

Cheong Li

Impromptu II

for alto flute and live electronics

2011

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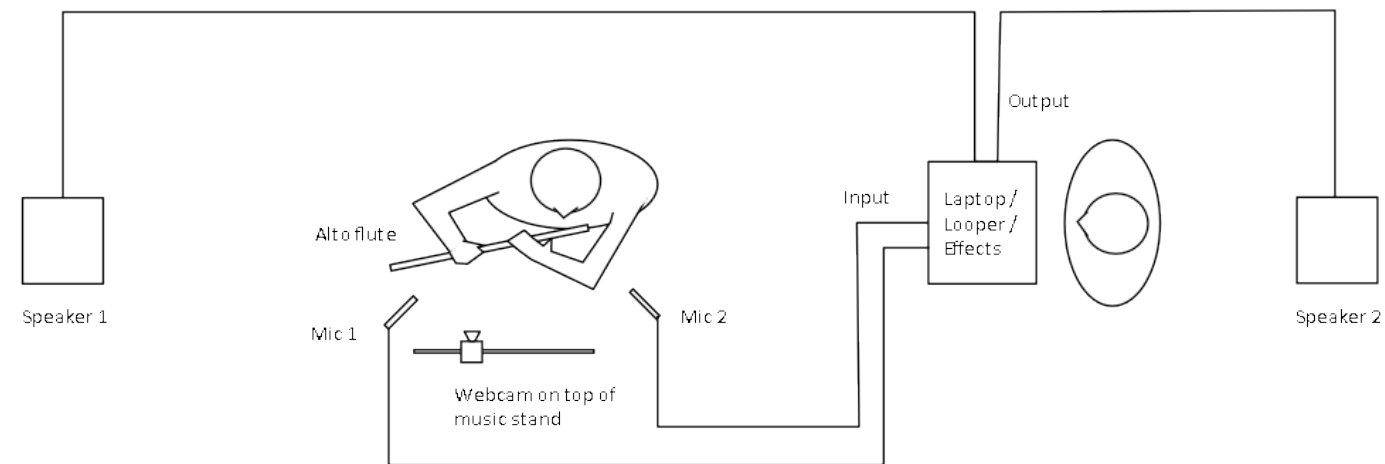
by Cheong Li

Approximate duration: 5-6 minutes

This is the second piece of the *Impromptus* series, which incorporates elements of improvisation in the composition. The flautist has the freedom to decide pitch, rhythm and timbre at certain moments. Live electronics interacts with the alto flute in many ways, imitating the flute part by looping and delay, building up a cluster of sounds by means of pitch-shift and processing the flute sound with various effects (e.g. distortion and flanger). The flautist's motion is also tracked by webcam to trigger pre-recorded sound samples.

The original version was premièred by Rachel Beetz in the Auditorium, Maccagno, Italy on 18 July 2011 as part of the SoundSCAPE Festival. This revised version was premièred by Christian Färnqvist in Chimera Concert at Sir Jack Lyons Concert Hall, York on 9 Dec 2011.

Layout



- Two microphones are preferred, with one put close to the finger holes to pick up the finger-click sounds and another one near the mouthpiece to pick up sounds from the mouth, e.g. lip pizzicato and breathing.
- A webcam should be clipped on top of a music stand, to track the flautist's movements.
- A pair of stereo speakers should be placed at a distance apart from the flautist, with a volume level similar to the flute, such that it sounds like an ensemble of flutes playing together.
- Equipment for live electronics can be put on stage, or at anywhere as long as the flautist and the electronic musician can see each other.

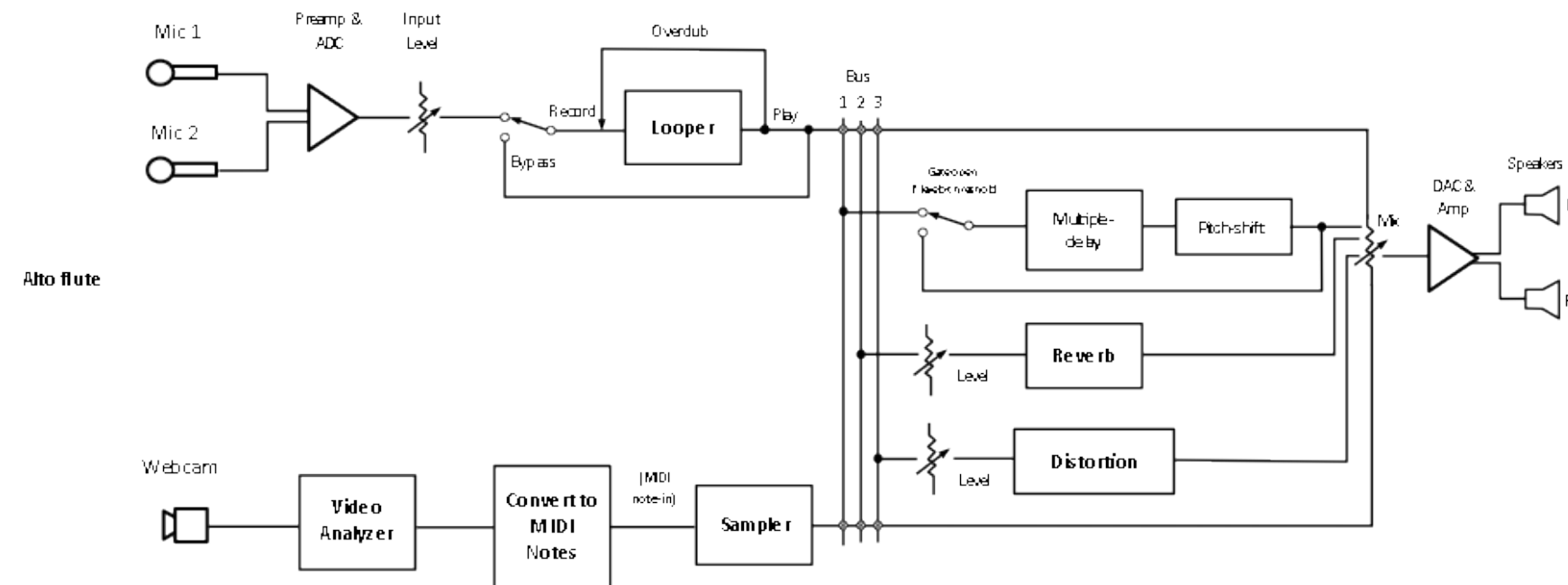
Live electronics

The flautist's playing is picked up through the microphones. The sound signals are processed by changing the timbre (e.g. distortion, flanger and wah-wah effect), by delaying the playback (e.g. looping, sampling, multiple-delay) so that the electronic part sounds like an exact or inexact imitation and by means of multiple pitch shifts (transposition), a cluster of sounds is produced. Some sound effects are triggered only when the flautist plays at a volume louder than a certain threshold (by adding a "gate" before the effect). A webcam (optional) can also be used to track the flautist's hand and head movements to trigger sound samples.

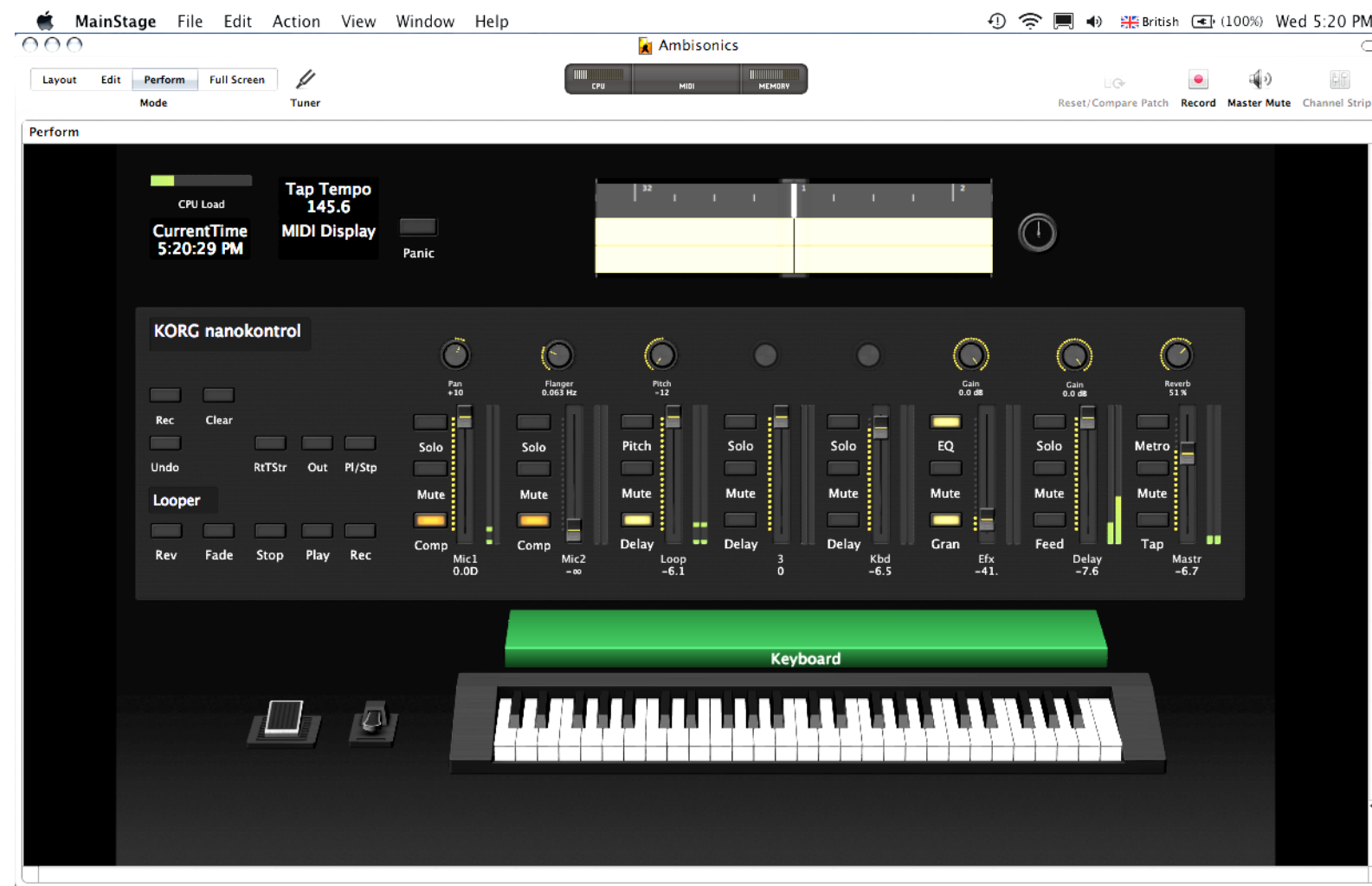
I used Logic Mainstage (a Mac software for live music performance) and KORG nanokontrol (a controller surface) for live sound processing and Quartz Composer for motion tracking. In the revised version, I used Max/MSP/Jitter for motion tracking. However, any electronic musician could reproduce this piece even if he is not using the same equipment, provided that he has the software or hardware that can perform the following tasks:

1. Looping – to record, overdub and playback sound samples.
2. Multiple delay (to imitate the flute sound exactly) combined with gate (to imitate the flute sound partially)
3. Multiple pitch-shifts (to copy and transpose the sound at intervals above or below)
4. Distortion, flanger, wah-wah or other effects that can change the timbre of the sound
5. Reverb (optional) - If the performing environment has a dry acoustics, reverb may help to blend the flute's sound and the sound from the speakers.
6. A controller surface for controlling the above-mentioned by faders, knobs and buttons
7. A webcam (optional) to track the flautist's hand and head motion, and any software that converts the data into MIDI notes to trigger sound samples.

On the right is a simplified chart of the signal flow:



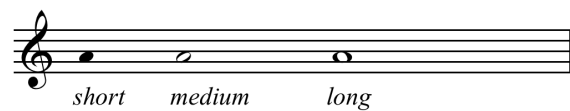
I created a template in Logic Mainstage to control the volume of microphone inputs, a looper and three auxiliary channels for sound effects. This graphic user interface helps anyone who has a KORG nanokontrol or similar controller surface to respond to flute playing efficiently.



Motion tracking can be done by Quartz Composer or Max/MSP/Jitter. The image from the webcam is captured and analyzed by the program to generate MIDI signals. The more the flautist moves, the louder and denser the created sound is. In the first performance, I used a modified version of the “Webcam Piano” patch (<http://memo.tv/node/752>) developed by Mehmet Akten. In the second performance, I have created my own Max/MSP/Jitter patch based on cv.jit object for motion tracking (<http://jmpelletier.com/cvjit/>), which is free to download, open-source and provided in public domain. Motion tracking is used to trigger flute finger-click and lip-pizzicato sound samples.

Performance direction

Flute



noteheads represent approximate note durations



feathered beams represent the notes should be played from slow to fast or from fast to slow



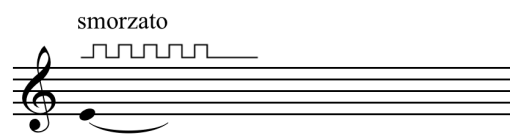
notes without noteheads represent arbitrary pitch, played in a gesture approximately shown by the notation



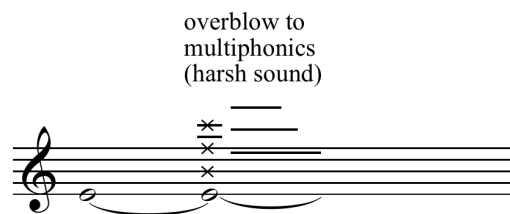
improvise with the given materials in the box



breath / short pause / long pause



smorzato: regular restriction of air-flow by partial compression of lips.



multiphonics (arbitrary pitch)




vibrato: wavy lines indicate the approximate amount of vibrato



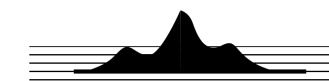
quasi-pizzicato (tongue or lips pizzicato): fingering a pitch and producing a hard "T" with the tongue or with a forcible opening of the lips that sounds like a violin pizzicato.

Live Electronics

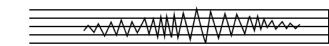
Graphic notation of the live electronics part is only suggestions of possible timbres and textures, which does not need to be followed exactly. The player can follow his/her own instinct to react instantly to the flautist’s playing.



increase the number of layers of flute sound to form a cluster, with each layer transposed to a different pitch

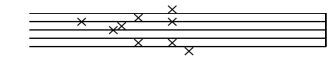


a cluster of flute sounds that varies in pitch and volume

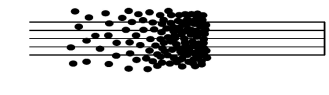


distorted sound

quasi-pizz. sounds



lip pizzicato sounds samples



any short, staccato sounds (e.g. finger clicks) that gradually become denser

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A (Improvise with the boxed patterns in any orders, with any grace notes on any pitches, but always returns to pitch D at the end of a phrase)

Alto Flute (in G)

pp

breathy → norm. overblow to harmonics flutt. *mf*

Electronics

(imitation) *pp*

(Improvise in a similar way, but always returns to pitch A at the end)

A. Fl.

flutt. *f* *mp* *f* *pp* smorzato

louder flute volume triggers random granular synth sounds

A. Fl.

① overblow to multiphonics (harsh sound) ② ③ overblow to multiphonics (harsh sound)

(overdubbing + pitch shift)

multiple delay + distortion (cluster) ① (echo) *mf* *pp*

A. Fl.

breathy → normal ④ overblow to harmonics alternate fingerings of harmonics *pp* Improvise with the given pitches in any order, any articulations

(delayed imitation + pitch shift) *pp*

A. Fl.

(Improvise by alternating B with any other pitches)

⑤

ppp

⑥

p

f

A. Fl.

(Improvise by alternating B with any other pitches)

flutt.

p

ff

ff

Improv. (any pitches in a generally downward trend)

pp

A. Fl.

(bend)

⑦

mp

(random key clicks with right-hand fingers)

pp

(random key-clicks)
random pizzicato-like sounds

(bend)

f

f

random pizzicato-like sounds

A. Fl.

(from slow to fast)

⑧

p

f

f

p

(from fast to slow)

⑨

Repeat the given pitches in any order

A. Fl.

pp

(overdubbed and gradually become a cluster)

quasi-pizz. *p*

normal

normal

Detailed description: This system contains two staves. The top staff begins with a box of eighth notes, followed by a box labeled 'quasi-pizz.' with 'x' marks indicating pizzicato, then a box labeled 'normal' with eighth notes, and finally a box with a wavy line and a slur. The bottom staff has a box of eighth notes, followed by a box with eighth notes and a slur, then a box labeled 'normal' with eighth notes, and finally a box with a wavy line and a slur. Dynamics include *pp* and *p*.

(random pitch, gradually leaping larger intervals)

A. Fl.

f

pp

f

(distorted)

Detailed description: This system contains two staves. The top staff starts with a box of eighth notes with a slur and an upward arrow, followed by a box with a slur and a downward arrow, then a box with a slur and a downward arrow, and finally a box with a slur and a downward arrow. The bottom staff starts with a box of eighth notes with a slur, followed by a box with a slur and a downward arrow, and finally a box with a slur and a downward arrow. Dynamics include *f*, *pp*, and *f*. A section is marked '(distorted)'.

Free Improvisation
(using material ① - ⑨)

A. Fl.

mf

normal *p*

quasi-pizz.

pp

ppp

Detailed description: This system contains two staves. The top staff starts with a box of eighth notes with a slur, followed by a box labeled 'normal' with eighth notes, then a box labeled 'quasi-pizz.' with 'x' marks, and finally a box with a slur. The bottom staff starts with a box of eighth notes with a slur, followed by a box labeled 'normal' with eighth notes, then a box labeled 'quasi-pizz.' with 'x' marks, and finally a box with a slur. Dynamics include *mf*, *p*, *pp*, and *ppp*.

breathy

norm.

overblow to harmonics

flutt.

pp

mf

flutt.

f

mp

f

smorzato

pp

(random pizz. sounds)

pp

Detailed description: This system contains two staves. The top staff starts with a box of eighth notes with a slur, followed by a box labeled 'breathy' with a slur, then a box labeled 'norm.' with a slur, and finally a box labeled 'overblow to harmonics' with a slur. The bottom staff starts with a box of eighth notes with a slur, followed by a box labeled 'flutt.' with a slur, then a box labeled 'flutt.' with a slur, and finally a box labeled 'smorzato' with a slur. Dynamics include *pp*, *mf*, *f*, *mp*, and *pp*. A section is marked '(random pizz. sounds)'.