



http://upload.wikimedia.org/wikipedia/commons/6/64/Creaci%C3%B3n_de_Ad%C3%A1n_%28Miguel_%C3%81ngel%29.jpg

DIY. Ihr sollt lernen es selber kostengünstig zu implementieren.

WE ARE...

JURI WOLF

B.A. Student

JORDI TOST

M.A. Student

FABIAN MORÓN ZIRFAS

Interface Lab Supervisor

WHO ARE YOU?

Studenten vorstellen

PROJECT TIMETABLE

Day 1 || Mo 06.10 LW 126:

Introduction, Juri, Jordi, Fabian, MT, Examples

- Workshop
- Form groups
- Exercise

Day || 2 - 5 Di 07.10 - Do 10.10 LW 126:

- development and prototyping LW 126

Day 6 - 10 || Mo 13.10 - Do 16.10 Home & Hallway:

- development and prototyping home and LW hallway

Day 10 || Fr. 17.10 Exhibition

PROJECT AIM

learn multitouch basics by using:

Computer Vision (Bare Bones)

Physical Computing (Capacitiv & Acoustic)

Open CV (Adavanced)

TUIO

Exhibition 17.10.2014

4 TYPES OF TOUCH(SCREEN) TECHNOLOGY

RESISTIVE

CAPACITIVE

OPTICAL

ACOUSTIC

HISTORY OF (M)T

Bill Buxton: Multi-Touch Systems
that I Have Known and Loved

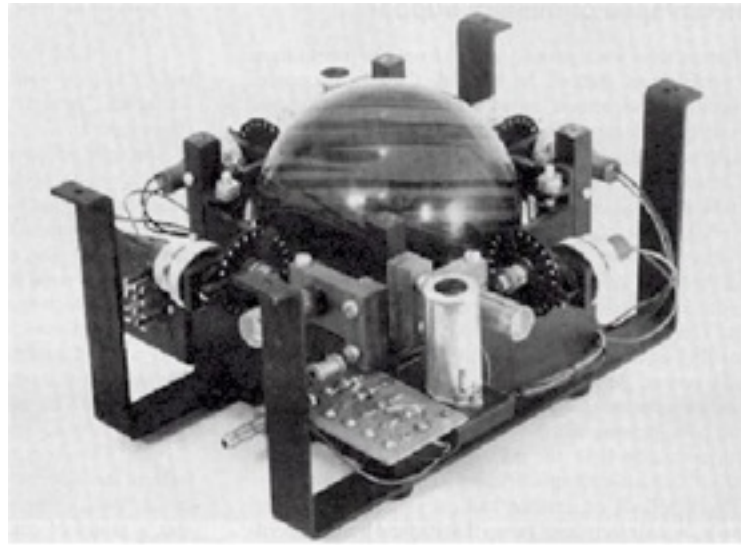
unvollständig



resistiv



resistiv



1945: Trackball (Ralph Benjamin)

trackball



Electroacoustic Music: The Early Days of Electronic Touch Sensors (Hugh LeCaine, Don Buchla & Bob Moog)

capacitive



1960s: Mouse (Douglas Engelbart & Bill English)

mechanical



1965: Touch Screen Technology (E.A. Johnson of the Royal Radar Establishment)

single touch capacitive



Plato IV optical (IR)



optical Video <https://www.youtube.com/watch?v=dmmxVA5xhuo>



1984: Multi-Touch Screen (Bob Boie, Bell Labs, Murray Hill NJ)

capacitive



capacitive



The device used optical sensors in the corners of the frame to detect fingers.

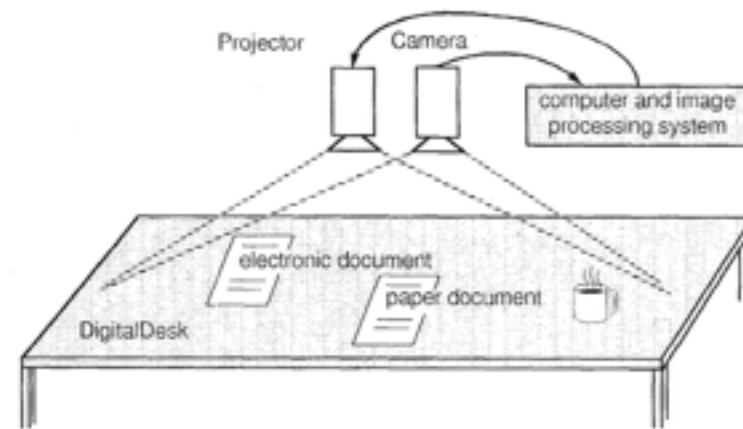


Figure 1. A DigitalDesk system

1991: Digital Desk (Pierre Wellner, Rank Xerox EuroPARC, Cambridge)

An early front projection tablet top system that used optical and acoustic techniques to sense both hands/fingers as well as certain objects, in particular, paper-based controls and data. https://www.youtube.com/watch?v=S8lCetZ_57g



IBM and Bell South release what was arguably the world's first smart phone, the Simon.

What is of historical interest is that the Simon, like the iPhone, relied on a touch-screen driven “soft machine” user interface.

While only a single-touch device, the Simon foreshadows a number of aspects of what we are seeing in some of the touch-driven mobile devices that we see today.

Sidebar: my two working Simons are among the most prized pieces in my collection of input devices.

AND MANY MORE

see Bill Buxtons [site](#) for further research

1992: Wacom, 1992: Starfire, 1994-2002: Bimanual Research, 1995: Graspable/Tangible Interfaces, 1995/97: Active Desk, 1997: T3, 1997: The Haptic Lens, 1998: Tactex Controls, ~1998: Fingerworks, 1999: Portfolio Wall, 2001: Diamond Touch, 2002: HandGear + GRT. DSI Datotech, 2002: Jun Rekimoto Sony Computer Science Laboratories, 2003: University of Toronto, 2003: Jazz Mutant, 2004: Neonode N1 Mobile Phone, 2004: TouchLight, 2005: Reactable, 2005: Blaskó and Steven Feiner, 2005: PlayAnywhere, 2005: Jeff Han, 2005: Tactiva, 2005: Toshiba Matsusita Display Technology, 2005: Tomer Moscovich & collaborators, 2006: Benko & collaborators, 2006: Plastic Logic, 2006: Synaptics & Pilotfish, 2007: Apple iPhone, 2007: Microsoft Surface Computing, 2007: ThinSight, 2008: N-trig, 2011: Surface 2.0

Ab hier werden die bisher eingeführten Techniken verbessert und erweitert

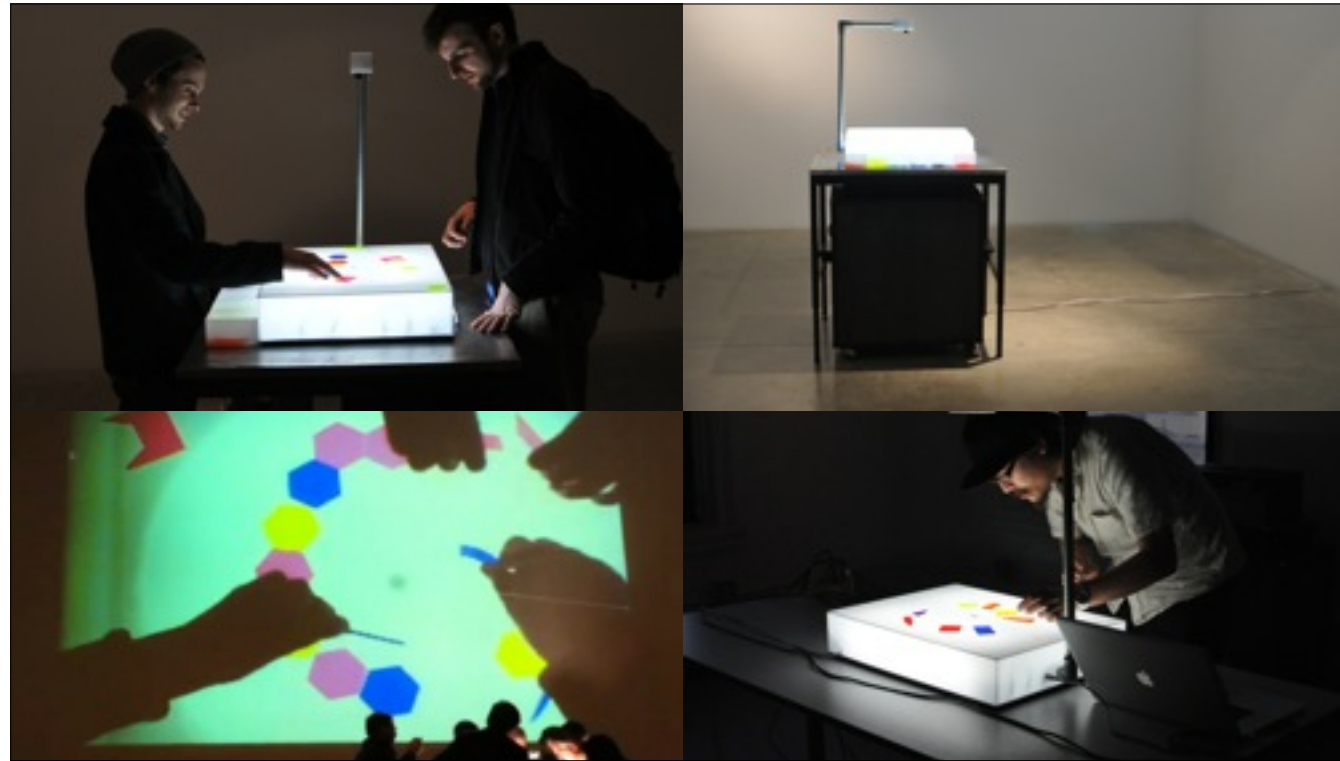
EXAMPLES

RHYTHMSYNTHESIS

by Ryan Raffa

<http://www.ryanraffa.com/parsons/thesis/category/concept/>

<https://vimeo.com/25090948>



<http://www.ryanraffa.com/parsons/thesis/category/concept/>

<https://vimeo.com/25090948>

[DIY Multitouch]

VIDEO

<https://vimeo.com/25090948>



crapple (2005: Golan Levin) is an audiovisual performance in which everyday objects placed on a table are interpreted as sound-producing marks in an “active score.” The Scrapple system scans a table surface as if it were a kind of music notation, producing music in real-time from any objects lying there. The 3-meter long table produces a 4-second audio loop, allowing the performers to improvise audiovisual compositions in real-time.

<https://vimeo.com/2379890>



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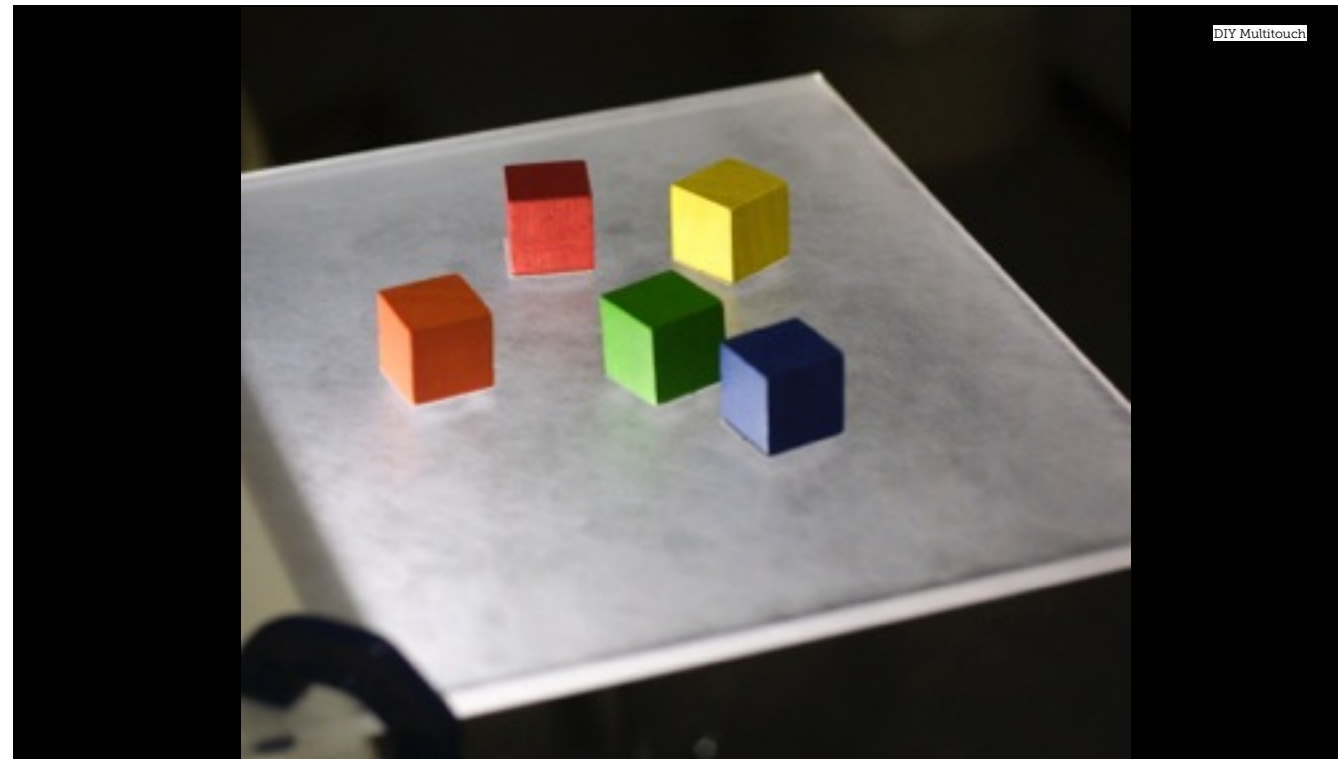
VIDEO & VIDEO

<https://vimeo.com/2379890> & <https://vimeo.com/2379389>



Optical system

Trackmate is an inexpensive, do-it-yourself tangible tracking system that allows your computer to recognize tagged objects and their corresponding position, rotation, and color information when placed on a surface. Trackmate sends all object data via LusedOSC (a protocol layer for unique spatial input devices), allowing any LusedOSC-based application to work with the system.



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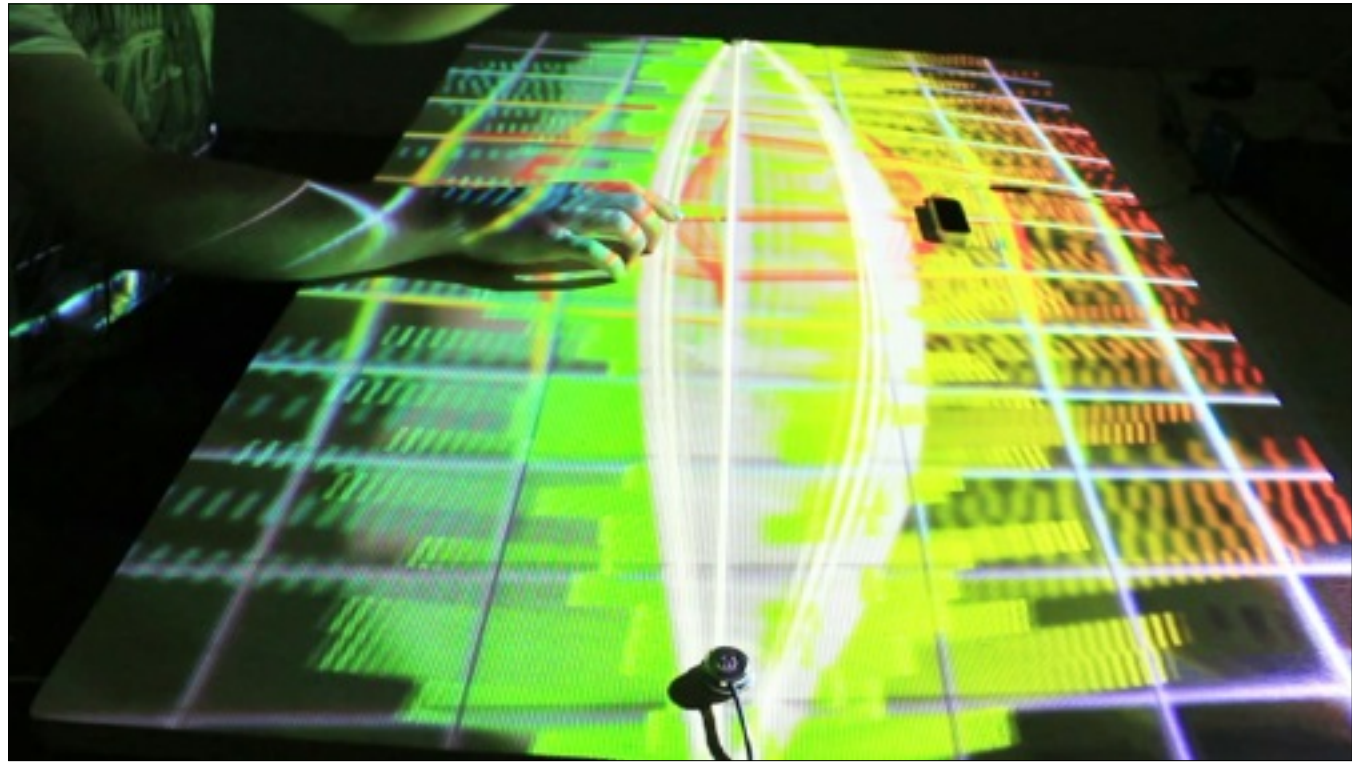
VIDEO

<https://vimeo.com/6730765>

CONTACT

by Felix Faire

<http://felixfaire.com/portfolio/contact/>



[DIY Multitouch]

VIDEO

<https://vimeo.com/82107250>

DRAWN

by Zachary Lieberman

<http://thesystemis.com/projects/drawn/>

<http://v2.nl/archive/works/drawn>



This project presents a whimsical scenario in which painted ink forms appear to come to life, rising off the page and interacting with the very hands that drew them. Inspired by early filmic “lightning sketches,” in which stop-motion animation techniques were used to create the illusion of drawings escaping the page, drawn presents a modern update: custom-developed software alters a video signal in real time, creating a seamless, organic and even magical world of spontaneous and improvised performance of hand and ink.

[DIY Multitouch]

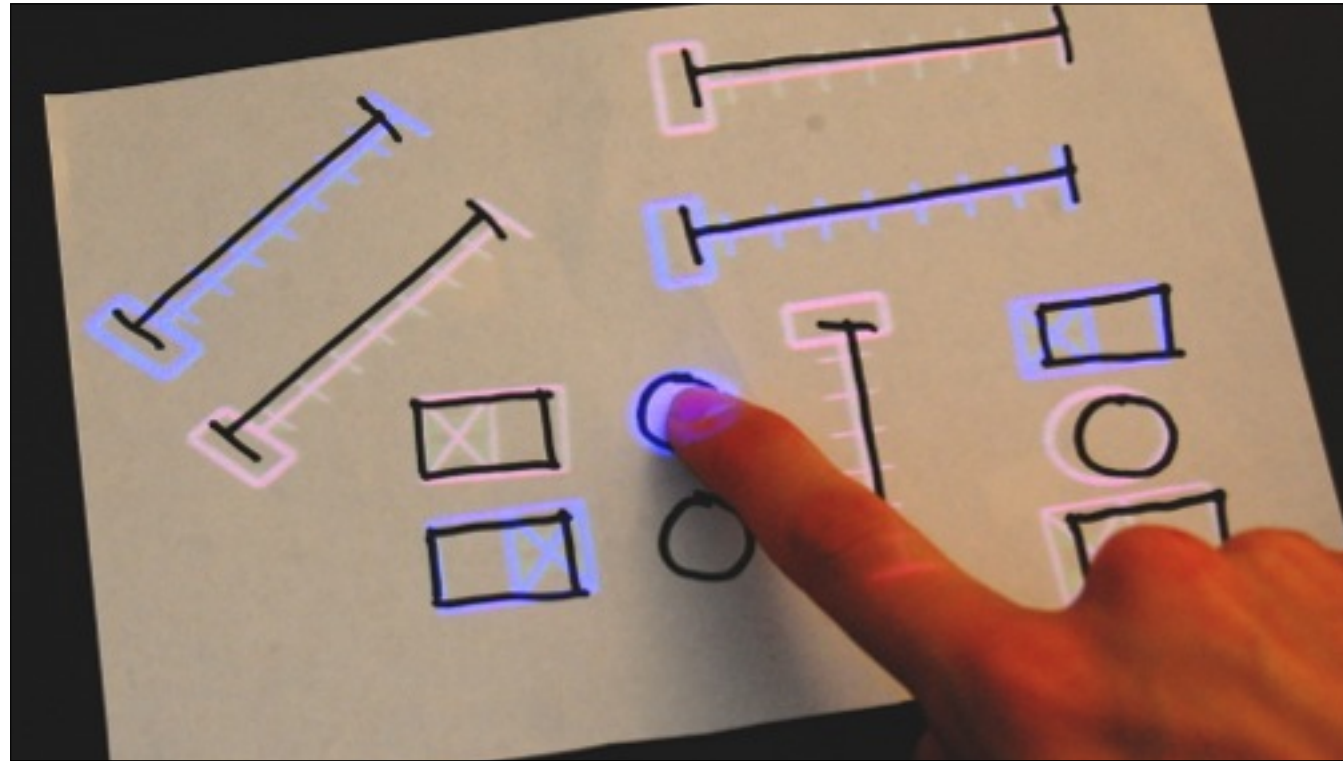
VIDEO

<https://vimeo.com/4732884>

SKETCHSYNTH

SketchSynth: A Drawable OSC
Control Surface by Billy Keyes

<https://github.com/bluekeyes>



SketchSynth: A Drawable OSC Control Surface

SketchSynth lets anyone create their own control panels with just a marker and a piece of paper. Once drawn, the controller sends Open Sound Control (OSC) messages to anything that can receive them; in this case, a simple synthesizer running in Pure Data. It's a fun toy that also demonstrates the possibilities of adding digital interaction to sketched or otherwise non-digital interfaces.

[DIY Multitouch]

VIDEO

<https://vimeo.com/42053193>

WORKSHOP

Bare Bones Computer Vision

**[HTTPS://GITHUB.COM/FH-POTSDAM/2014-2015-
WISE-15PP-PW-DIY-MULTITOUCH](https://github.com/FH-Potsdam/2014-2015-WISE-15PP-PW-DIY-MULTITOUCH)**

Sourcecode repo

WHAT ELSE IS IN THE BOX?

[DIY Multitouch]

OPENCV

Jordi

OPENCV

(Open Source Computer Vision Library)

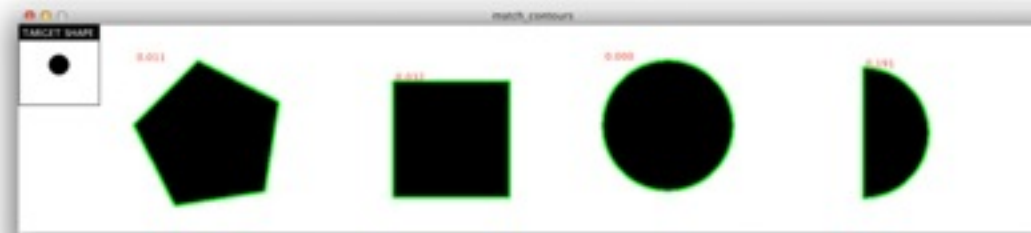
is an open source computer vision and machine learning software library. OpenCV was built to provide a common infrastructure for computer vision applications and to accelerate the use of machine perception in the commercial products.

<http://opencv.org/>

OPENCV-PROCESSING

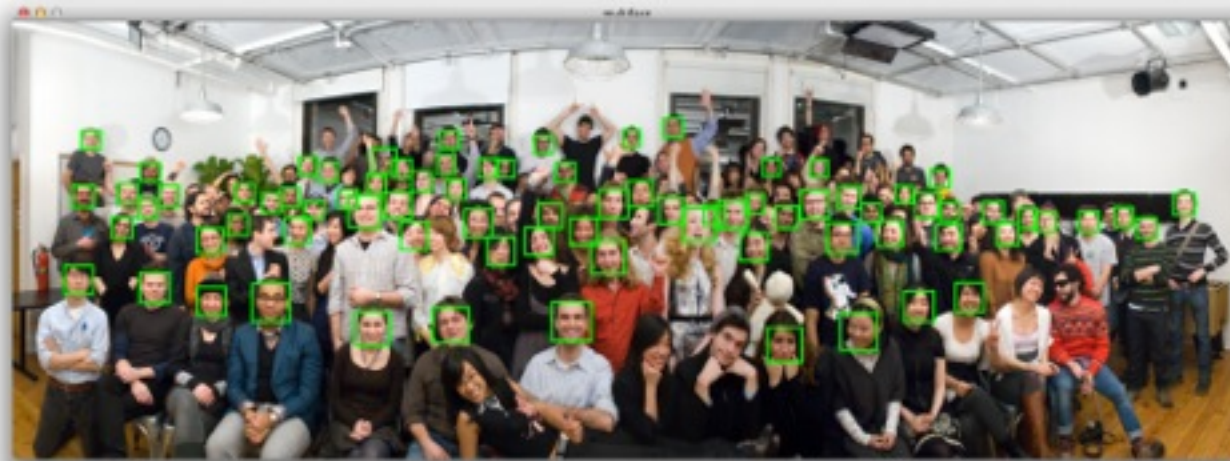
<https://github.com/atduskgreg/opencv-processing> by [Greg Borenstein](http://gregborenstein.com/)

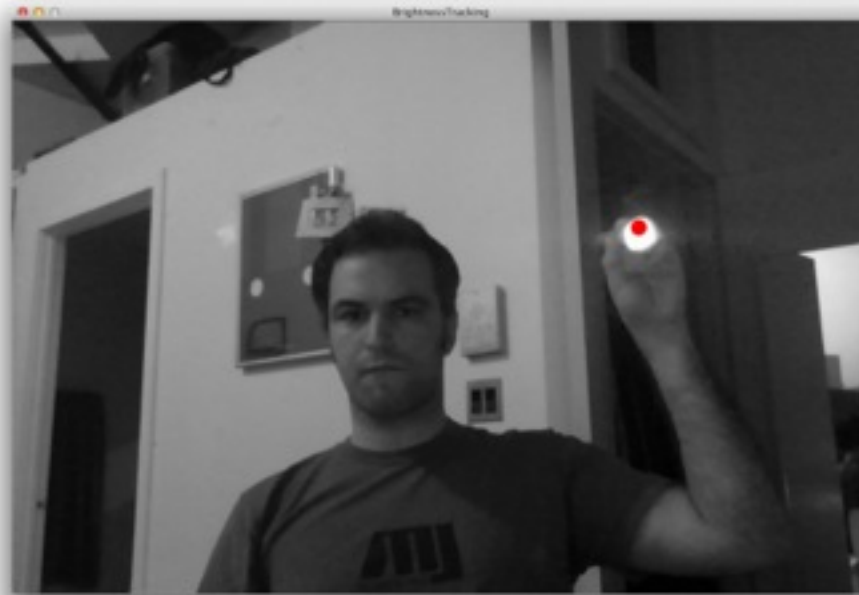
Jordi? <http://gregborenstein.com/>

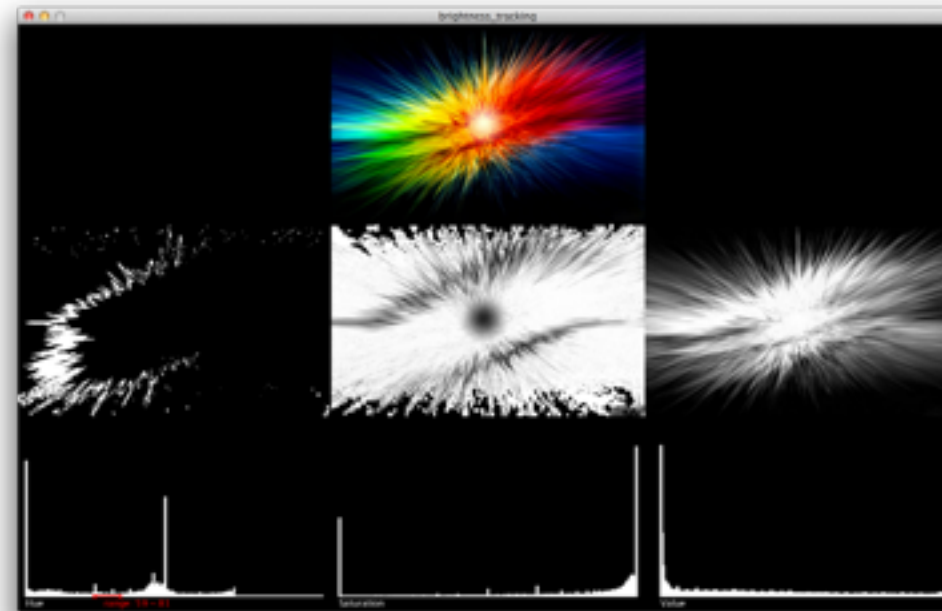


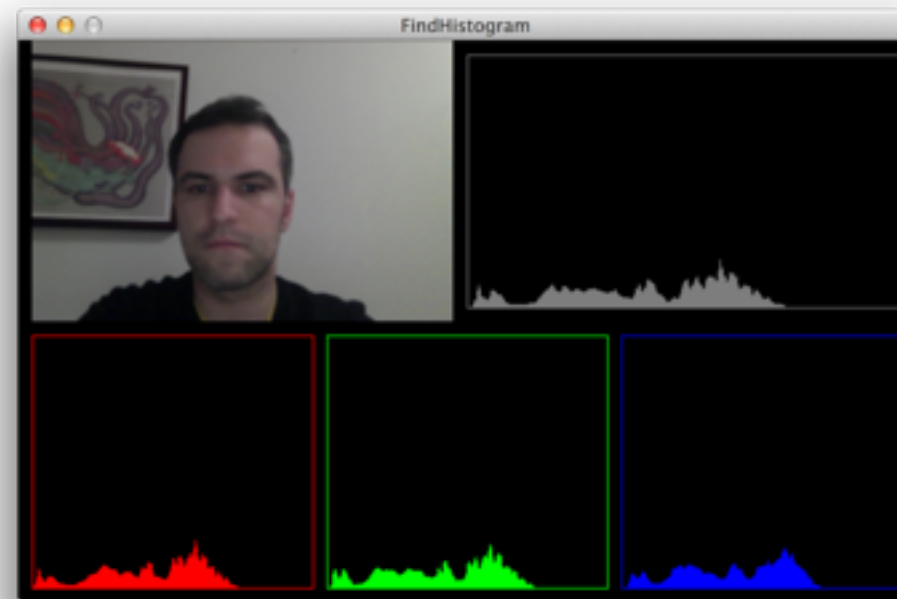






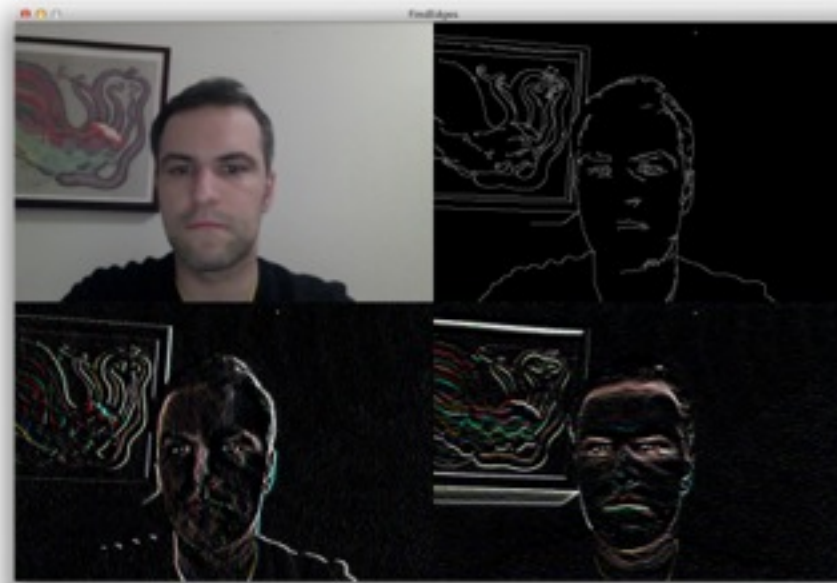






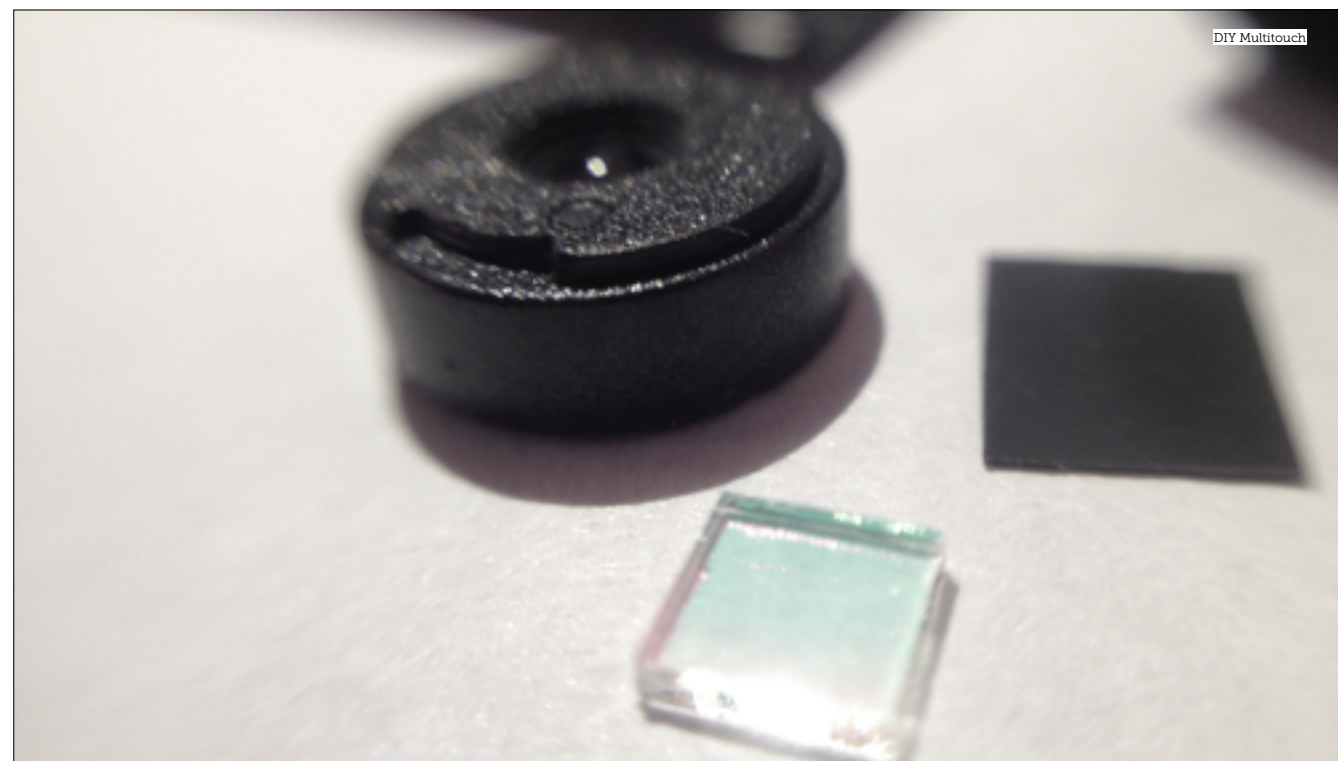


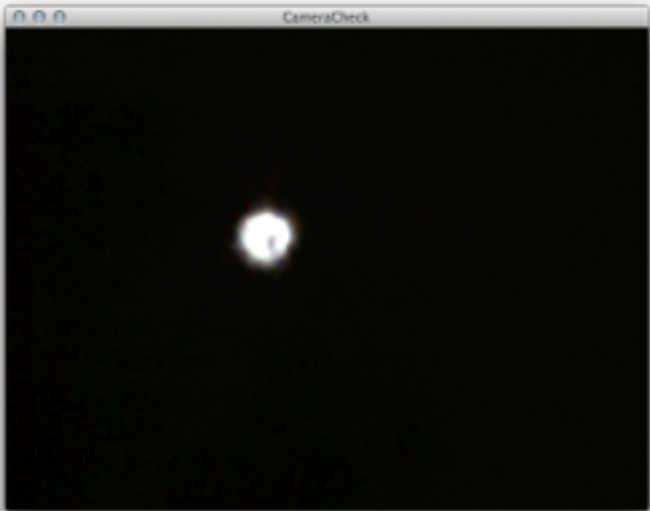




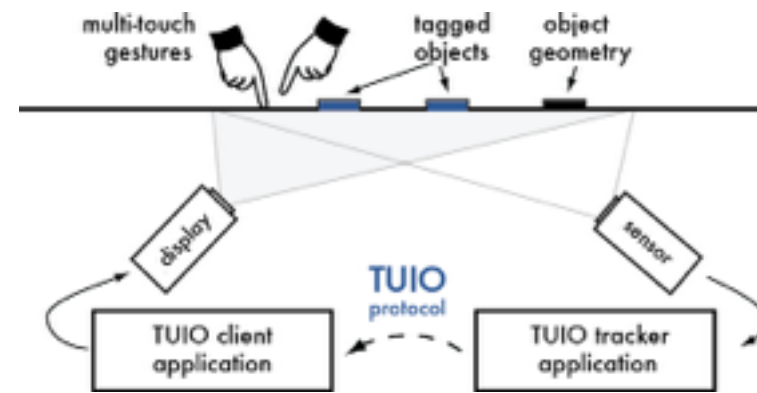
DIY IR CAMERA

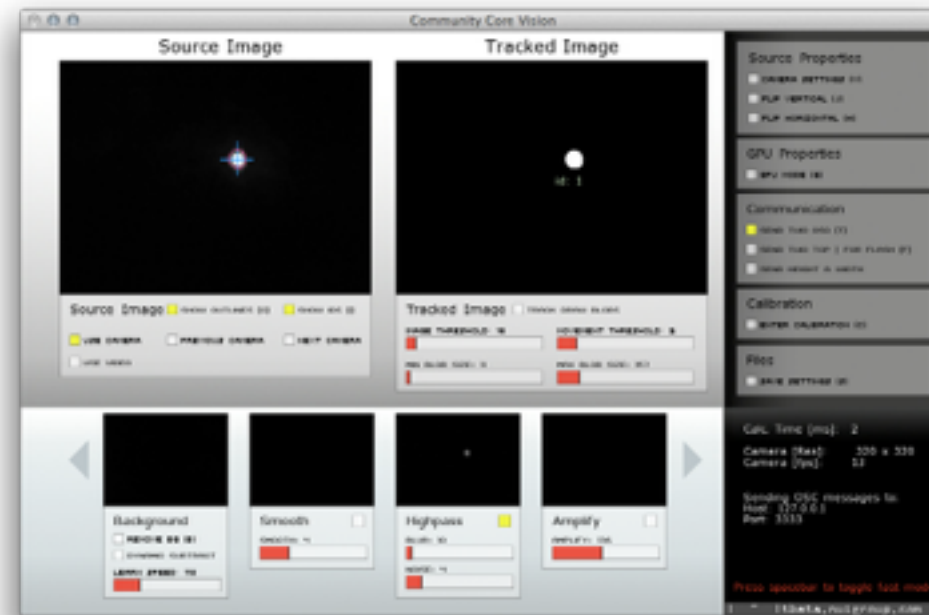
Juri & Fabian



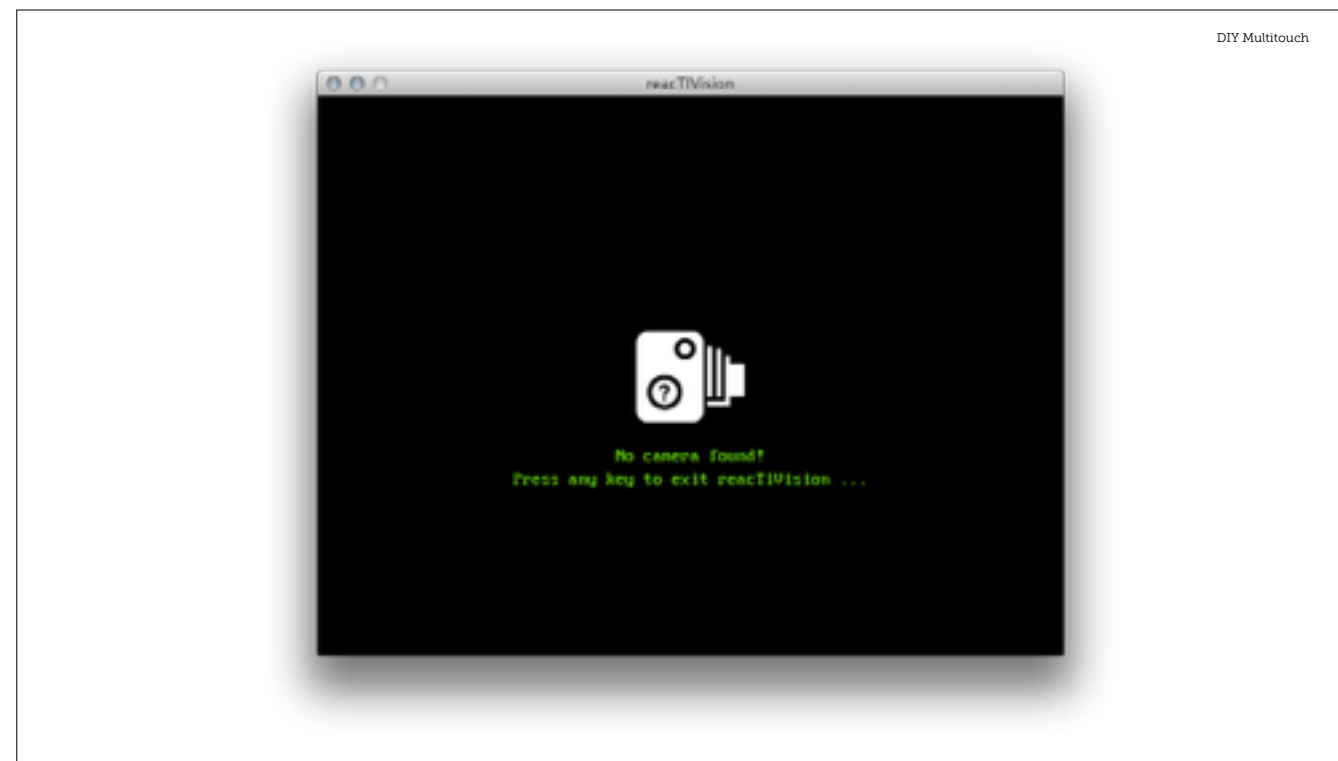


TUIO





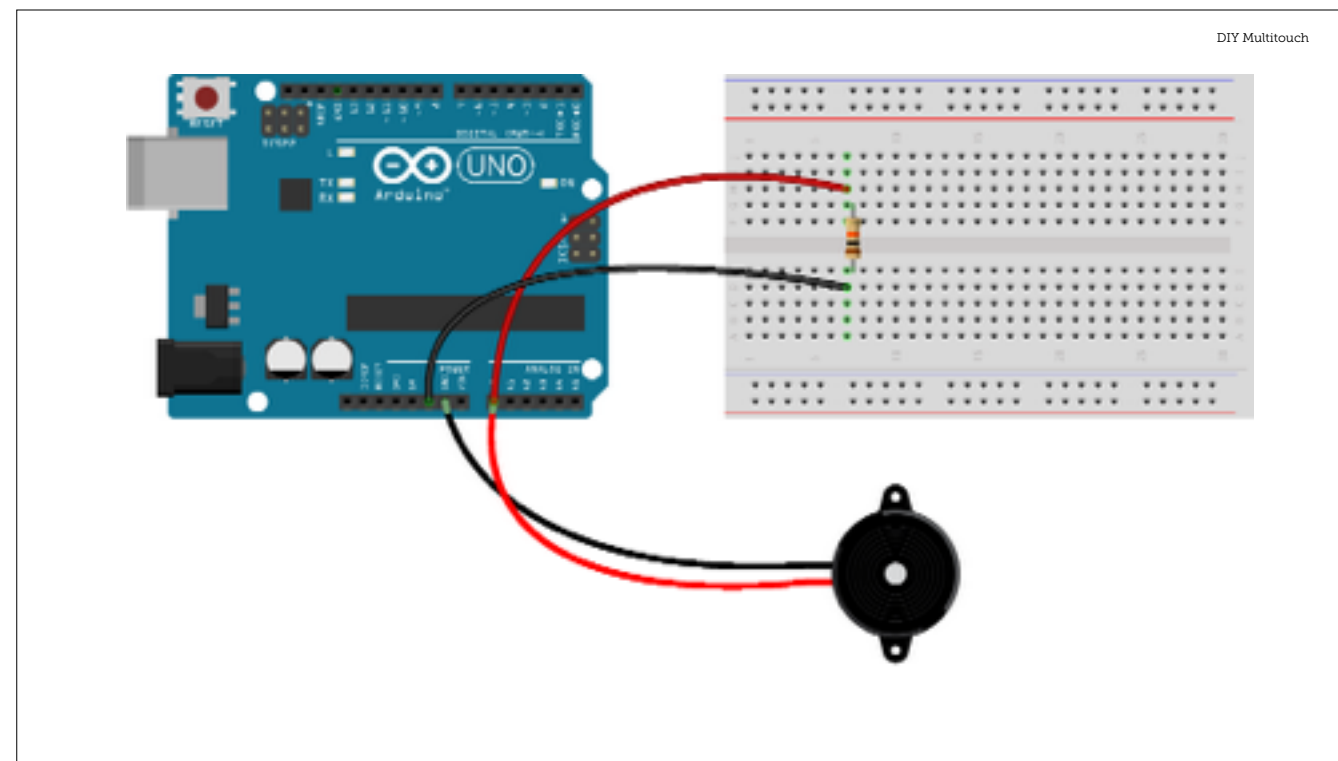
CCV app mit IR Camera



reactIVision app

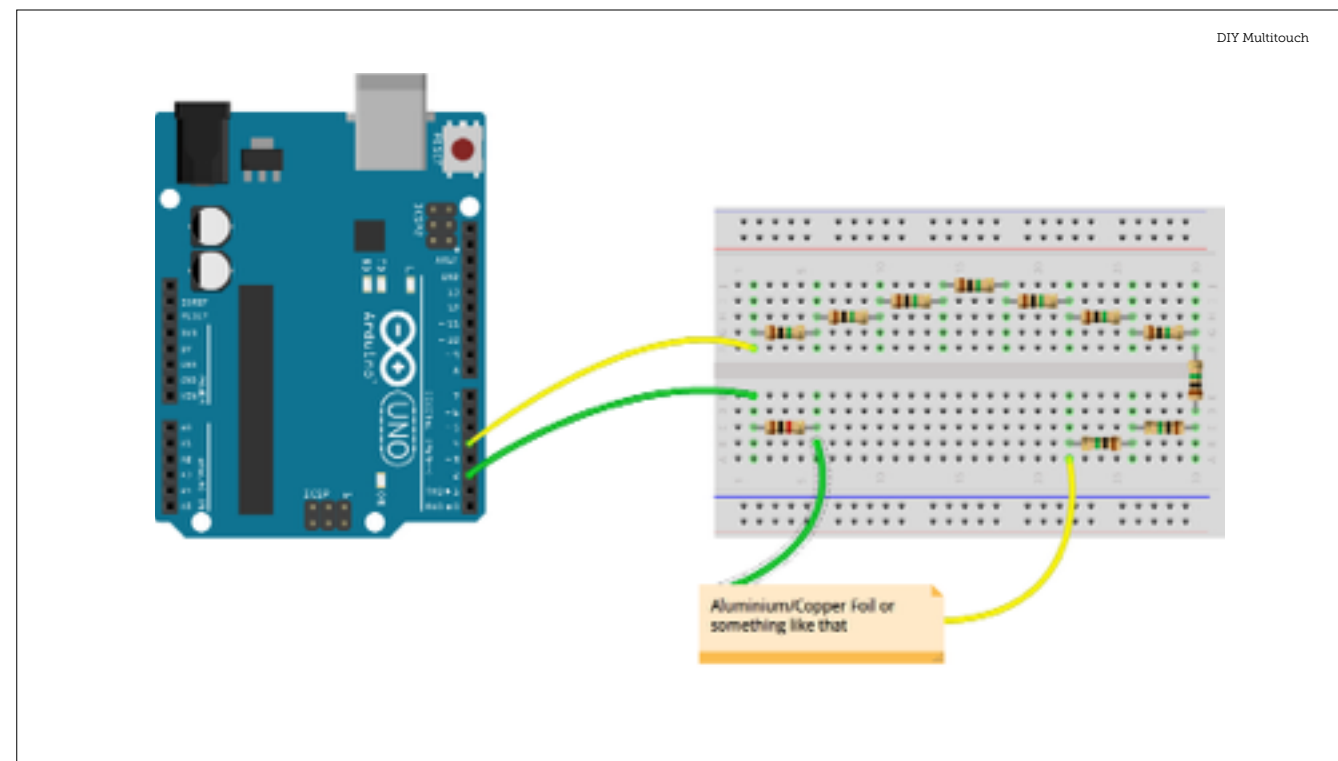
PHYSICAL COMPUTING

Fabian



Knock acoustic

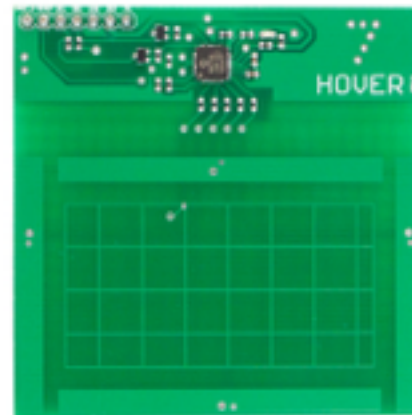
Capacitive Digital



Capacitive Analog



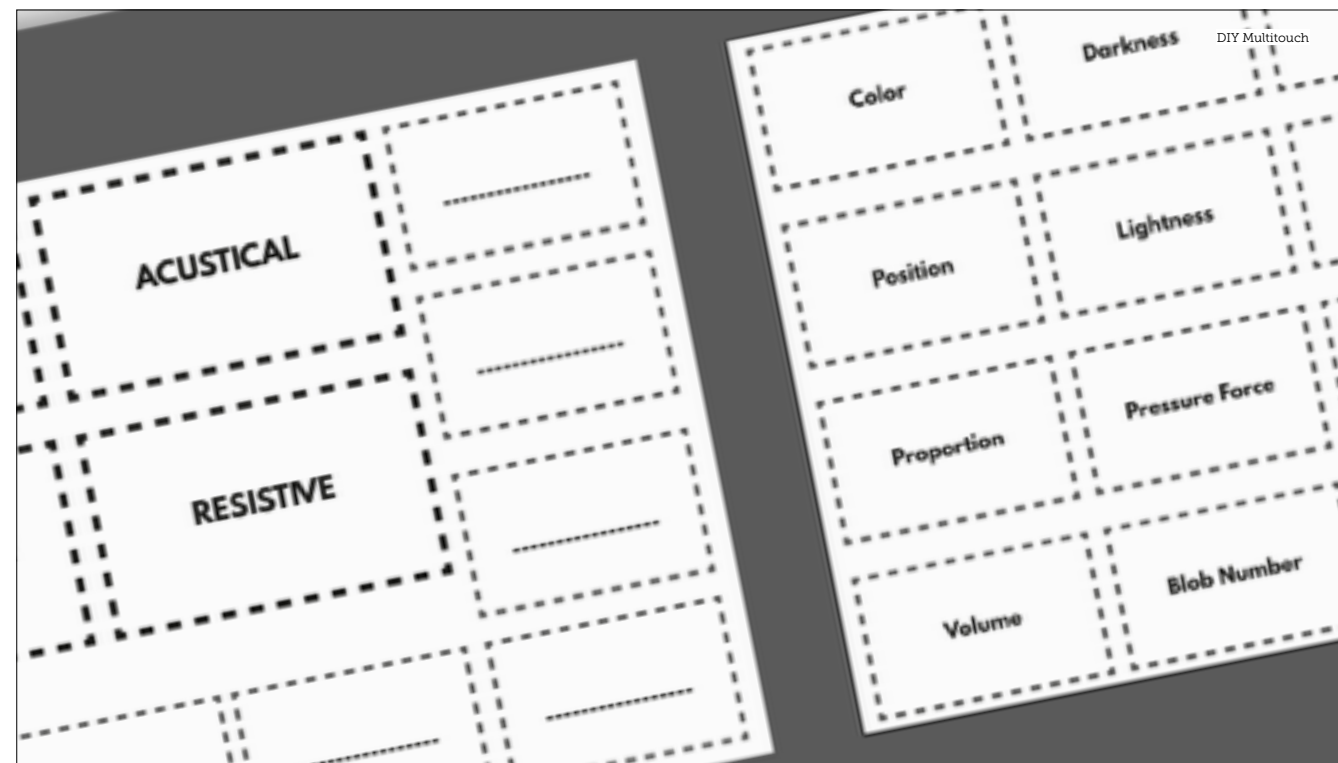
<https://www.olimex.com/Products/Duino/AVR/OLIMEXINO-85S/open-source-hardware>



<http://www.hoverlabs.co/#hover>

Dank an Phillip Pfingstag

IDEA GENERATOR



GROUPS

EXERCISE

Connect || Think || Present

Aufgabe zu morgen