NIME - 2010



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The metaphor: a human size optical pickup head



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Multiple "optical heads":



each spot can be an instrument string or a musical track

hierarchy in the spot interaction (one spot can modulate the sound parameters of another)



...to harness the power of a pure graphical language





of course we are not the first and certainly not the last to try this...



Oscar Fischinger sound scrolls (circa 1930)





Golan Levin "Scrapple" (2005)

reacTable (modular synthesizers)



Line-surface-noise (2008)

(in collaboration with Philippe Chatelain)



 sweeping laser line over Philippe's paintings (rotating)

• people as "scratches" over a vinyl...

Problem: difficult if not impossible to create an usable mapping

scoreLight basic image-to-sound mapping





- * Pitch controlled by the inclination of the lines: rotation = transposition
- * Pitch is continuously modulated by the curvature of the lines: kiki/bouba effect
- * Corner detection: discrete sounds.
- * Bouncing on lines: percussion, rythms
- * Interaction between spots and intermodulation: effects control



Low level sound mapping for granular synthesis



Feedback on the pick-up dynamics...



Working principle





(originally used for gesture tracking)



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Main features of the "smart laser projector":

- no camera, no image processing
- sample rate: 50 to 500Hz -> granular synthesis!
- perfect image registration by construction
- markerless tracking up to 3m/s
- miniaturization possible (MEMS)
- can write alphanumeric data back (useful for controllers)





scoreLight table configurations















bottom:

synthesizer , speakers and subwoofer (haptic feedback!)





top:

smart laser projector

Spatialized sound configurations







• introduces "extrinsics" position parameters of the drawings *in 2d...*

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information encoded on a flat surface...



...information encoded in a 2d manifold with arbitrary 3d shape

height code for octaves
slanting a plane score generates inversions

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sculpting sound as pottery

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towards complex sonic sculptures (partially interactive)



... or for a performance: wearing the score?









motion on stage can modulate the sound encoded on a printed pattern





Multilayered tracks



...similar to multilevel recording on a DVD



Summarizing

- artificial synesthesia
- Real time interaction
- Very rich information
- Fast sampling (500Hz)
- compact (size of a barcode scanner)





... but can this be really used as a "musical instrument"?

We are working on this...

Current and future work

As a musical instrument (interaction):

- right balance between control and randomness
- low and high level sound mapping
- track and controllers spots
- dance performance





As a non-interactive piece:

 create paintings/sculptures that also read as a musical score

Very large installations

- interactive games
- augmented architectures, logos, etc
 read the city landscape as musical score



G.R.L

"Laserinne" in collaboration with Jussi Angesleva

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Reversing the interaction metaphor: *light arrays (*):*



Hussein Chalayan (laser fashion)

...body worn laser heads explore the space surrounding the wearer



...technologica I update of Rebecca Horn "Pencil Mask"?

*) ongoing collaboration with Danielle Wilde, Jussi Angeslevasand Alexis Gerroug http://www.k2.t.u-tokyo.ac.jp/







Thank you!

www.k2.t.u-tokyo.ac.jp/perception/scoreLight/

