

Advanced Graphics and Interaction 2014: Lecture 1



Mario Romero
2014/09/03



VICSTHLM
VISUALISATION INTERACTION COLLABORATION

Agenda

1. Show AGI12 and AGI13
2. Introduce AGI14
3. Introduce VIC
4. Next time...

Advanced Graphics and Interaction 2012 and 2013

The Students



Andreas

Niklas

Eric



Johan

Robert

Joakim

Emil



André

Elvira

Jonas

It's all about the students



Students in Advanced Graphics and Interaction 2013
(AGI14) in the Visualization Studio VIC

The Team



Björn Thuresson
VIC director

Coordinate
Projects
Events



Henrik Edlund
VIC Engineer

Technical Support
Ideation
Critical Feedback



Mario Romero
AGI14 Coach

Guidance
Focus
Support

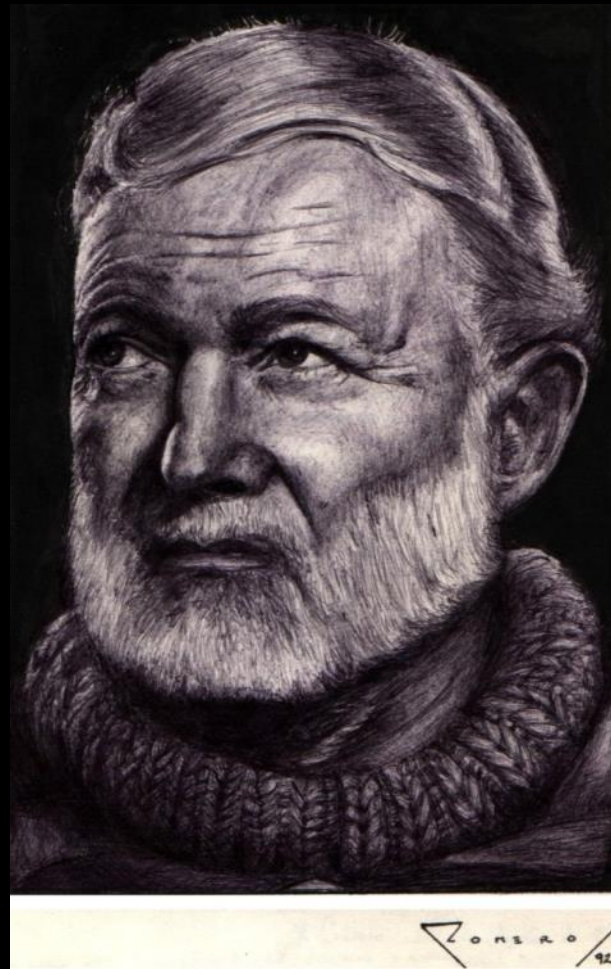
The Teacher



Budapest 1992



9/3/2014



AGI14 - L1

iHice lo que quise!



Nicholas Hogan - [Space Bar](#) ©2012



B.S. Industrial Engineering

B.S. Construction Engineering

Minors:

Art History

Graphic Design

English



Promote curricular advancement through interactive
computing technologies





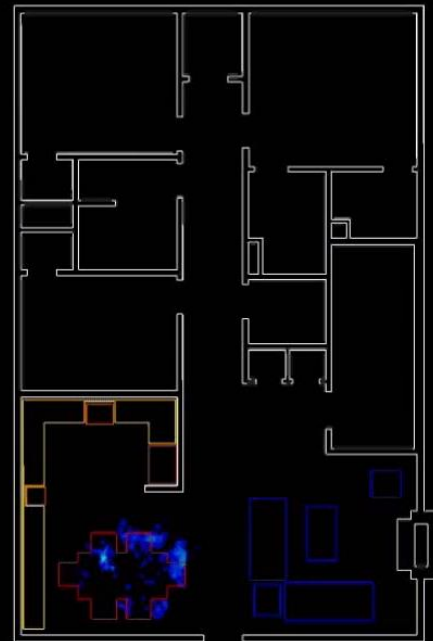
Master in Computer Science Artificial Intelligence

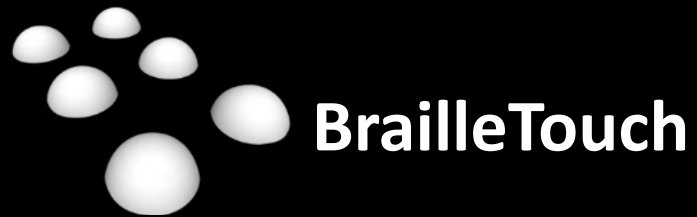


PhD Computer Science
Human-Computer Interaction
Information Visualization
Digital Media

Evaluating Video Visualizations of Human Behavior

Mario Romero
Alice Vialard
John Peponis
John Stasko
Gregory Abowd





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GLOBAL FOOTPRINT

12KW*
PER RACK

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⚠ SUBSCRIBER CONTENT: Mar 2, 2012, 6:00am EST | UPDATED: Mar 2, 2012, 9:34am EST

Georgia Tech-developed app allows eyes-free mobile texting



Urvaksh Karkaria
Staff Writer-
Atlanta Business Chronicle
Email | Twitter | Google | LinkedIn

A two-century-old code for reading and writing sight-free could soon allow the sighted to type without looking at the screen of their smart phone. A team of Georgia Tech researchers has developed a technology that uses Braille to make eyes-free mobile texting possible.

Researchers have built an application, called BrailleTouch, for smart phones and



AG114 - L1

Your Guide
Forward

 **Cherry Bekaert**^{LLP}
CPAs & Advisors

Learn More

Most Popular



1. Carter plans \$40 million Decatur project
2. Alpharetta buildings eyed for big corporate relocation
3. SunTrust to cut 40 branches in first quarter of 2013
4. Astronaut snaps night photo of Atlanta from space
5. Health IT firm athenahealth to bring more than 700 jobs to Midtown

More...

ment | Video

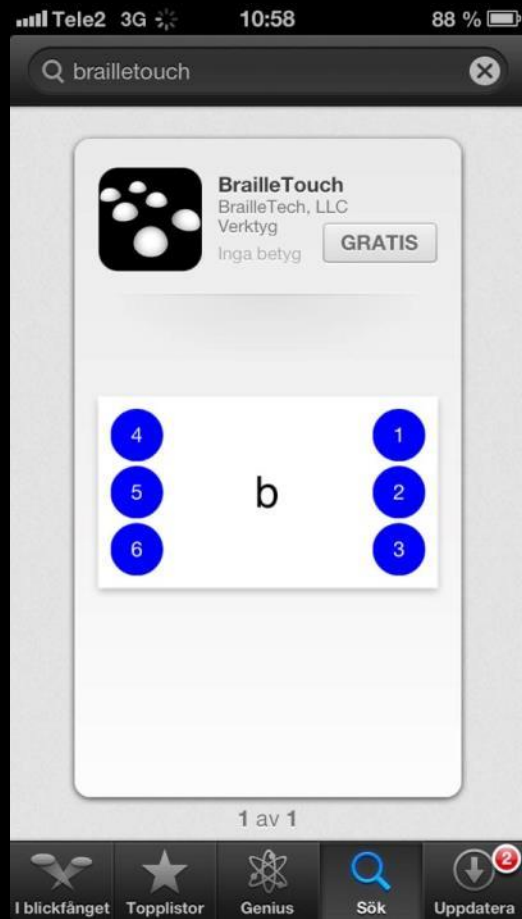
ADVERTISER

Make
Work
Work

Ken
'doc

ted over w
early death
nuclear r

20





Associate Professor
HCI Visualization Graphics



Teacher of the Year 2013

Mario Romero, HPCViz

"This year's Laureate have renewed education by successfully kill two, or perhaps three, birds with one stone.

When the students on courses in graphics, interaction, and visualization will show their skills, ideas and projects to outsiders at "Forskar-fredag", conferences and contests has been rewarded with great interest, media attention and prizes. At the same time deepen the students' problem-based learning and motivation through their project work will be significant and appreciation outside the classroom. Mario Romero additionally utilize his experience of scientific publication and manages through innovative course structure of universities perform tasks of research, teaching and with the community in a single.



Contact Mario

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- www.kth.se/profile/marior/
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- twitter.com/MarioRomero73
- www.linkedin.com/in/marioromero
- Skype: marfeote

The Studio

Students' Resources: Visualization Studio

- Research
 - Visualization Supported Collaborative Work
 - Foundational Technology
 - User Evaluations
- Showcase and classroom environment
- Outreach



Technologies in



9/3/2014



AGI14 - L1

- High-resolution projection wall with stereoscopy
- Oculus Rift
- Cinema quality audio
- High-definition video communications with eye contact
- Holographic display
- Multi-touch interactive surfaces
- Eye tracking
- GPU-based computing cluster
- Diverse interaction and sensor systems (haptic, mocap, etc.)
- Haptic Devices
- 3D printer

Visualization Pipeline

expanded from Readings in Information Visualization: Using Vision to Think
By Stuart K. Card, Jock D. Mackinlay, Ben Shneiderman, 1999



Studio Contacts

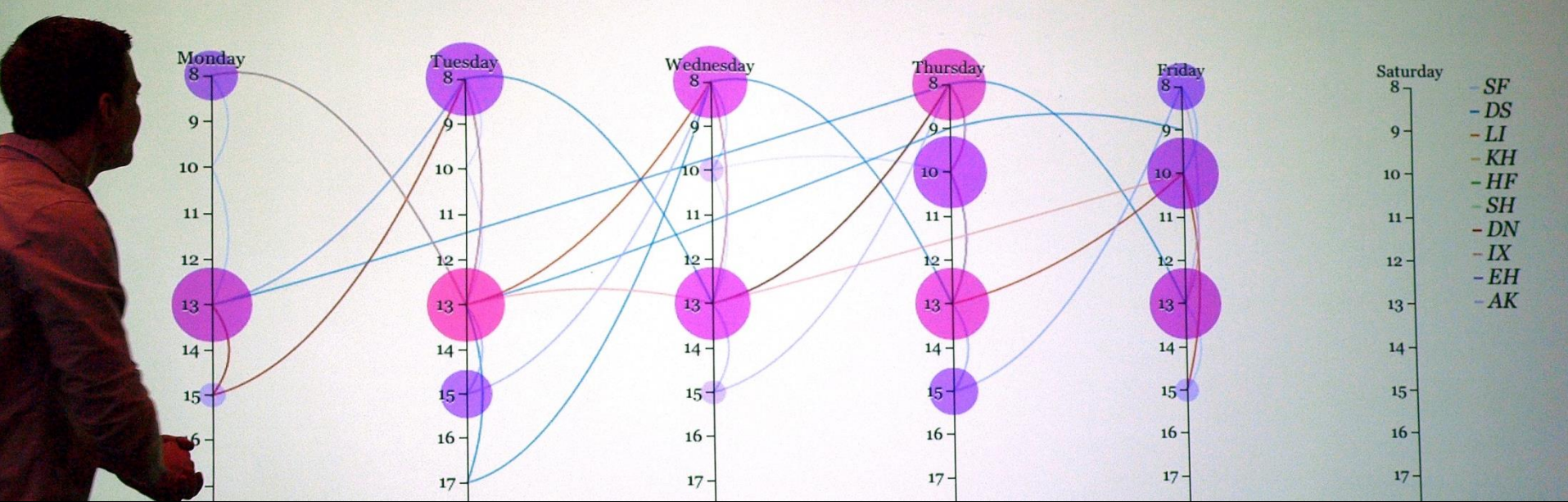
- [Webpage](#)
- [Directions](#)
- [Map](#)
- [Booking](#)
- [Facebook](#)
- [Björn Thuresson](#)
- [Henrik Edlund](#)

The Learning



IVIS14 final demo in VIC

Students teaching themselves and each other.



IVIS13 final demo in VIC

Students teaching themselves and each other.



VIS14 final demo in VIC

Students teaching themselves and each other.



IVIS14 final demo in VIC

Students teaching themselves and each other.



IVIS14 students @ C-Awards

Students presenting to the open public.



AGI12 students @ FF

Students presenting to the open public.



AGI13 students @ GAMEX

Students presenting to the open public.



AGI13 students @ GAMEX

Students presenting to the open public.



AGI13 students @ GAMEX

Students presenting to the open public.

The Seed



SIGGRAPH2012
The 39th International Conference and Exhibition
on Computer Graphics and Interactive Techniques

Conference 5–9 August 2012
Exhibition 7–9 August 2012
Los Angeles Convention Center

Technical Papers

P R E V I E W

The Challenge

Advanced(Graphic + Interaction) = Project

Select Portfolio

AGI12

Virtual Sculpting

- Volume Rendering
- Computer vision interaction







Dust Storm

- Particle Systems
- Accelerometer-based gesture control



Base Jumper

- Octree rendering
- Computer vision body control



Public Presentations



AGI13

SolarSense



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DangeRoads

InnerViz





FaceUp

Parasomnia



9/3/2014

AGI14 - L1

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ComposIt





WingMan

9/3/2014

AGI14 - L1

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Dispersion



IMPACT

Chrome Arkiv Redigera Visa Historik Bokmärken Fönster Hjälp 10 (3:32) tors 11:04

De utvecklar spel för säkrare vägar x

www.metro.se/nyheter/de-utvecklar-spel-for-saekrare-vagar/EVHmkAlv61DEBTL0Kt8Y/

metro

"För alla som varit
galet förälskade"
Johan Norberg, idéhistoriker &
författare

+8°C
12m/s
Malmö

MENY

Följ Metro
f t

Start > **Nyheter** Pryn Senaste nytt Sverige Världen In English

UPPDATERAD: I dag 08:42 PUBLICERAD: I går 23:17

De utvecklar spel för säkrare vägar

Den 1 december börjar nya regler gälla för mobilanvändning vid ratten. Och i samband med det utvecklar studenter vid KTH och Berghs i Stockholm ett spel som ska avskräcka förare från att köra bil och sms:a samtidigt.

f Rekommendera 14 t Tweeta 3 g+1 0



Stina Ekholm visar och Cedric Mrin, Yann Chazallon, Remi Blateron och Henrik Boström tittar på.
Foto: Urban Brådhe

Spellet går enligt studenterna ut på att uppmärksamma på farorna man utsätter sig själv och andra för när man använder telefonen bakom ratten.

MEST LÄST



- 1 Tryckte falska tusenlappar i mangelrum
- 2 Hårda hot mot Jimmie Åkesson i ny låt
- 3 27 djur dog under Hobbit-inspelning

ANNONS

KOMMENTERAT



- 1 Lisa Magnusson: Sverigedemokraterna är fortfarande rasister
- 2 Hårda hot mot Jimmie Åkesson i ny låt

SENASTE NYTT

- 10:43 Malmberg prisas för bok om Blake
- 10:42 Flygplan i diket på Arlanda
- 10:42 Nya stjärnor söker schlagerrevansch
- 10:41 Vietnam inför hårdare Facebookregler
- 10:38 Saknad man var misstänkt för dubbelmord

Visa fler...

SÖK

Sök på metro.se

Metro Sverige
Like

11,423 people like Metro Sverige.

Facebook social plugin

Tweets Följ

Welcome to AGI14

- Intended Learning Outcomes:
 1. Collaborate to build original and stable projects that combine methods in advanced computer graphics and advanced human-computer interaction;
 2. Communicate the theory and practice of these methods at a technical and a practical level;
 3. Provide informed constructive criticism to the development of the projects from other teams;
 4. Demonstrate the projects at large public venues to open audiences.

AGI14 Grade Assignment

- Project 1 50%
- Project 2 40%
- Assignments 10%
 - < 100 minutes/week
 - Reading
 - Writing
 - Coding
 - Interacting

Project 1 (50%)

• Proposal	5%	10/9
• Demo	5%	24/9
• Forskar Fredag	10%	26/9
• Deliverable 1	5%	28/10
• ComiCon	10%	30/10
• Open House KTH + BSC	10%	5/12
• Deliverable 2	5%	12/12

Project 2

• Proposal	5%	11/11
• Demo	10%	2/12
• Open House KTH	15%	5/12
• Deliverable	10%	12/12

Deliverables

- Working VIC Demo
- Code with good comments
- Webpage
 - Description
 - Photos
 - "Making of" documentary (2 minutes)
 - Demo Reel (30 seconds)
 - PR Material: logo, trailer, flyers, posters, catalog...
 - User Testimonials

Assignment 1 For Friday at 15:00

1. Answer this [Survey](#)
2. Watch these videos and answer this [survey](#):
 1. [2012 SIGGRAPH Technical Papers](#)
 2. [2012 SIGGRAPH Emerging Technologies](#)
 3. [2013 SIGGRAPH Technical Papers](#)
 4. [2013 SIGGRAPH Emerging Technologies](#)
 5. [2014 SIGGRAPH Technical Papers](#)
 6. [2013 SIGGRAPH Emerging Technologies](#)
3. Read this six-page paper and answer this [survey](#):
 1. [Romero 2013](#)
4. Read this six-page paper and answer this [survey](#):
 1. [Romero et al 2014](#)
5. Familiarize yourself with [KTH Social](#) and [Facebook](#) group pages
6. Think of what you would like to build in AGI14

Next Class

- Friday 15:00 – 19:00 (!)
- Form groups
- Brainstorm
- Discuss
- Propose
- Pizza and a movie?

BREAK

STUDIO TOUR

Thank you!

marior@kth.se

Questions?

Advanced Graphics and Interaction

High-Quality Ambient Occlusion	Animated Crowd Rendering	Virtual Reality
Volumetric Light Scattering	Collision detection	Embodiment
Shadow Maps	Hair	Kinect
Multi-Texturing Techniques	Snow	Wii mote
Cloth simulation	Clouds	Multi platforms
Soft Bodies	Geometric texturing	4k screen - touch
Fluids	Voxels - texturing - modeling - animation	Haptics
Smoke	Octree rendering	Mobile interaction
Rigged body animation	Volumetric shadows	3D printing
Rigid Body simulation	GPU Ray Tracing of large scenes with shadows, reflections and ambient occlusion	Microsoft surface
Multiple specular reflections and refractions	...	Touch screens
Shading techniques		Gestures
N-body simulation		Accelerometers
Generating Complex Procedural Terrains		On-body sensing
		Sonification
		...