COOL SHIT

Inspiring Creation and Creating Inspiration

Doug McCune

FUCK
SHIT
DAMN

I still love you

MY STORY

March, 2007

August, 2008

February, 2009

FUCK FLEX

Flex is a crutch, it's a box. Fuck Flex, leave it behind. If I'm hitting a brick wall then I need to find another road. Somewhere there's a path that leads higher up the mountain instead of circling at the same altitude. I'm driving faster and faster, but all that does is get me back to where I started in less and less time. I'm repeating myself repeating myself, and in the process I'm getting dizzy. I'm getting sick. Time to pull over. Time to get out of the car. I'll walk up this fucking mountain if that's the only way to get a different perspective.

I'll be talking about:

Steganography

Head Tracking

Augmented Reality

This is <u>not</u> a talk about:

Steganography

Head Tracking

Augmented Reality

This is really about:

Inspiration

Exploration

Creation

STEGANOGRAPHY

WTF is Steganography?

- Wikipedia says: "the art and science of writing hidden messages in such a way that no-one, apart from the sender and intended recipient, suspects the existence of the message, a form of **security through obscurity**"

- Doug says: "Straight up CSI shit"

Inspiration

Lee's Dead Drop

——-[GPS location (52.370067, 4.896679) - Wall to the left of room 617 - Need UV]——-

Exploration: File Types for Steganography

- Graphics formats: BMP (super easy), PNG (kinda easy), GIF (not sure)

- Audio: MP3 (no idea)

- SWF?

- How do you learn? Read the specs, read Wikipedia

Exploration: Least Significant Bit

- One RGB pixel: #RRGGBB

- Composed of 4 bytes (8 bits each)

- We only modify the last bit of each byte (which might mean no modification)

<u>original bytes</u>

01010101
01010101
01010101
01010101

01010101
01010101
01010101
01010101

<u>modified bytes</u>
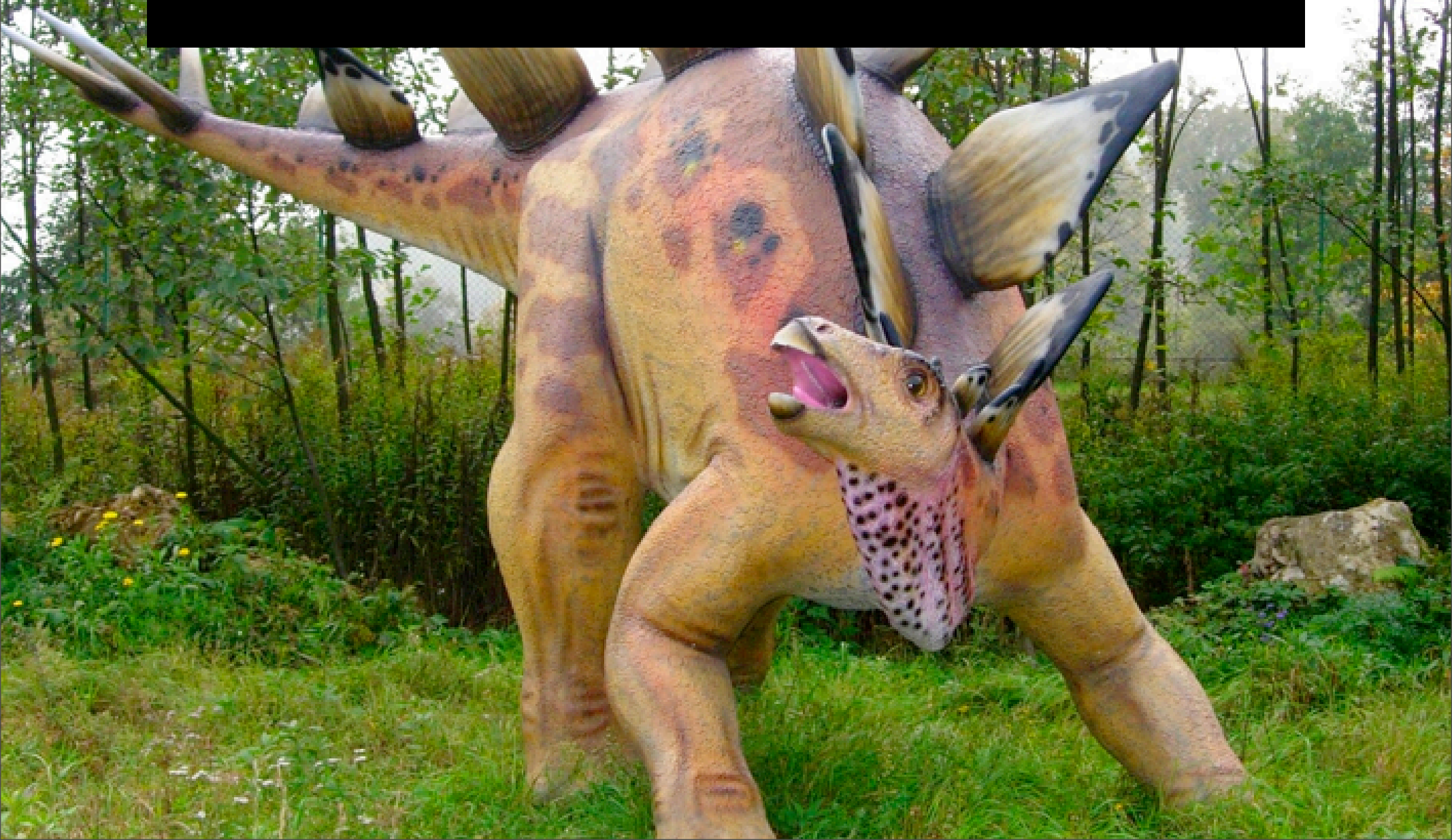
01010100
01010101
01010101
01010100

Exploration: Comparing BMP and PNG

BMP

Header `54 bytes`

Raw pixels
```
0x000000

0x00FF00

0x00FFFF

...
```

PNG

IHDR `N bytes`

IDAT
```
filter byte
```
`pixels for row 1`
```
filter byte
```
`pixels for row 2`

Exploration: Open Source PNG Libraries

- PNGEncoder - part of the Flex framework

- PNGDecoder - written by Heriet (heriet.info)

Creation

STEGAsaurus

- AIR app for embedding and extracting secrets from PNG files

- hide secret text messages

- drag and drop files to hide them in an image
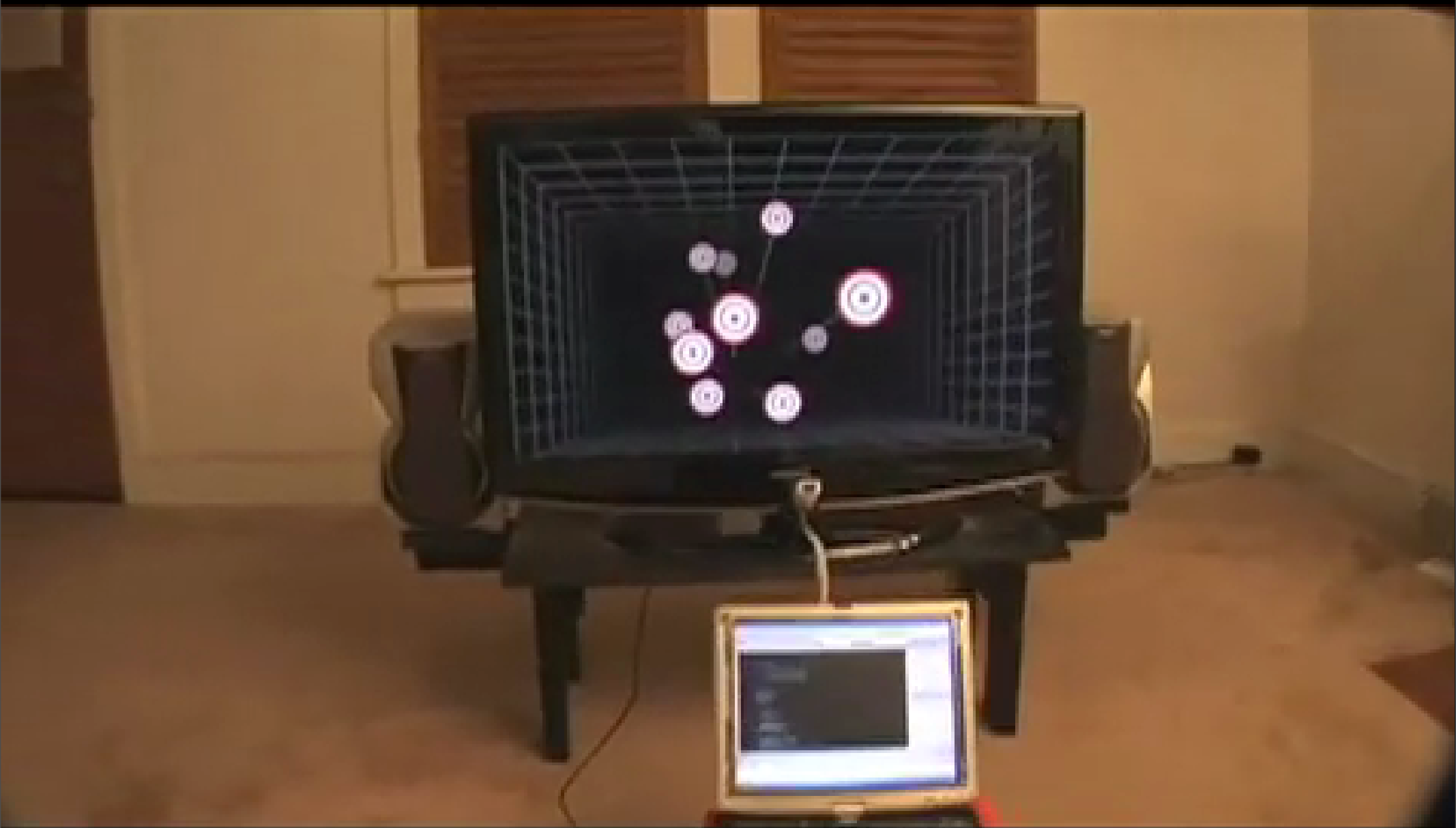
Take it to the next level

- Encrypt a SWF within a PNG and load it at runtime as an RSL or a Flex module

- Encrypt inside mp3s and playback secret message with text to voice software (Merapi?)

- AIR web browser that would show secret messages in images while browsing

- Use TwitPic to tweet secret messages hidden in images
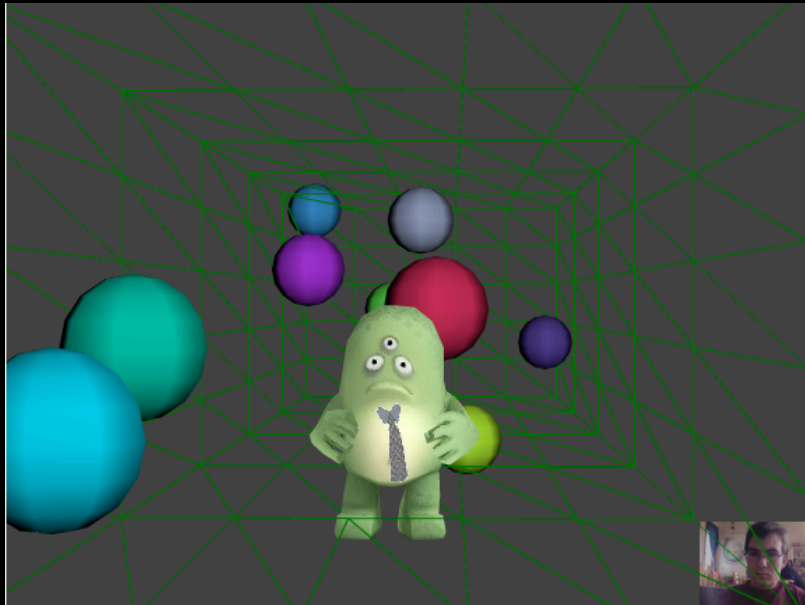
HEAD TRACKING
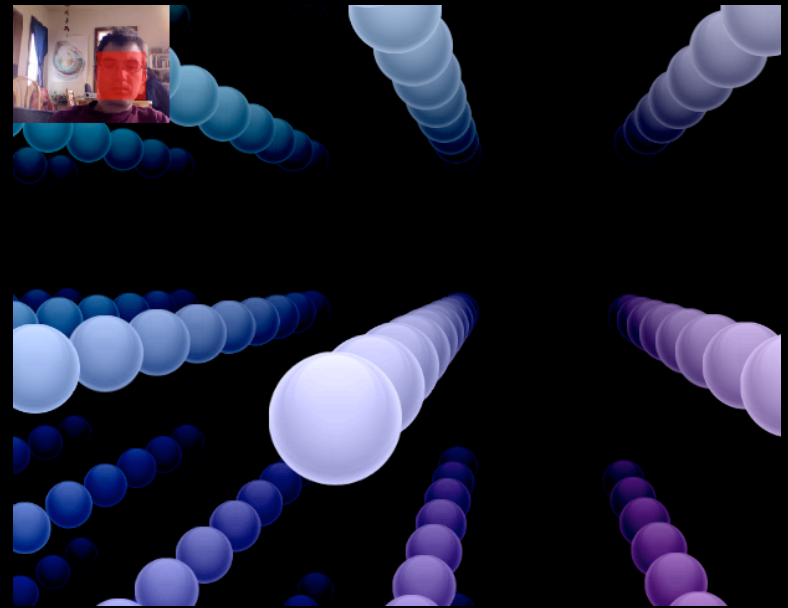
Inspiration:
Johnny Lee

http://johnnylee.net/projects/wii/

Normal Display (no head tracking)

Inspiration:
Flash Demos

Boffswana

http://www.boffswana.com/news/?p=498

mr. doob

http://mrdoob.com/90/Face_tracking_+_3D_Scene

Exploration: Marilena and Deface

- Marilena is written by Masakazu Ohtsuka

  - part of the Japanses libspark project (which also includes FLARToolkit and other badass stuff)

- Deface is written by Steve Shipman

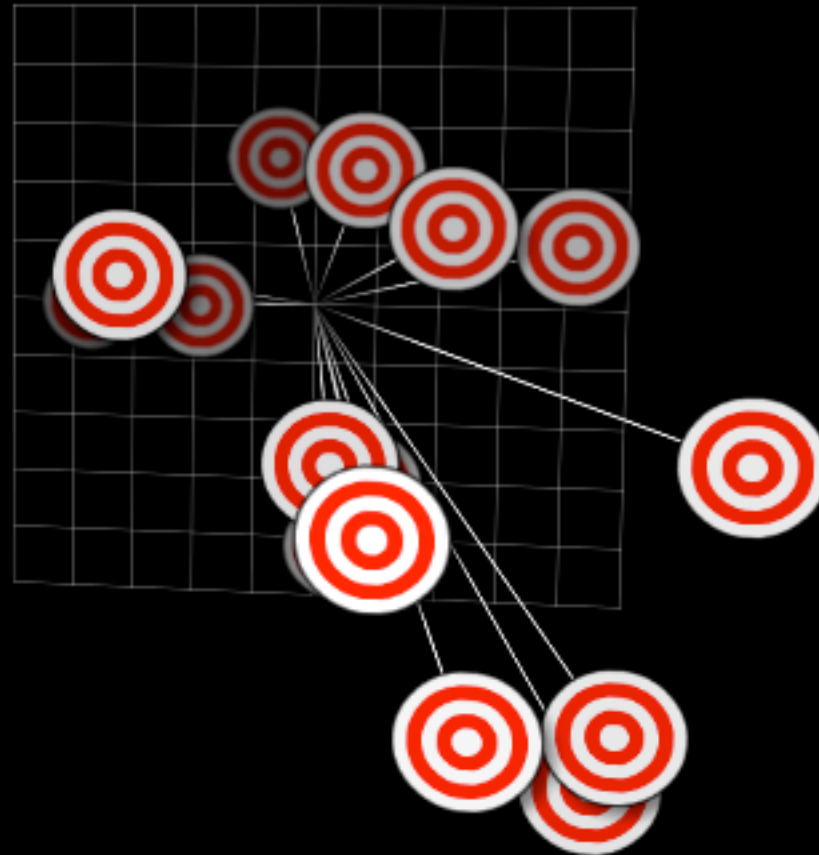- both are based on OpenCV that uses "Haar Cascades" to detect faces

Exploration: Haar Cascades

- Converts image to numeric computed values (based on surrounding pixel values)

- Scans for known "feature sets" in an image

- Tree-based structure with an array of root feature nodes

- Scans over and over at different resolutions

- I think it might be racist

Exploration: Haar Cascades

- The algorithm was designed to efficiently scan one image once

- NOT designed to continuously scan live video

- But with some simple changes we can fix that

Creation:
Flash Target Demo

Creation:
Safe Sexting

Head Tracking in Games

Creation:
Crappy Top Gun Game

Take it to the next level

- Make some games that don't suck

- Multi-player head tracking games using CoCoMo

- Eigenfaces AS3 implementation

    - used during login to check identity

    - restore user's preferences based on who they are

    - customize UI based on gender or race (and prepared to get sued)

AUGMENTED REALITY

Inspiration: Early Flash Webcam Examples from Grant Skinner

Inspiration:
Early FLARToolkit Demos

http://www.boffswana.com/news/?p=392

Inspiration: JackLinks Sasquatch

http://www.livingsasquatch.com/

Inspiration:
GE Smart Grid

http://ge.ecomagination.com/smartgrid/#/augmented_reality

Inspiration: Topps Baseball Cards

http://www.toppstown.com
http://www.youtube.com/watch?v=QAjEGqGnpFI

Inspiration:
Crazy AR Games

http://turing.lecoledEdesign.com/flasorne/
http://vimeo.com/3853814

Inspiration:
Weird Dolls from Japan

http://www.geishatokyo.com/jp/ar-figure/figure.html

Exploration: FLARToolkit

- ARToolkit is the base, written in C

- FLARToolkit is a AS3 port (C ported to Java ported to AS3)

- http://www.libspark.org/wiki/saqoosha/FLARToolKit/en

- **WARNING: GPL License**

Creation: Dress Up

- I apologize in advance for what I am about to do

Take it to the next level

- Greeting cards

- Wearable AR clothing

- Dorky graffiti

- Screw Flash, it's about the iPhone

WHAT'S ON YOUR LIST?

THANK YOU

http://dougmccune.com
doug@dougmccune.com