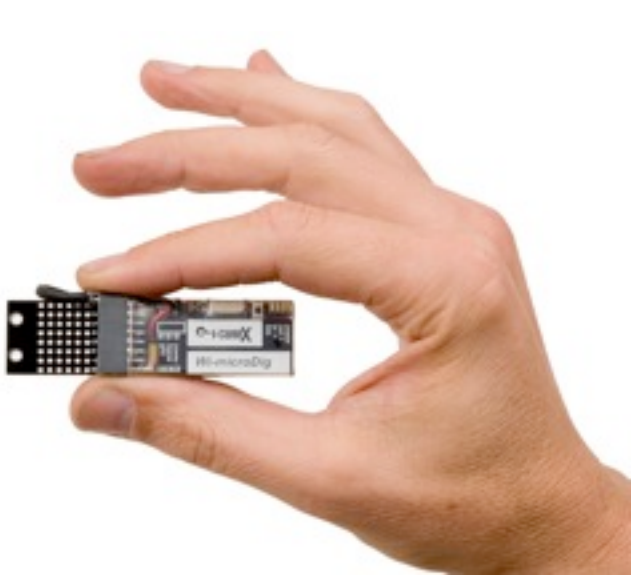
USB-microDig

USB sensor interface

8 inputs, 10 bit resolution, 6250 Hz sample rate (max), I²C capable

Wi-microDig

Wireless sensor interface

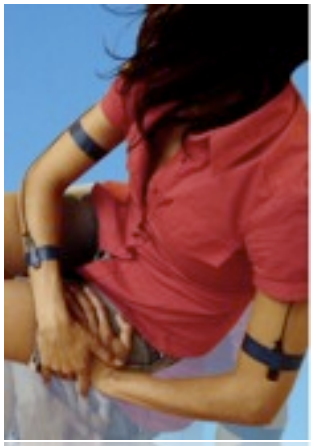


8 inputs, 10 bit resolution, 5760 Hz sample rate (max)

100 meter range (Bluetooth class 1), I^2C capable

I-CubeX applications

Music



Dance

Installation Art

Exhibit Design

Game Dev

Biomechanics

need picture !

Behaviour Research

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