Agenda

1. Show AGI12 and AGI13
2. Introduce AGI14
3. Introduce VIC
4. Next time...
Advanced Graphics and Interaction
2012 and 2013
The Students
It’s all about the students

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

9/3/2014
The Team
The Teacher
Budapest 1992
¡Hice 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
Evaluating Video Visualizations of Human Behavior

Mario Romero
Alice Vialard
John Peponis
John Stasko
Gregory Abowd

GvU
Georgia Tech School of Interactive Computing
hsi
Health Systems Institute
AWARE HOME RESEARCH INITIATIVE

9/3/2014 AGI14 - L1
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 smartphone. 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 smartphones and tablets.
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 “Forskare-fredag”, conferences and contests has been rewarded with great interest, media attention and prices. At the same time deepen the students’ problem-based learning and motivation through their project work will be significantly appreciated outside the classroom. Mario Romero additionally utilizes experience of scientific publication to manage through innovative course structure of universities perform tasks of research, teaching and with the community in a single...
Contact Mario

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  – VIC
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• www.kth.se/profile/marior/
• www.facebook.com/marioromero73
• twitter.com/MarioRomero73
• www.linkedin.com/in/marioromero
• Skype: marfeote
Students’ Resources: Visualization Studio

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

- 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
Studio Contacts

- Webpage
- Directions
- Map
- Booking
- Facebook
- Björn Thuresson
- Henrik Edlund
The Learning
Students teaching themselves and each other.
Students teaching themselves and each other.
Students teaching themselves and each other.
Students teaching themselves and each other.
Students presenting to the open public.
Students presenting to the open public.
Students presenting to the open public.
Students presenting to the open public.
Students presenting to the open public.
The Seed
SIGGRAPH 2012
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
PREVIEW
The Challenge
Advanced(Graphic + Interaction) = Project
Select Portfolio
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
IMPACT
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 smsa samtidigt.

Stina Ekholm visar och Cedric Mrin, Yann Chezallon, Remi Blateron och Henrik Boström tittar på.

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

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Due Date</th>
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<tbody>
<tr>
<td>Proposal</td>
<td>5%</td>
<td>11/11</td>
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<tr>
<td>Demo</td>
<td>10%</td>
<td>2/12</td>
</tr>
<tr>
<td>Open House KTH</td>
<td>15%</td>
<td>5/12</td>
</tr>
<tr>
<td>Deliverable</td>
<td>10%</td>
<td>12/12</td>
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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
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
Volumetric Light Scattering
Shadow Maps
Multi-Texturing Techniques
Cloth simulation
Soft Bodies
Fluids
Smoke
Rigged body animation
Rigid Body simulation
Multiple specular reflections and refractions
Shading techniques
N-body simulation
Generating Complex Procedural Terrains

Animated Crowd Rendering
Collision detection
Hair
Snow
Clouds
Geometric texturing
Voxels - texturing - modeling - animation
Octree rendering
Volumetric shadows
GPU Ray Tracing of large scenes with shadows, reflections and ambient occlusion

Virtual Reality
Embodiment
Kinect
Wii motes
Multi platforms
4k screen - touch
Haptics
Mobile interaction
3D printing
Microsoft surface
Touch screens
Gestures
Accelerometers
On-body sensing
Sonification

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