

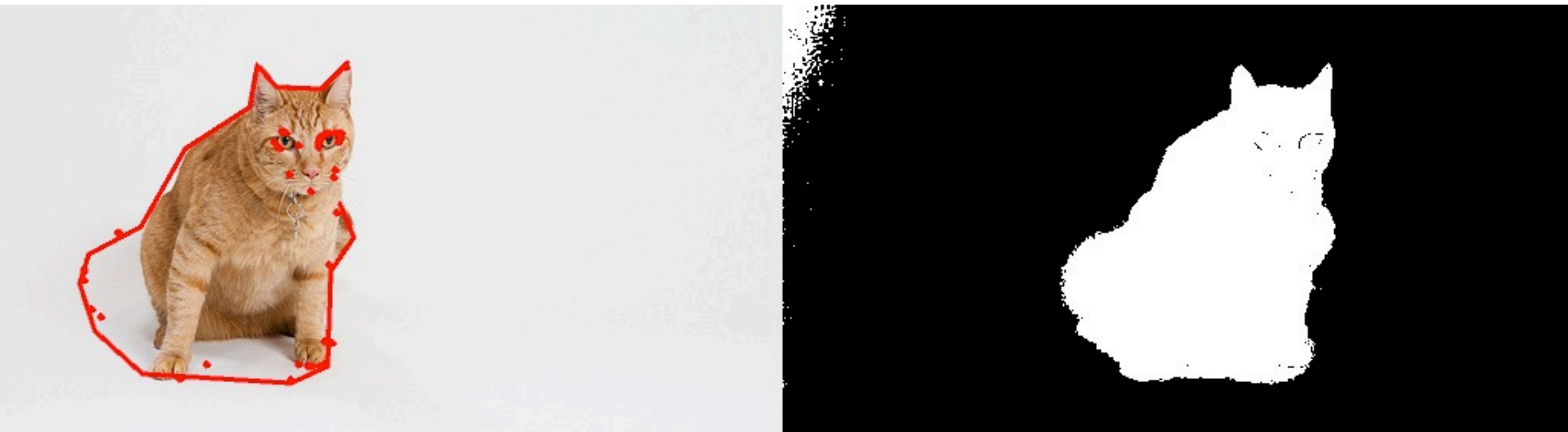
We do not see things as they are, we see them as we are.

-Folkert

Intro to Computer Vision

Chris Sugrue :: School of Machines Making & Make-Believe 2014

Computer vision refers to a wide range of algorithms that try to extract information from images and video and attempt to make decisions about them.



Common computer vision and image processing tasks:

- brightness / contrast
- thresholding
- blur
- sharpen
- histogram / levels
- color correction
- color channels
- edge detection
- background subtraction
- contour detection
- face detection
- line detection
- motion detection / analysis
- color tracking



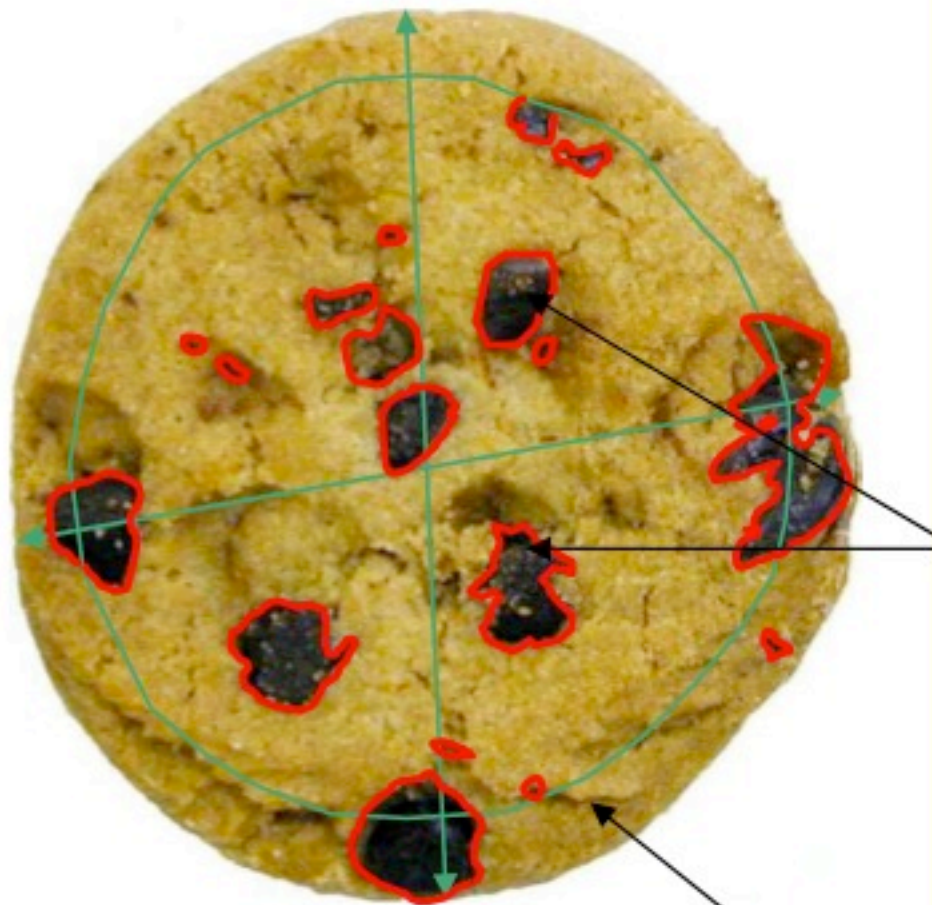
Computer vision techniques
are used in many fields.

Robotics



CHOCOLATE CHIP COOKIE MEASUREMENT

Top Measurements



Maximum Thickness: The thickness of the biscuit at the thickest point, measured relative to the belt on which the biscuit sits. If the biscuit base is flat, this will be the thickest area on the biscuit. If the biscuit base is curved, this will be the highest point above the belt on the biscuit top surface. If it has a bump of sufficient size to interfere with the stacking process, the thickness at this bump will be reported as the maximum thickness.

Top Color: The average bake color of the top surface of the biscuit. The smaller the color value, the darker the biscuit. Bake color is calculated from the area inside a 10 mm wide guard band. Dark chip areas are ignored when calculating color. Thus the number of visible chips does not affect color measurement.

Chip Area %: The percentage of the top surface covered by visible chocolate chips.

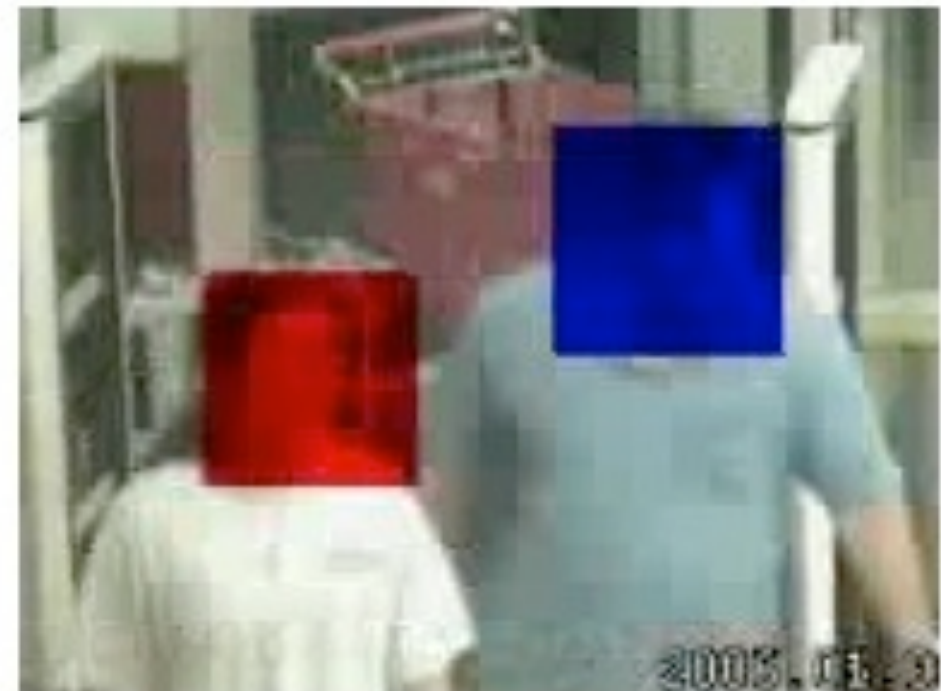
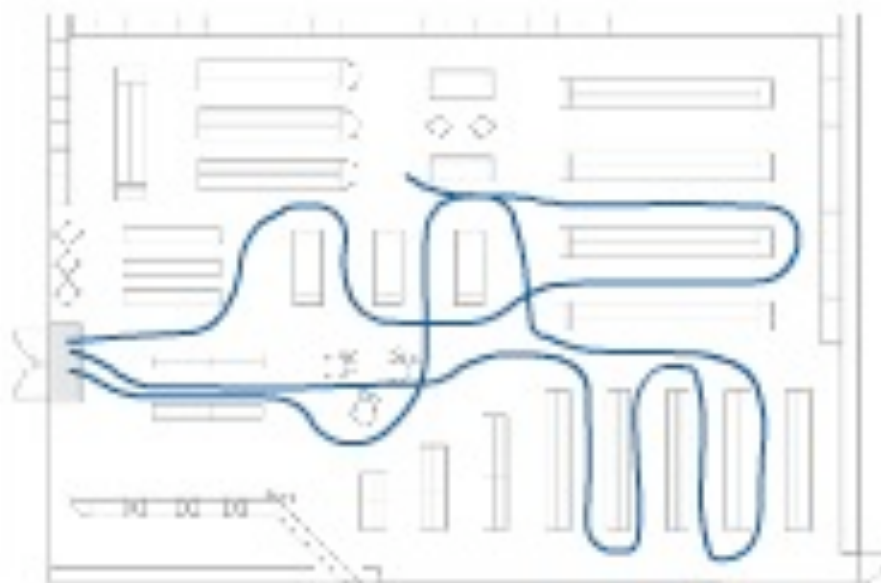
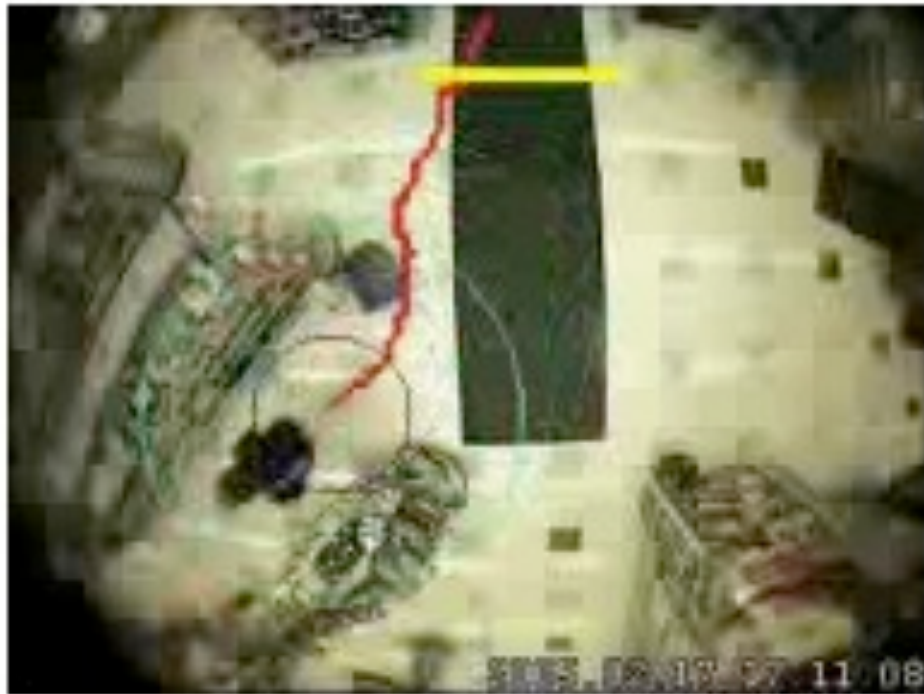
Average Diameter: The average of 45 evenly spaced diameters.

Roundness: The longest diameter minus the shortest diameter. A perfectly round biscuit will have a roundness of zero. A large value for roundness indicates an out-of-round biscuit.

Volume, Weight and Density: Biscuit volume is calculated directly. Weight can be input from an optional computer readable scale. From these two measurements, biscuit density can be calculated.

Guard Band: An area around the perimeter of the biscuit, defined by the guard band perimeter is not used in the calculation of bake color. The width of the guard band is configurable for both top and bottom measurement.

Security and surveillance

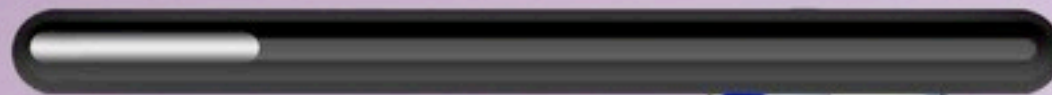


Film / Special Effects





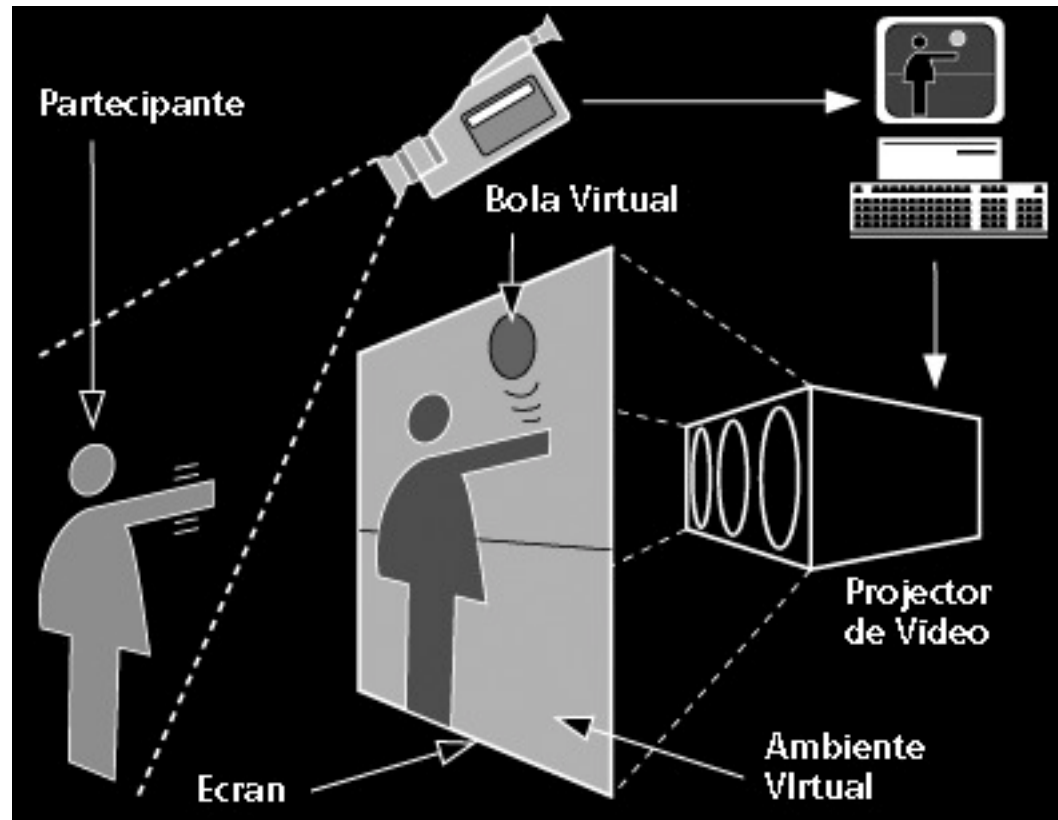
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art

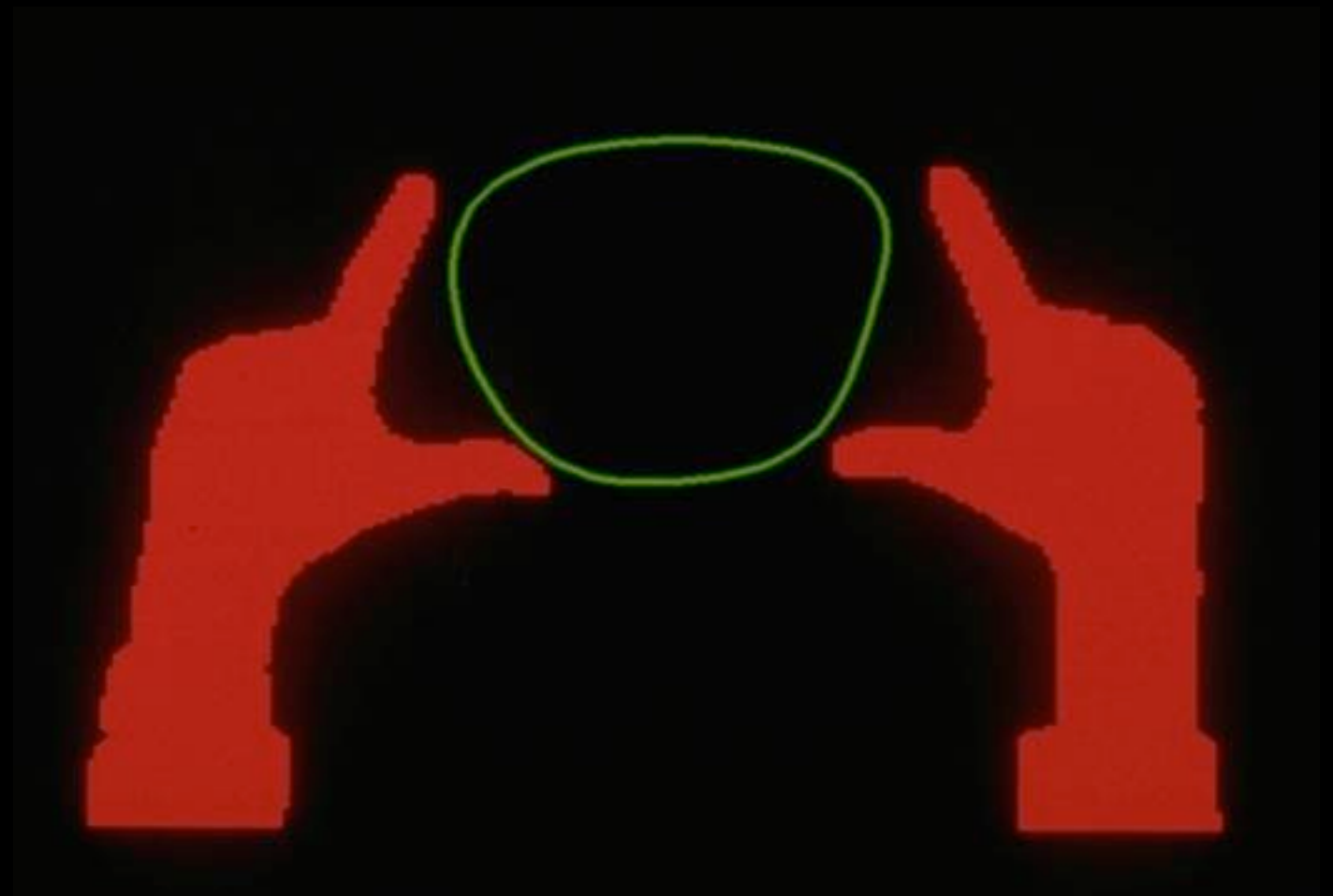
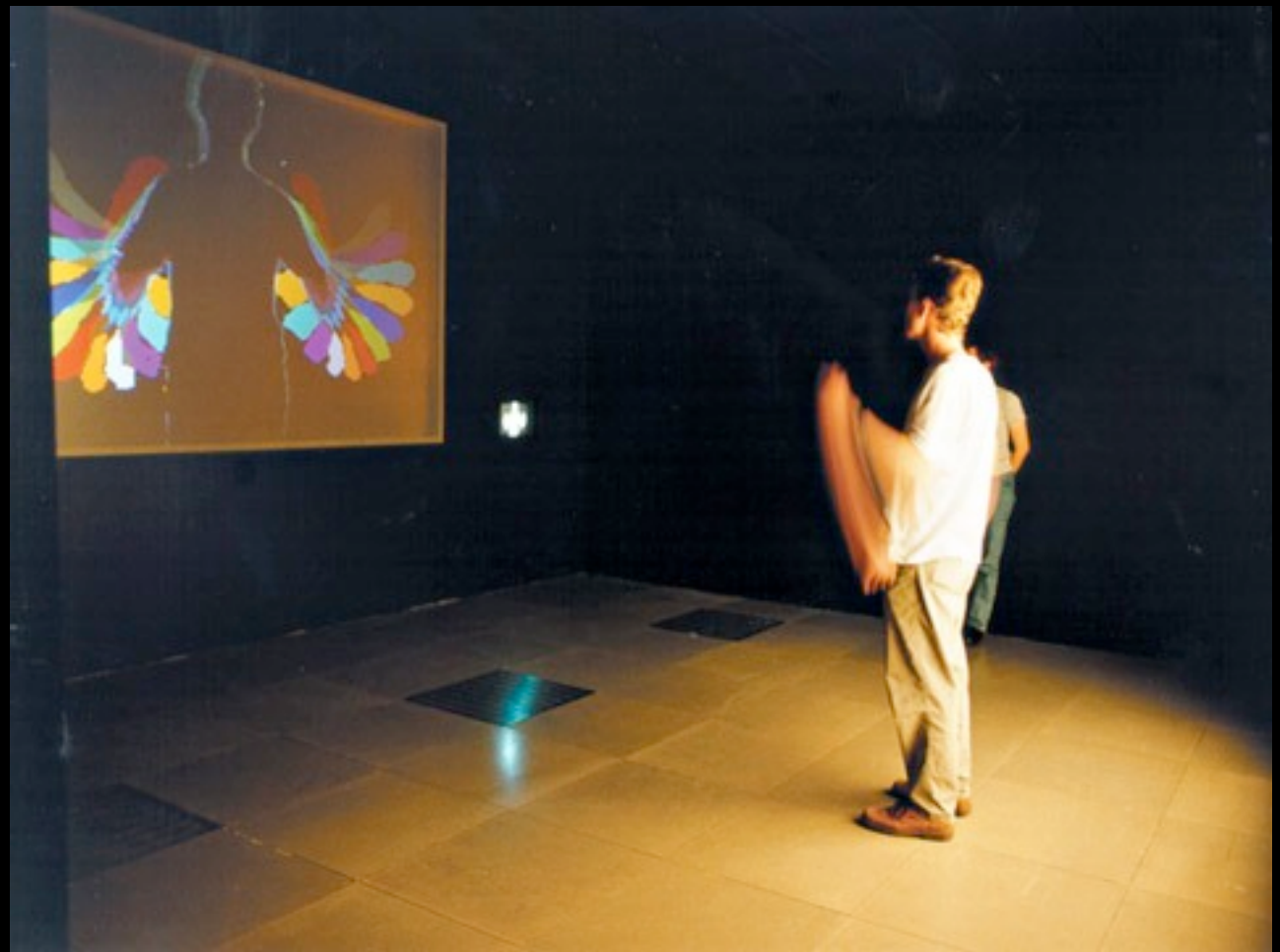
interactive installations

dance





Myron Krueger





Suicide Box

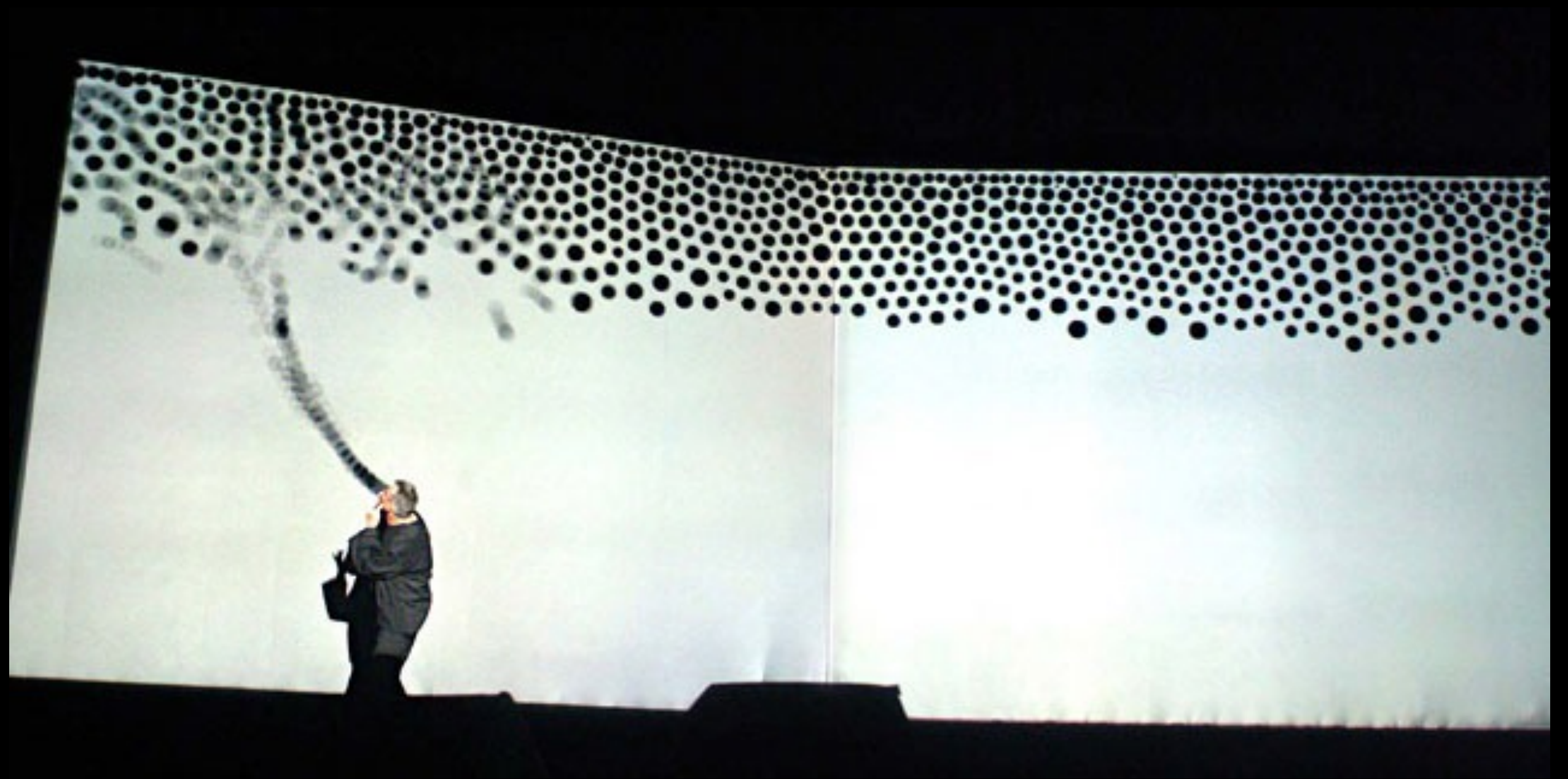
Natalie Jeremijenko



Messa de Voce

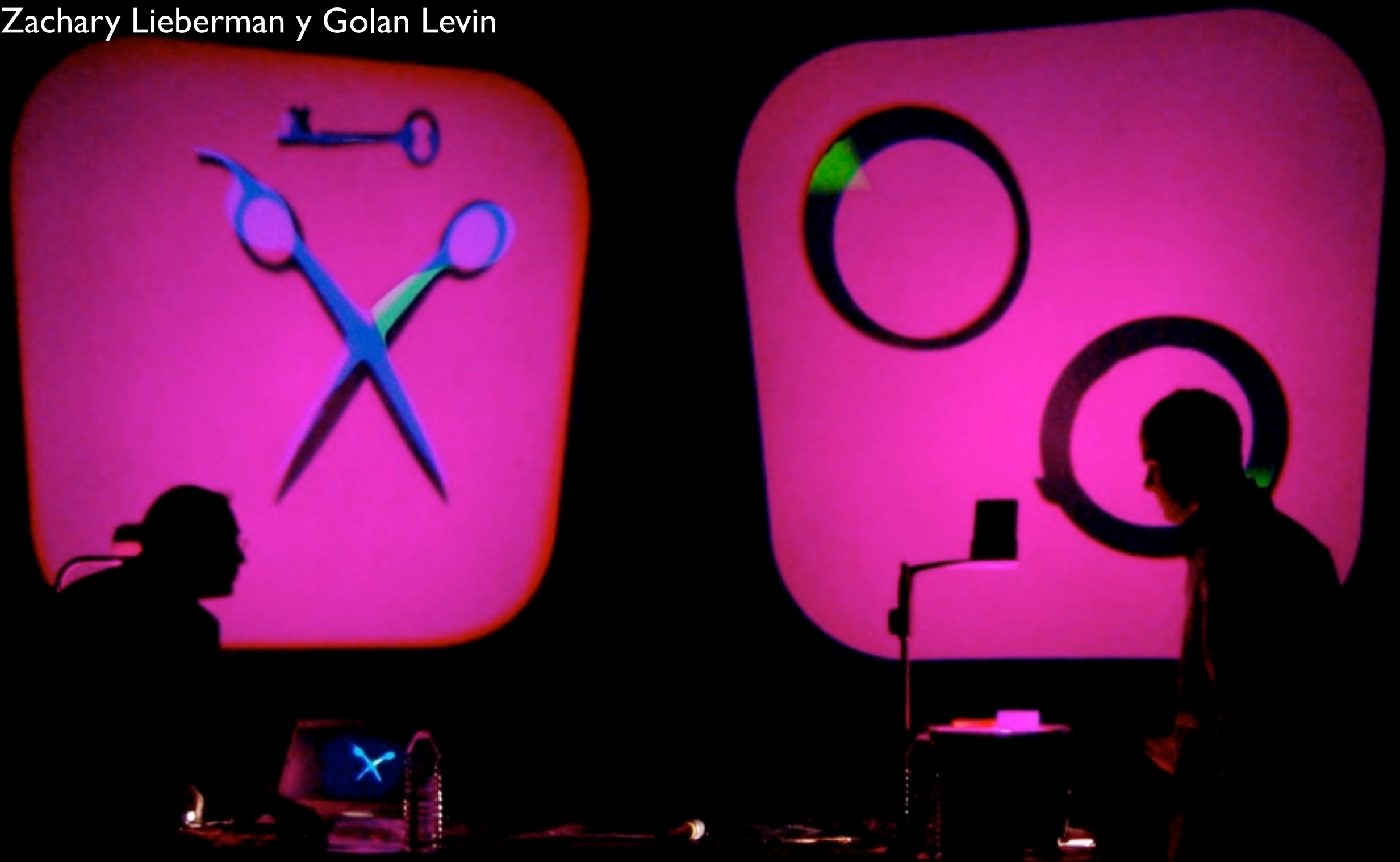
Zachary Lieberman y Golan Levin





Manual Input Sessions

Zachary Lieberman y Golan Levin





Reactable

Sergi Jordà, Marcos Alonso, Günter Geiger y Martin Kaltenbrunner



Glow

Chunky Move & Frieder Weiss

CHUNKY
MOVE

