

Lumisonic on the iPhone

Dr M Grierson, Director of Creative Computing,
Goldsmiths Digital Studios, Centre for Cognition,
Computation and Culture.



Collaboration

South Bank Centre, London Philharmonic Orchestra, Whitefields School for the Deaf (students, training, inset, development), Sonic Arts Network, Duncan Chapman, Goldsmiths College, University of London, AHRC, Frank Barnes school, BBCi, See Hear.

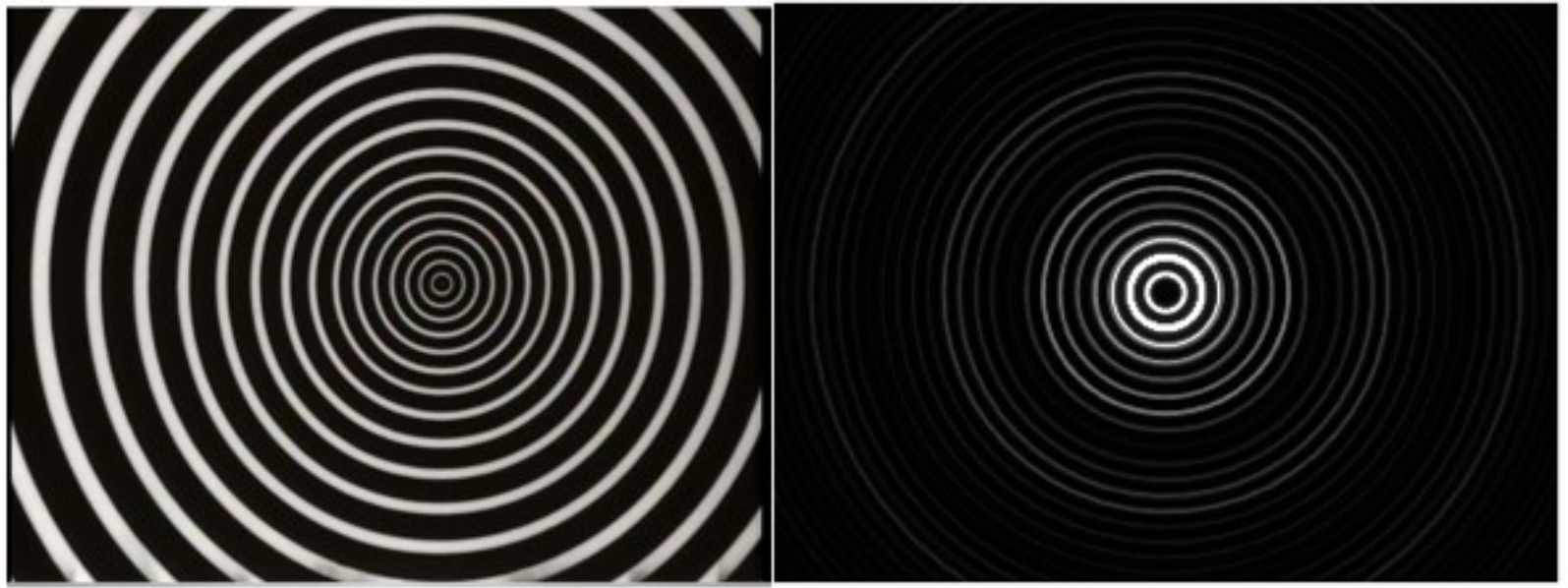


Lumisonic

Combination of approaches, both practice led and traditional research.

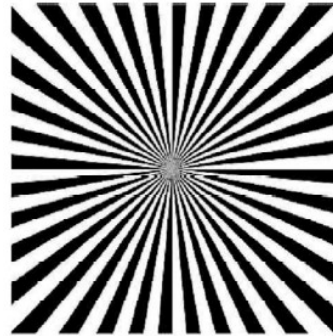
- Film Studies
- Neuroscience
- Audiovisual representation
- Synthesis
- Creativity
- Collaboration
- Therapy

Lumisonic

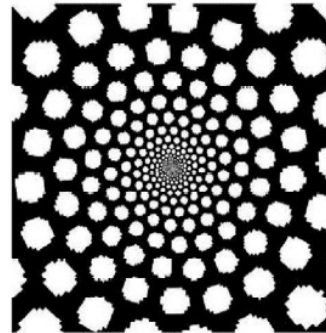


Still image from Spiralen (1924) by Oskar Fischinger (left), and a screengrab from Lumisonic (right).

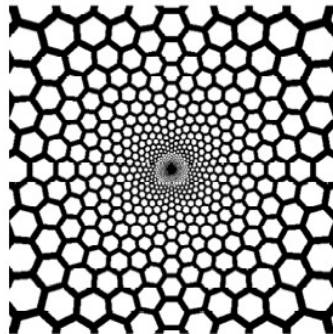
Form Constants



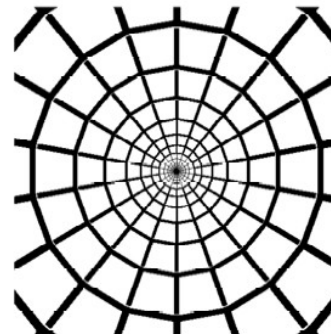
(a)



(b)



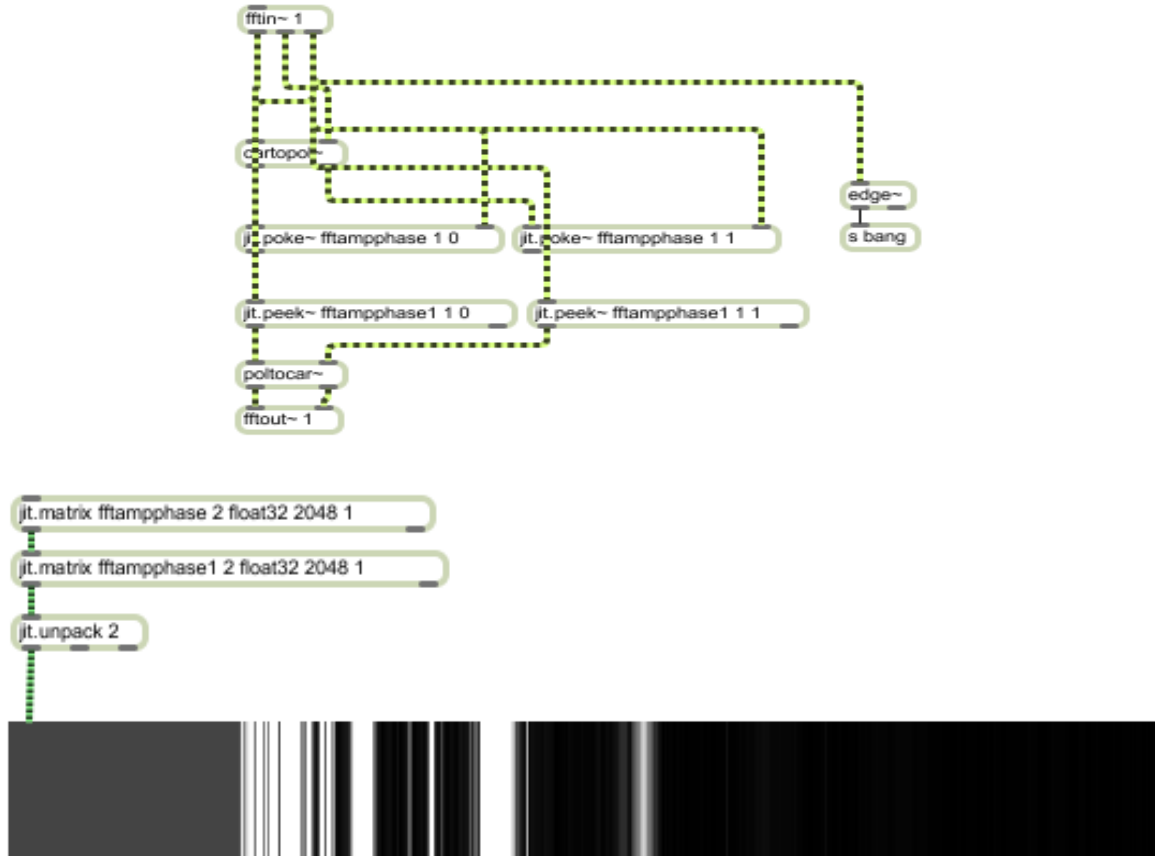
(c)



(d)

P C Bressloff, J D Cowan, M Golubitsky, P J Thomas, M C Weiner (2001), What Geometric Visual Hallucinations Tell Us about the Visual Cortex, *Philosophical Transactions of the Royal Society B*, 356, 2001.

Lumisonic



FFT conversion to 1d array of pixel data

Spaced non-linearly, spectrally filtered, mapped in 2D by 3D processing

Lumisonic iPhone

Pilot project

Collaboration between

- SAM digital
- Strangeloop
- Goldsmiths Creative Computing



Lumisonic iPhone

Development Team

- Mick Grierson
- Matt Green - Year 1
Creative Computing
Student
- Visualisation
Research
- Ramona Beharavan



Challenges

Efficient FFT

Non-linear representation

Drawing routine

- Just a display device.



FFT

FFTW non-functional for iPhone at present

Apple FFT iPhone examples non-functional/unreliable

Our Code:

- 512 bin real FFT
- Based on published code from “Numerical Recipes in C” (out of print)
- C++ within Objective C



Logarithmic display

Original Lumisonic uses logarithmic display filtering, similar to a CQT.

iPhone version uses 17 filters each with a bandwidth of 1 octave.



Drawing Routine

OpenGL ES

- iPhone implementation is limited
- No antialiasing (gl_smooth)
- No polygons
- Texture mapping is old skool
- Alpha issues.



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Arts & Humanities
Research Council

