



# OpenKinect

The OpenKinect Community

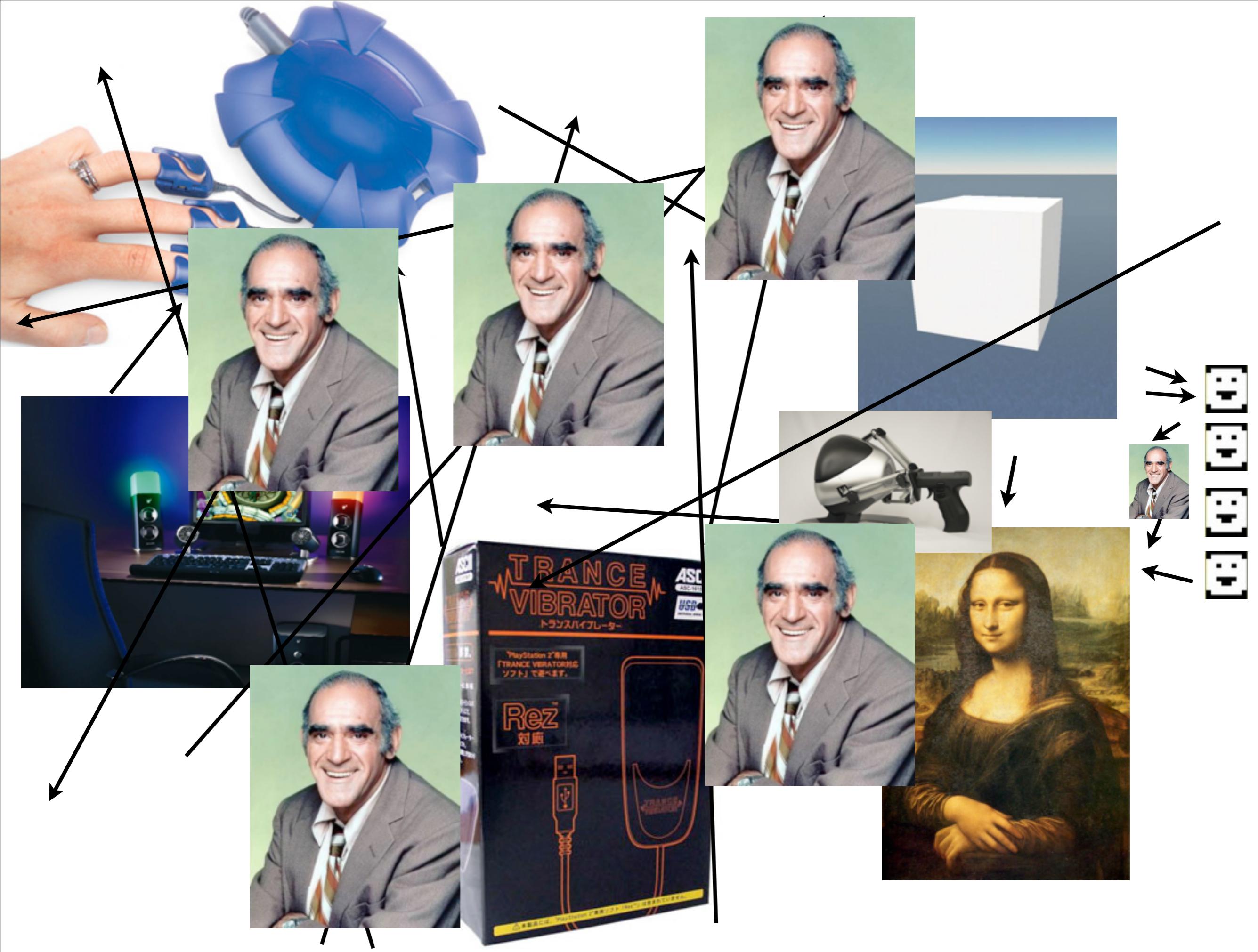
Josh Blake - Project Lead  
Hector Martin Cantero - Engineering Lead  
Kyle Machulis - Integration and Engineering

kyle@nonpolynomial.com

@qdot on twitter

<http://www.nonpolynomial.com>

**[Test Pattern!]**



**[Absolute confusion!]**



**[Sounds of disgust!]**



[Yay!]



[Whee!]



*ifixit*

<http://www.youtube.com/watch?v=nvvQJxgykcU>

[Academic  
understanding!]



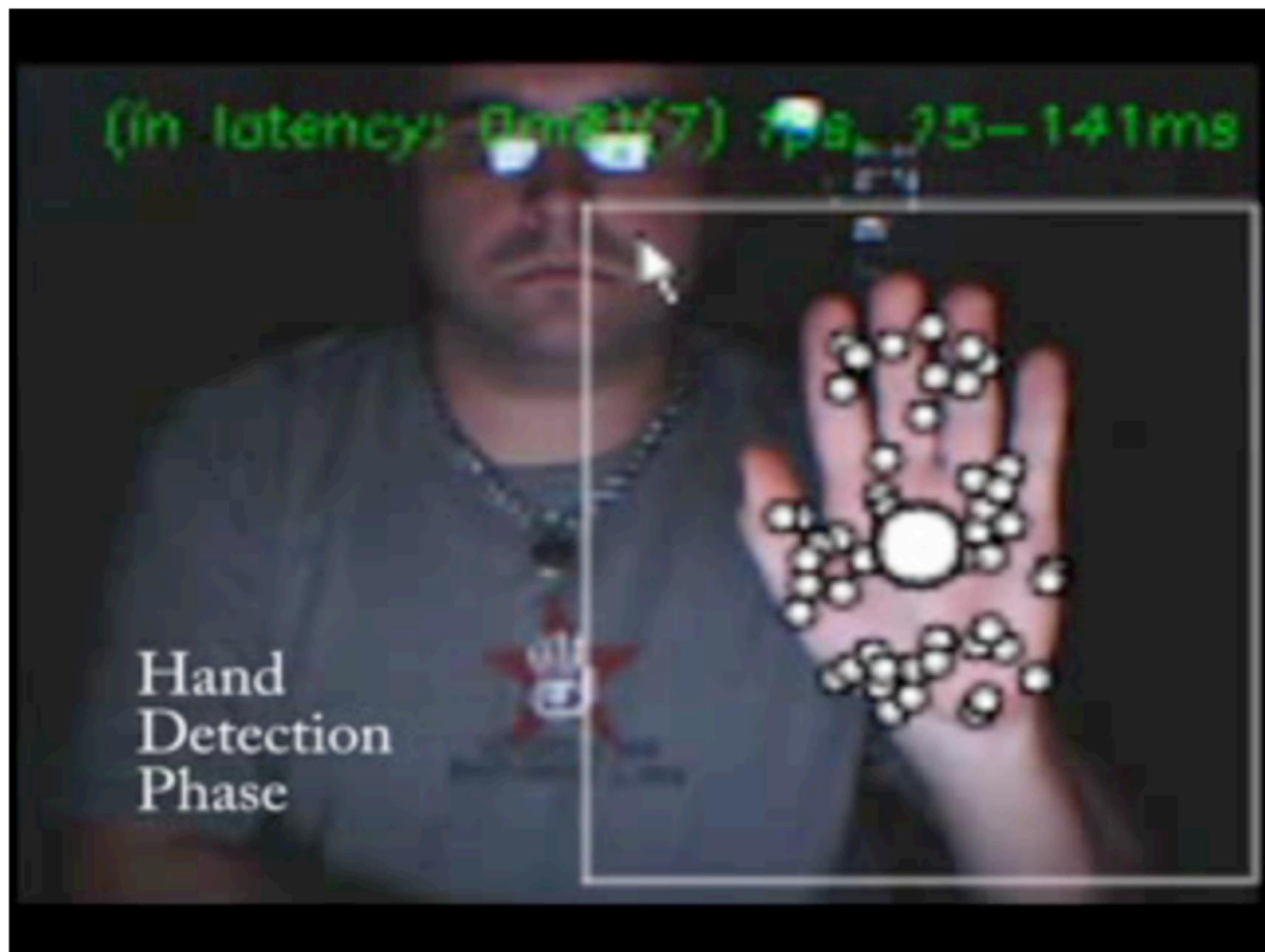
[Pfffft!]

What does this solve  
for us?

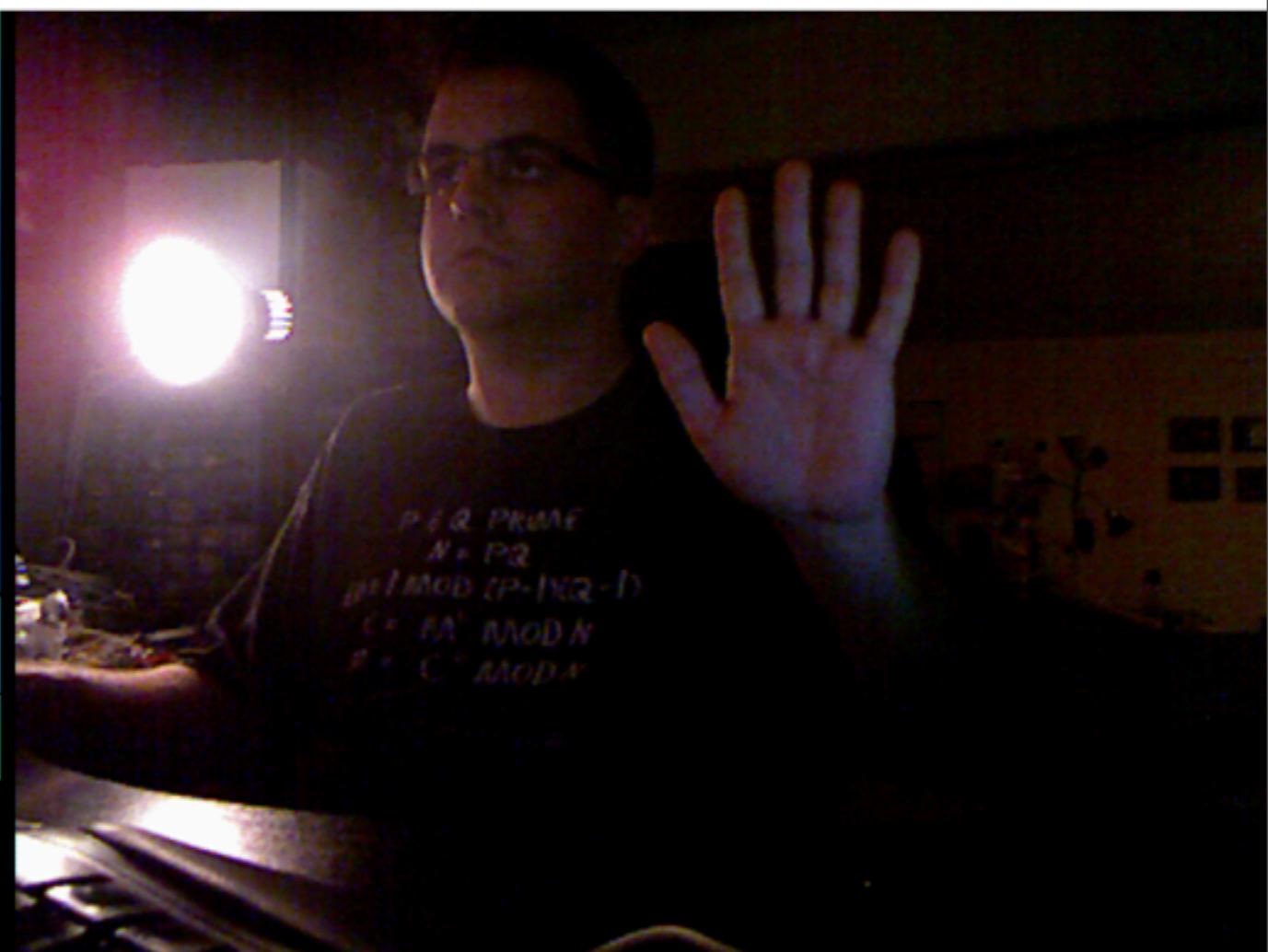
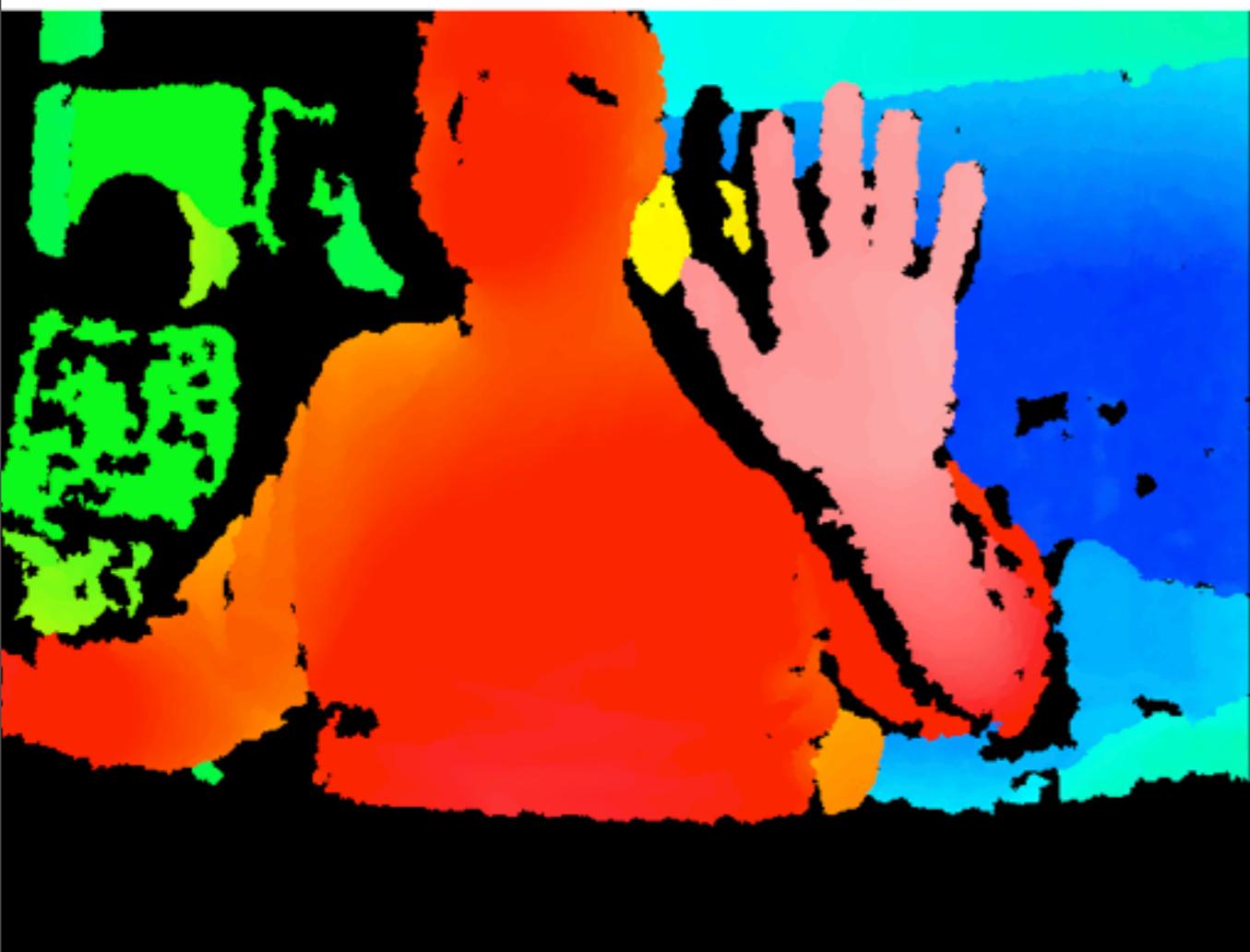
# Segmentation

# Background Subtraction

**[Sounds of learning!]**



<http://www.vimeo.com/296403>



[Ooooooh!]

# Day 0 Release





[Yay!]



**[Gasp!]**

```
bcdUSB          2.00
bDeviceClass      0  (Defined at Interface level)
bDeviceSubClass    0
bDeviceProtocol    0
bMaxPacketSize0     64
idVendor          0x045e Microsoft Corp.
idProduct          0x02ae
bcdDevice          1.0b
iManufacturer       2 Microsoft
iProduct            1 Xbox NUI Camera
iSerial             3 A00366A08793039A
bNumConfigurations   1
Configuration Descriptor:
  bLength          9
  bDescriptorType    2
  wTotalLength      32
  bNumInterfaces     1
  bConfigurationValue 1
  iConfiguration     0
  bmAttributes        0xc0
    Self Powered
  MaxPower          16mA
Interface Descriptor:
  bLength          9
  bDescriptorType    4
  bInterfaceNumber    0
  bAlternateSetting   0
  bNumEndpoints      2
  bInterfaceClass    255 Vendor Specific Class
  bInterfaceSubClass  255 Vendor Specific Subclass
  bInterfaceProtocol  255 Vendor Specific Protocol
  iInterface          0
Endpoint Descriptor:
  bLength          7
  bDescriptorType    5
  bEndpointAddress    0x81 EP 1 IN
  bmAttributes        1
    Transfer Type      Isochronous
    Synch Type        None
    Usage Type         Data
  wMaxPacketSize     0x0bc0 2x 960 bytes
  bInterval           1
Endpoint Descriptor:
  bLength          7
  bDescriptorType    5
  bEndpointAddress    0x82 EP 2 IN
  bmAttributes        1
```

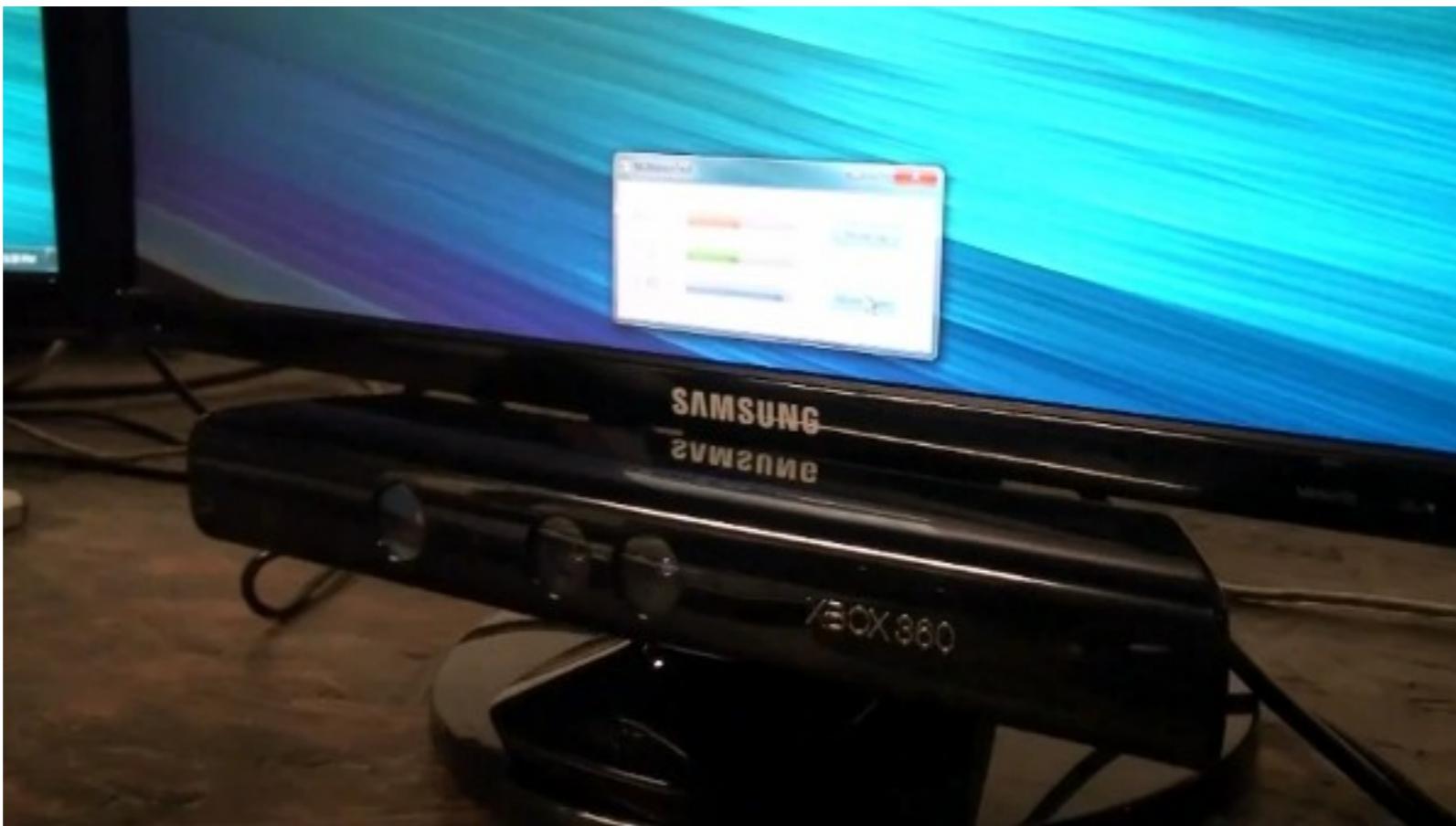
# Day I

## MS speaks out

[?????????]

# Day 3

## Code Laboratories and the Ransom



<http://www.youtube.com/watch?v=I8vSblw5SNk>

[Maybe yay?]



[Boooo!]

# Day 5

We get dumps



enuminit - Total Phase Data Center

File Edit Analyzer View Help

518.10 MB

Sp	Index	m:s.ms.us	Len	Err	Dev	Ep	Record	Summary
	0	00:00.000.000						Capture started (Aggregate) [11/09/10 21:41:02]
	1	00:00.000.000						Bus event <Host connected>
HS	2	00:07.934.342						Bus event <High-speed>
HS	3	00:07.934.342	1B I					OUT packet E1
	4	00:07.934.342	250 ms T					Bus event <Reset> / <Target disconnected>
FS	5	00:08.743.754						Bus event <Full-speed>
FS	6	00:08.743.761	16.2 us					Bus event <Reset> / <Chirp J> / <Tiny J>
FS	7	00:08.743.777	131 us					Bus event <Reset> / <Target disconnected>
FS	8	00:08.743.908	41.7 us					Bus event <Reset> / <Chirp K> / <Tiny K>
	9	00:08.743.950	164 ms T					Bus event <Reset> / <Target disconnected>
FS	10	00:08.945.774						Bus event <Full-speed>
FS	11	00:08.946.774	98.3 ms					Bus event <Suspend>
FS	12	00:09.047.105	526 us					Bus event <Reset> / <Chirp J> / <Tiny J>
FS	13	00:09.047.631	1.91 ms					Chirp K
FS	14	00:09.049.543	53.1 us					Bus event <Reset> / <Chirp J> / <Tiny J>
FS	15	00:09.049.596	48.5 ms					+ Chirp K-J pairs [453 Chirp K-J pairs]
FS	923	00:09.098.135	318 us					Bus event <Reset>
HS	924	00:09.098.454						Bus event <High-speed>
HS	925	00:09.098.454	10.6 ms					[86 SOF] [Frames: 1905 x - 1916.1]
HS	926	00:09.109.137	8B 00 00					Get Device Descriptor Index=0 Length=8
HS	939	00:09.109.205	125 us					I2 SOF [Frames: 1916.2 - 1916.3]

Text LiveSearch

No filter: 2.140 M records.

Protocol Lens: USB

Command Line

```
1> open
2> open(u'C:/Documents and Settings/ladyada/My
Documents/Projects/kinect/USBLogs/enuminit.tdc', True)
Buffer cleared.
File opened.
```

Details

Offset	0	1	2	3	4	5	6	7	ASCII
0x0000									

Data

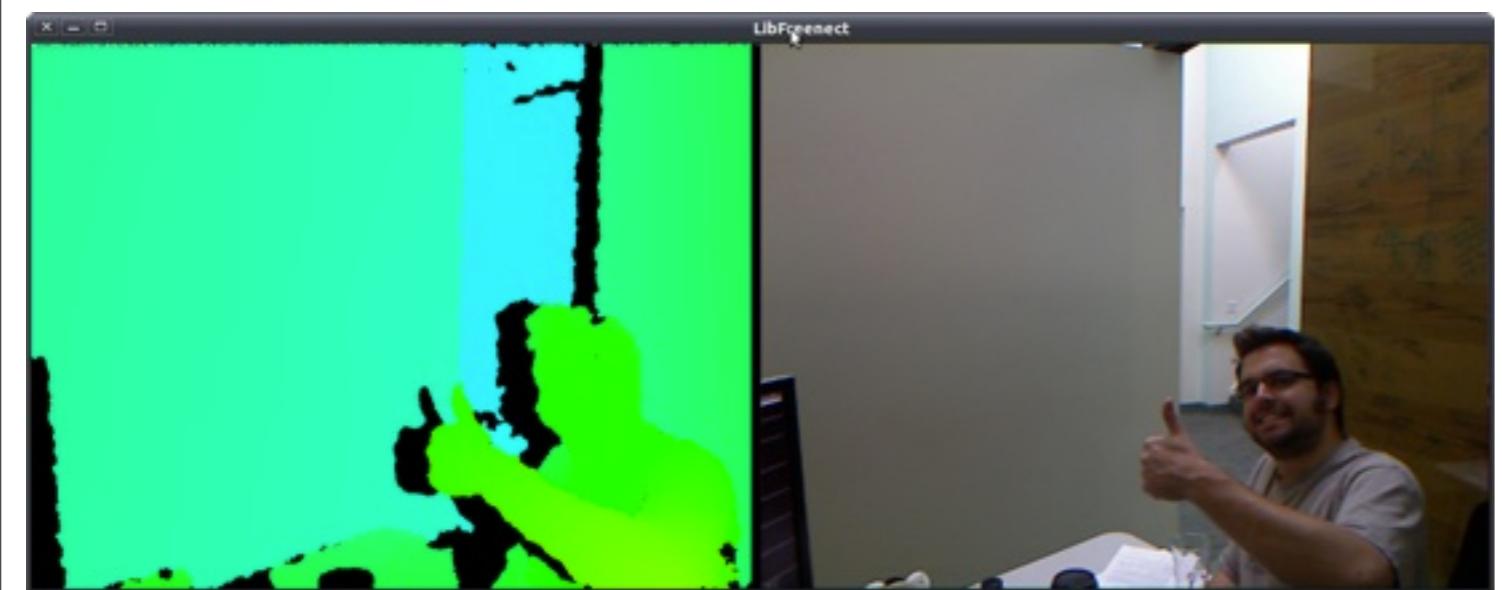
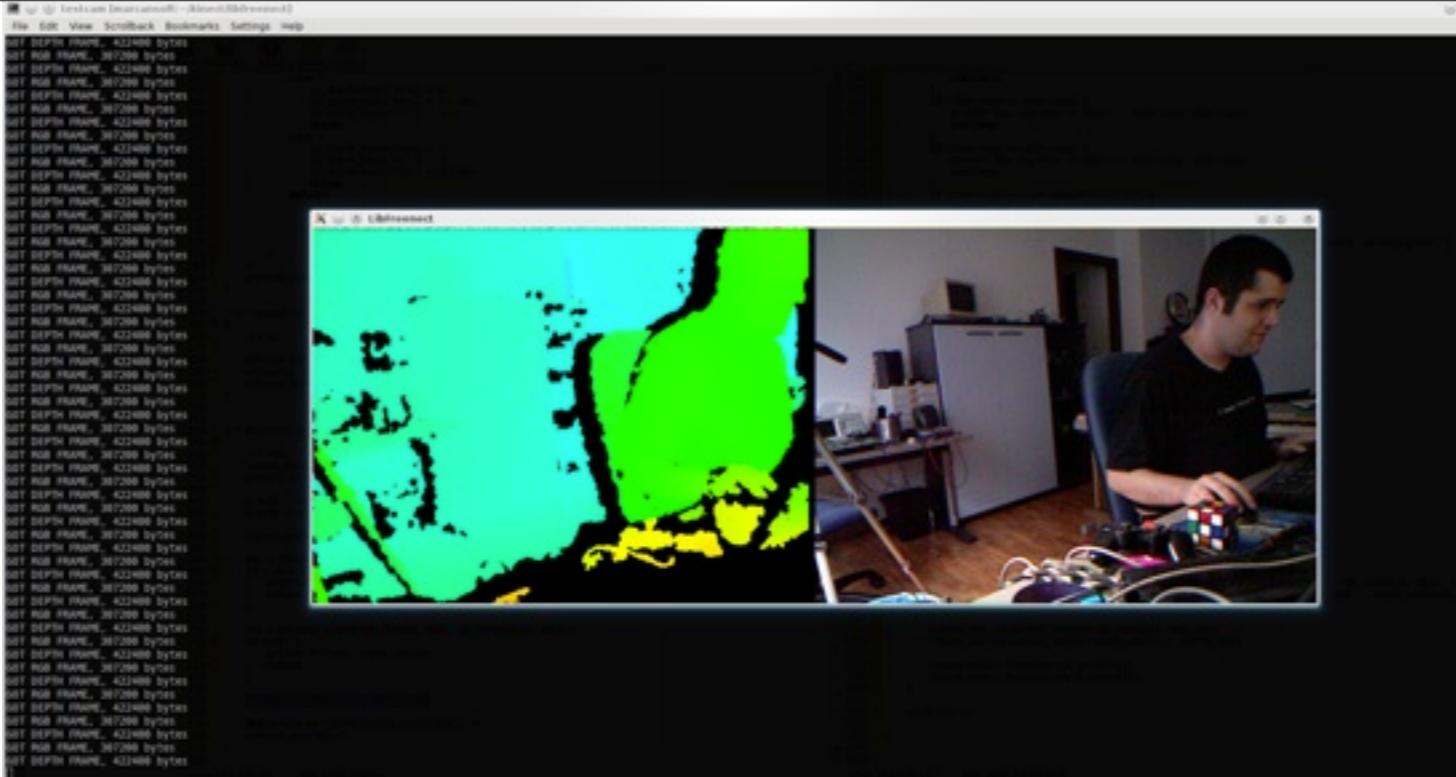
Bus LiveFilter Info

Ready Disconnected EN

**[Sound of Interest!]**

# Day 6

## Damn it, Europe



**[Half Yay Half Boo!]**

# **Day 7**

**The Community Begins**

<http://www.github.com/openkinect/>

OpenKinect / libfreenect

Unwatch Fork Your Fork Pull Request 140 25

Source Commits Network Pull Requests (4) Fork Queue Issues (9) Wiki (20) Graphs Branch: master

Switch Branches (2) Switch Tags (0) Branch List

Drivers and libraries for the Xbox Kinect device on Windows, Linux, and OS X — [Read more](#)

Downloads

SSH HTTP Git Read-Only git@github.com:OpenKinect/libfreenect.git This URL has **Read+Write** access

Don't segfault if kinect not connected.



Kenneth Johansson (author)

about 8 hours ago

commit 67c0d076abf40c7be5f0  
tree e0c81e0e621ad3bbcd54  
parent 562a7b28eb7ab7d7f361



JoshBlake (committer)

about 7 hours ago

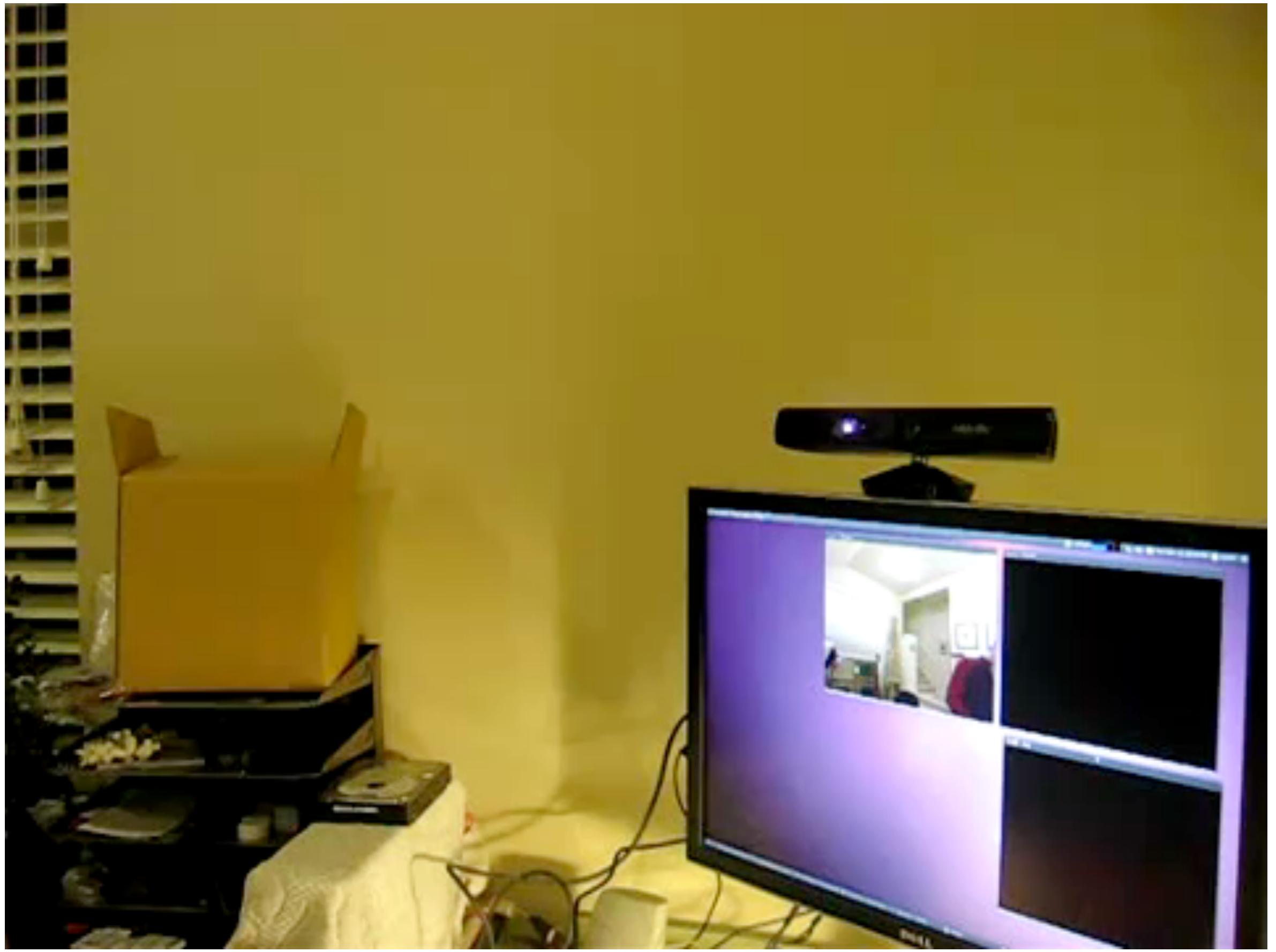
## libfreenect /

name	age	message	history
.gitignore	5 days ago	Merge remote branch 'marcan/master' [qdot]	
APACHE20	1 day ago	Add new license headers and files [marcan]	
GPL2	1 day ago	Add new license headers and files [marcan]	
LICENSE-2.0.txt	5 days ago	Updated drivers [JoshBlake]	
README.asciidoc	about 11 hours ago	Fix from roefer ( <a href="https://github.com/roefer">https://github.com/roefer</a> ) to ... [qdot]	
c/	about 8 hours ago	Don't segfault if kinect not connected. [Kenneth Johansson]	
csharp/	5 days ago	Reshuffled csharp stuff into csharp directory [qdot]	

# Day $\infty$

Oh god the future why won't it stop

<http://idav.ucdavis.edu/~okreylos/ResDev/Kinect/>



<http://www.youtube.com/watch?v=cRBozGoa69s>

# The Kinect Sensor in Mobile Robotics: *Initial Experiments*

Philipp Robbel  
Personal Robots Group  
MIT 2010

<http://www.youtube.com/watch?v=dRPEns8MS2o>

[Sounds of  
amazement!]

**But what do /you/ want  
to do, Kyle?**



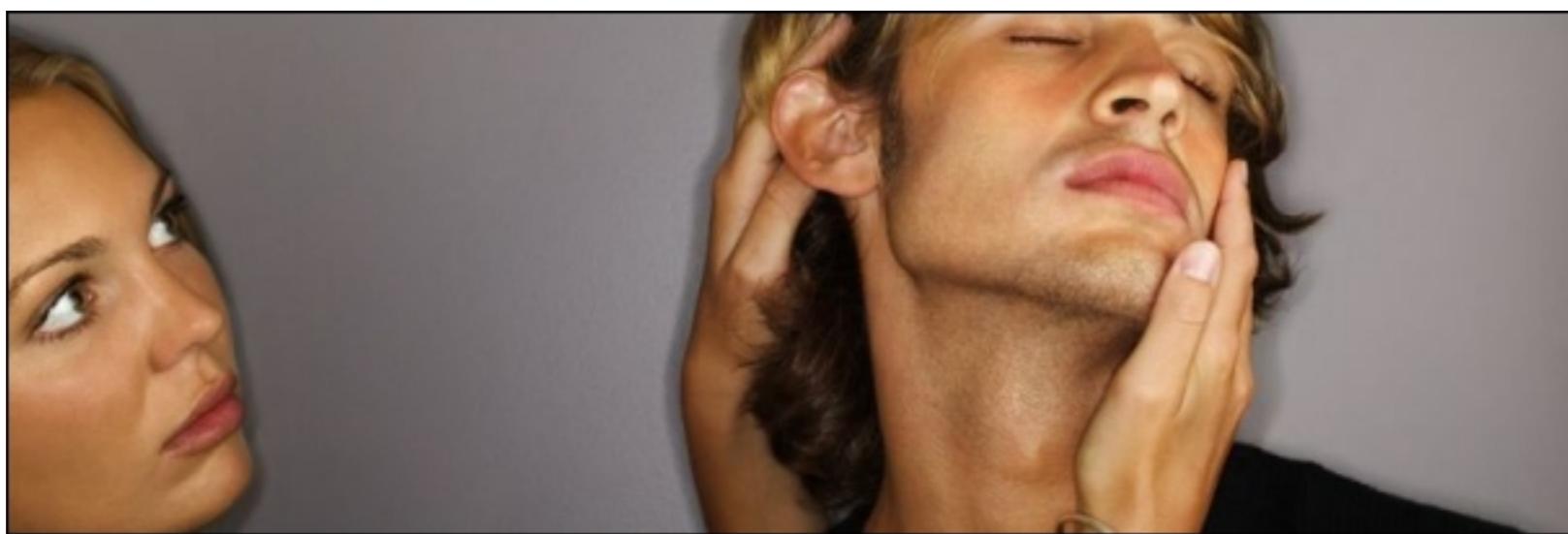
**[Laughter!]**



net



=

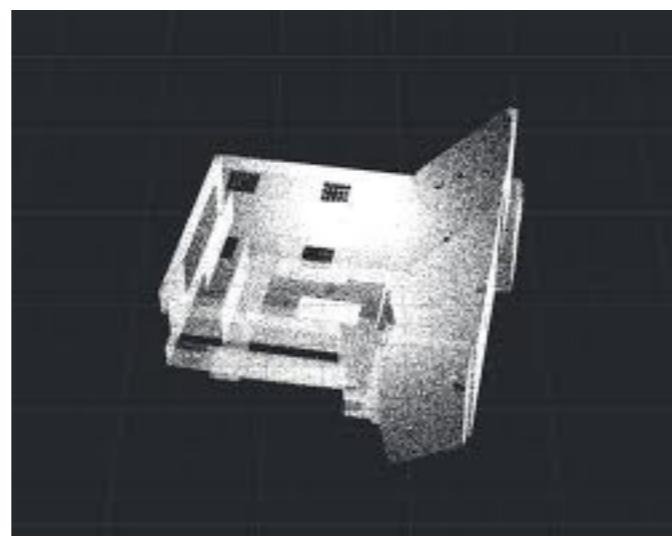


[Eww!]



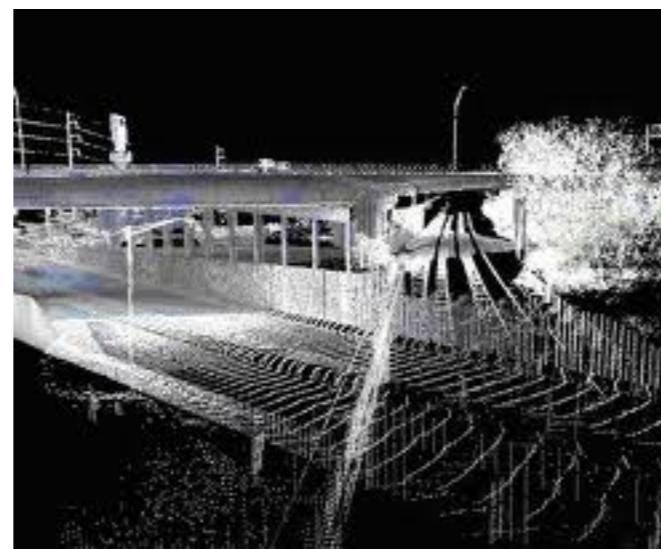


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[Neat!]

# Who's Got Drivers?

- C
- C++
- Java
- Processing
- OpenFrameworks
- Jitter via OfxSyphon (Jitter external soon)

# Thanks to

- The OpenKinect Community

**[Lots of Applause!]**

# Where to Go

- <http://www.openkinect.org>
- OpenKinect group on google groups (500+ members)
- #openkinect on Freenode
- @openkinect on twitter

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[Complete, utter,  
uncomfortable silence!]