Advanced Graphics and Interaction 2014: Lecture 8

AGI14 Student Demos @ VIC

Mario Romero

2014/09/24

KTH VETENSKAP OCH KONST

VICSTHLM
VISUALISATION INTERACTION COLLABORATION

Course Schedule

1.	Wed Sept 03 13-15	Lecture 1	Intro
2.	Fri Sept 05 15-19	Lectures 2-3	Group Formation and brainstorming
4.	Wed Sept 10 13-15	Lecture 4	Proposals
5.	Thu Sept 11 10-12	Lecture 5	Feedback on proposals
6.	Mon Sept 15 8:30-10	Lecture 6	Hello World! Demos
7.	Thu Sept 18 10-12	Lecture 7	Demo Day and ForskarFredag Planning
8.	**Wed Sept 24 14-16**	**Lecture 8**	**Demo Day!!!**
•	Thu Sept 25 16-20	Debaser Invation	Setup 16:00 – 20:00
•	Fri Sept 26 8-18	Debaser Domination	ForskarFredag 2014!!!
9.	Mon Sept 29 8-10	Lecture 9	Reflections of ForskarFredag
10.	Wed Oct 8 13-15	Lecture 10	Agile Development → ComiCon
11.	Mon Oct 13 8-10	Lecture 11	Agile Development 2
12.	Wed Oct 15 13-15	Lecture 12	Aglie Development 3
•	Wed Oct 29 16-23	Kista Mässan Invation	Setup 16:00 – 23:59
•	Thu Oct 30 -Sun Nov 2, 9-19	Kistamässan Domination	COMICON 2014!!!
13.	Tue Nov 4 10-12	Lecture 13	Reflections on ComiCon
14.	Wed Nov 5 10-12	Lecture 14	New groups
15.	Fri Nov 7 15-19	Lectures 15-16	Epson Moverio Workshop
17.	Tue Nov 11 10-12	Lecture 17	Proposals
18.	Tue Nov 18 10-12	Lecture 18	Feedback on proposals. Early hello world dem os
19.	Tue Nov 25 10-12	Lecture 19	Hello world !demos
20.	Tue Dec 2 10-12	Lecture 20	Demo Day!!!
•	Thu Dec 4 15-18	VIC Invation	Prepare Open House
21.	Fri Dec 5 15-19	Open House	AGI14-VIC Open House

Demo: Schedule

1. Pod Racer 14:15

Context switch 10:35

2. Space Survival 14:40

Context switch 11:00

3. 2Pacs 15:15

Context switch 11:35

4. YA3 15:40

PodRacer

Carl Ahrsjö
Johan Storvall
Anton

Introduction

PodRacer is a racing game that aims to create an immersive virtual reality gaming experience using haptic feedback. We want to understand what useful haptic feedback in combination with modern virtual reality technology can provide in a gaming context.

Motivation

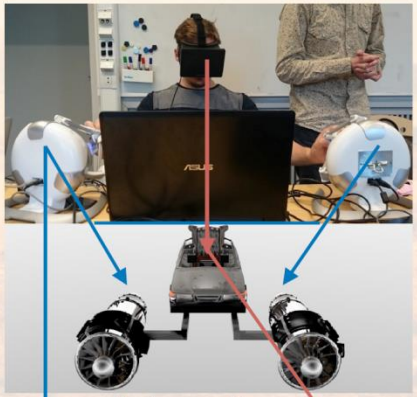
- Learning about, and implementing modern graphic and interaction technologies
- Connecting technologies
- Creating an entertaining game

Goals

- Further Immersion
  - *Fire particle system*
  - *Heat effects*
  - *Simulating speed through graphics and haptic feedback*

Technologies

- Unity3D – Graphics engine
- Blender – 3D-modelling
- Novint Falcon – Plugin & SDK
- Oculus Rift – Plugin & SDK



Interaction

2x Novint Falcons – controlling each engine & haptic feedback

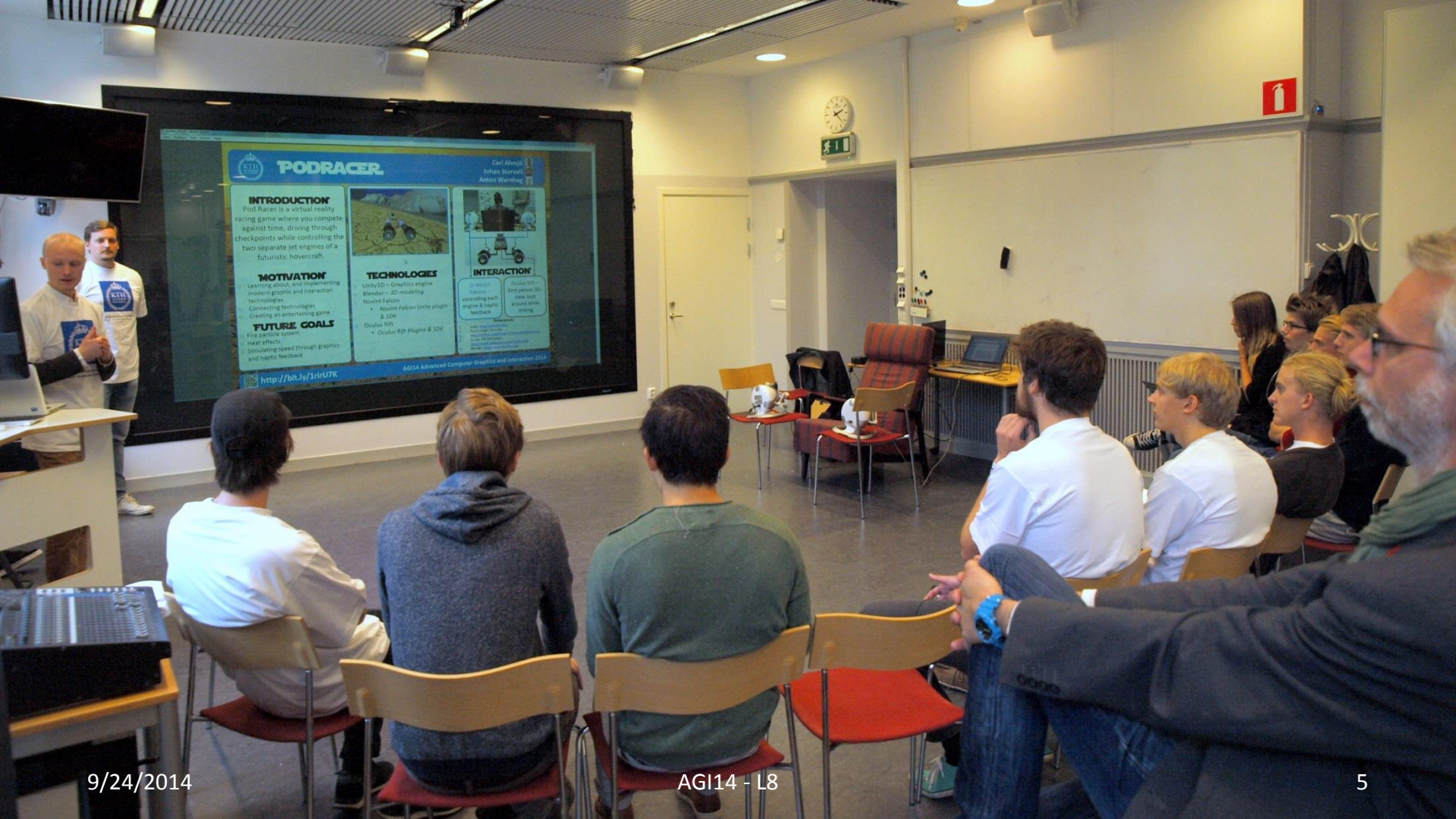
Oculus Rift – First person 3D-view, look around while driving

References

1. Unity: http://unity3d.com/
2. Falcon plugin for unity:
3. https://github.com/kbogert/falconunityReference
4. Oculus Rift SDK/plugin: http://vrwiki.wikispaces.com/Oculus+Rift
5. Blender: http://www.blender.org/

How to play

- Start with the handles of the Novint Falcons fully extended and start the engines by pushing the button on each handle
- Accelerate by pushing the handles of the Novint Falcons forward
- Turn left by decelerating the right engine and vice versa for right turns
- Go through each of the three checkpoints to make a complete lap
- Beat the high score
- Have fun!


PODRACER
Carl Ahnjö
Johan Storvall
Anton Warnhag
INTRODUCTION
Pod Racer is a virtual reality racing game where you compete against time, driving through checkpoints while controlling the two separate jet engines of a futuristic hovercraft.
MOTIVATION
Learning about, and implementing modern graphic and interaction technologies
Connecting technologies
Creating an entertaining game
FUTURE GOALS
Fire particle system
Heat effects
Simulating speed through graphics and haptic feedback
TECHNOLOGIES
Unity3D – Graphics engine
Blender – 3D-modeling
Novint Falcon
Novint Falcon Unity plugin & SDK
Oculus Rift
Oculus Rift Plugins & SDK
INTERACTION
2x Novint Falcon – controlling each engine & haptic feedback
Oculus Rift – First person 3D-view, look around while driving
http://bit.ly/1rlrU7K
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KTH
Oculus

Mario’s Feedback to Pod Racer

Your game is exceptional and looking at people play is fantastic. I am dying to try it myself. You will receive very valuable feedback from the audience. Be mindful. Yet, you already know that you need more balancing in your game. Your walls need to push back with subtle haptics and with special visual and sound effects. You need a sound track and some level of sound effects. We will consider the sound and haptics as part of the interaction of your game, but, I, as well as you, would like to focus on the graphics. I want to push your graphics as far as they can go. I would like to start with motion blurring, de-alising, atmospheric effects, and particle systems for dust and fire. That should keep you busy. Let's see what else we learn tomorrow. Grade: Pass with Honors (5/5). Great work!

Space Survival

Stefan Etoh
Oscar Friberg
Johan Bäckman

Introduction & Motivation

- Space walking simulator
- Immersive gameplay
- Multimodal

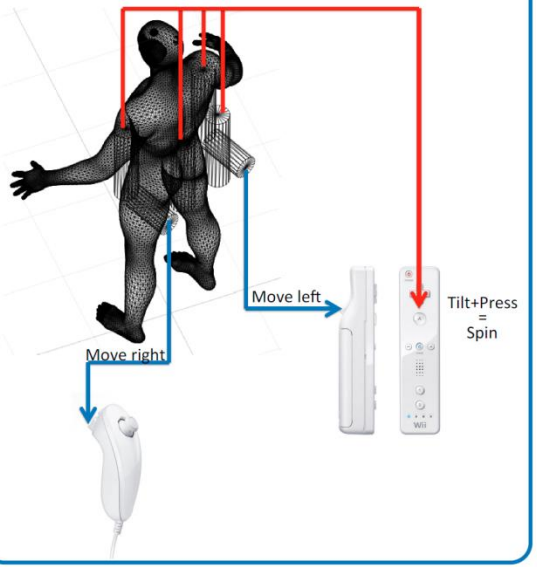
Goals

- Realistic physics
- Animated movements
- Haptic feedback

Methods

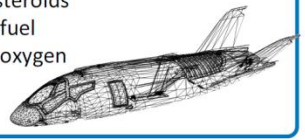
- Blender & Unity
- Oculus Rift
- Wii Remotes
- + plugins

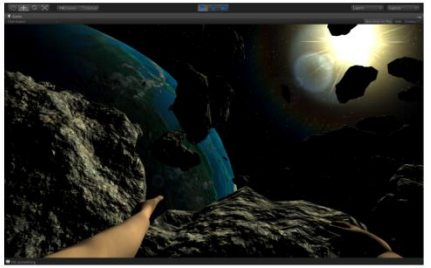
How do you play?



Gameplay goal

- Reach your ship
  - Avoid asteroids
  - Limited fuel
  - Limited oxygen





User feedback

References

1. *The Wii Remote as an input device for 3D interaction in immersive head-mounted display virtual reality* [Chow]
2. *Real-Time Rendering of Planets with Atmospheres* [Schafhitzel, Falk & Ertl]
3. *VR Simulation System for EVA Astronaut Training* [Liu et al.]


Space Survival
Introduction & Motivation
• Space walking simulator
• Immersive gameplay
• Multimodal
Goal
• Reach your ship
• Avoid asteroids
• Limited fuel
• Limited oxygen
Graphics
Methods
• Blender & Unity
• Oculus Rift
• Wii Remotes
• + plugins
AGI14 Advanced Comp


Space Survival
Oculus


Oculus

Mario’s feedback to Space Survival

I am dying to try it! From what I observed, people are fully immersed in your experience. Congratulations! You are well on your way of achieving your goal of full embodiment and immersion. I also liked your graphics. I want you to observe people closely tomorrow. When are they lost? When do they have it? When do they loose it after they had it? Again, you may be very close to perfecting your interaction mechanisms. This frees you to explore other interaction modalities and, of course, complex graphics. First, I would like to hear the sound of things bumping into the character's body and helmet and his/her breathing. Next, I would like to explore the complex interactions between asteroids. Then, I would like to see gasses in space. A ruptured oxygen tank, for example, would be fantastic. Also, some light scattering in the atmosphere on earth below. Those are the kinds of explorations we can have. Be mindful of your audience on Friday. Grade: Pass with honors (5/5). Great work!

2-Pacs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Introduction

2-Pacs is a two-player challenge game where you have to collaborate to collect all the pellets and survive the ghosts.
Remember to mind the gaps.

Techniques

Unity 3D Game engine
- Unity Pro for the light effects: bloom filter and self-illuminating material

Blender
- Level modeling and texture

3D Studio Max
- Character modeling

Photoshop
- Textures

References

Uncle Roy All Around You: Implicating the City in a Location-Based Performance
Benford, Steve. et al. (2003)

Designing Asymmetrical Collaborative Gameplay for Heterogeneous Device Ecosystems
Speck, Robert Sean. (2013)

Experimental Evidence for Suspense as Determinant of Video Game Enjoyment
Klimmt, Christoph et al. (2009)

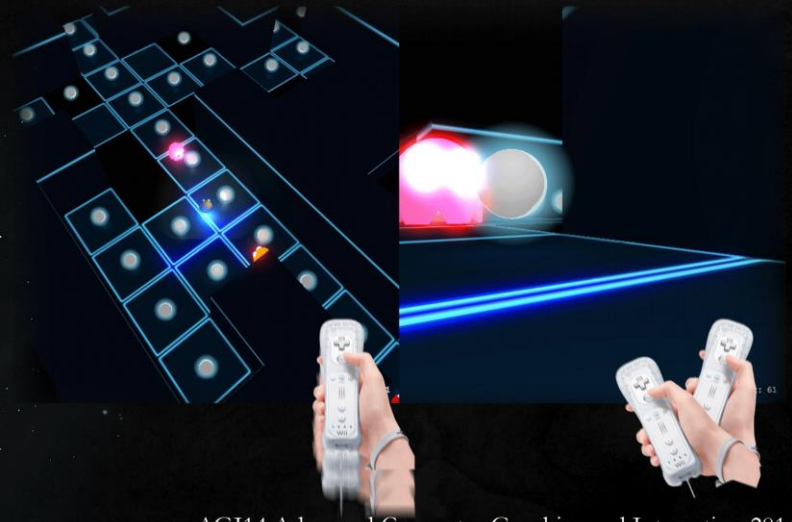
Motivation and Goal

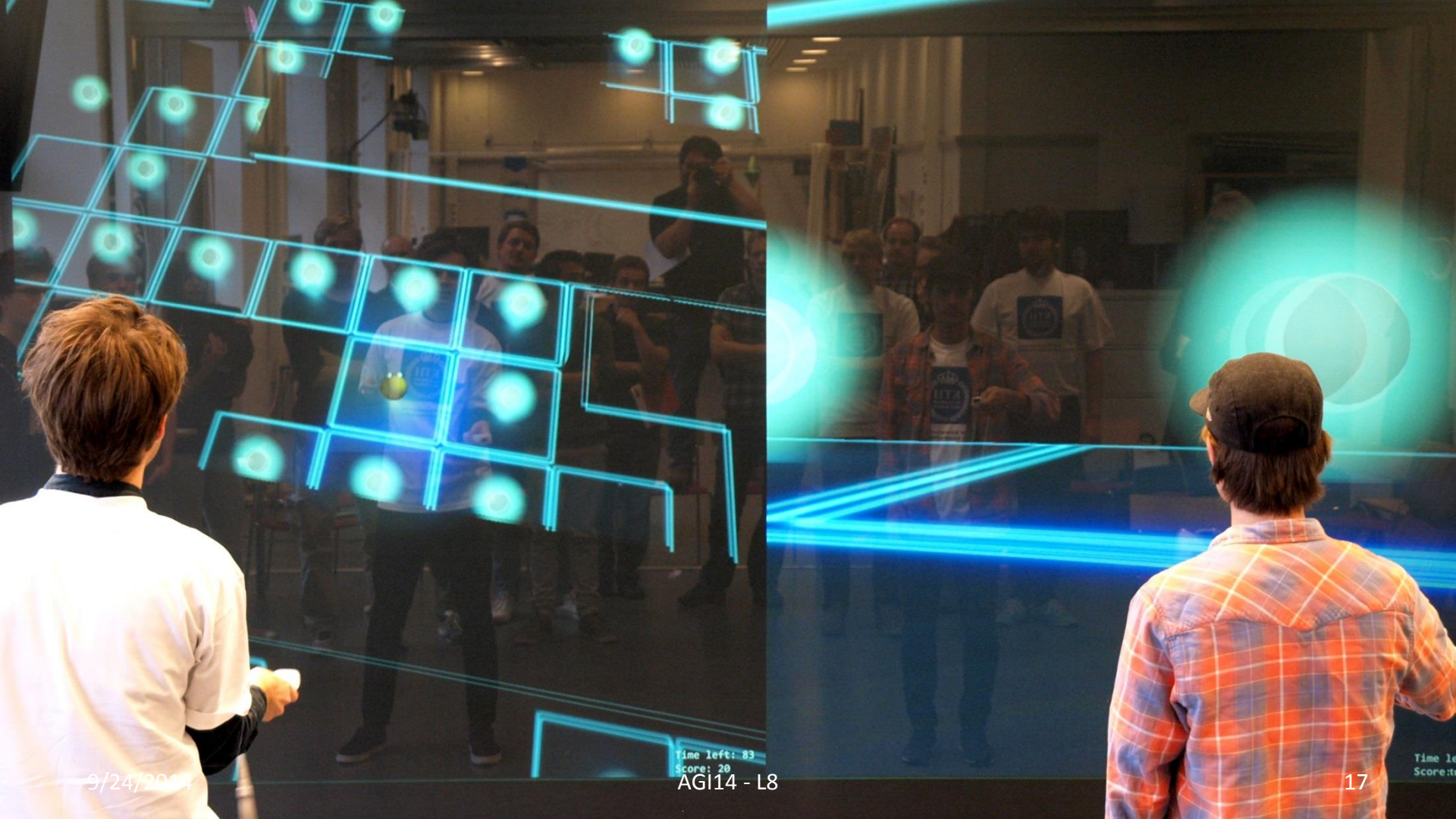
We want to create a **fun** multiplayer experience and learn how to create an immersive experience with light effects, challenging controls and new VR technology

Interaction

Control Pacman together using two Wii-remotes that manage different directions.

Player 1: Shake to move forward. Faster movement gives more speed! Press B to break!
Player 2: Tilt to the left and right to turn. Press A to jump!




Time left: 83
Score: 20

Mario's Feedback to 2Pacs

Your game is working well. Congratulations! It is a bit too difficult to begin with. We talked about a simple way of dealing with this initial difficulty: remove the holes in the ground and put walls so that your pac does not fall out of the space. Your 3rd and 1st person perspectives are working really well. Your lighting effects and motion seems flawless. I have not observed with great attention the mechanics of the wii motes, but overall people seem to get it quickly and it also seems to be a requisite to collaborate. Nice. Again, I feel you have set an interaction framework that can be tweaked. You are ready to start working on special visual effects. How about complex translucency for the ghosts and pellets through particles systems and volume rendering? Also, special effects when you hit walls with some vibration, sound, and visual effects? Finally, some atmospheric light scattering? Of course, like everyone else, you will receive significant and numerous feedback tomorrow. Be open. Grade: Pass with Honors (5/5). Great work!

Axel Lewenhaupt, Daniel Månsson, Philip Sköld, Søren Hansen
Kungliga Tekniska Högskolan, KTH

Dina Idéer

You • Are • a • Tree

Vad är det?

- Du styr hur ett träd växer med dina kroppsrörelser
- Sprid ut grenar i luften, böj dig med vinden och sträck dig åt höger och vänster

Vad är det inte?

- Ingen bestraffning
- Du vinner eller förlorar inte
- Det är inte riktigt ett spel

Var används det?

- Tunnelbanan, flygplatser, vänterum
- Där det finns dötid

Varför?

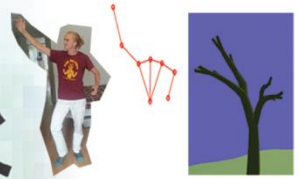
- Det är kul
- Stressreducerande

.. men mest för att det är kul!

Kinect + grafik

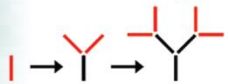
Kinectinteraktion

Med hjälp av Microsofts Kinectbibliotek kan vi hitta kroppsrörelser



Trädgenerering

- Regler för hur trädet förgrenar sig



- Genererar ett skelett till trädet
  + löv
  + bark
  + vind

Datorgrafik

- Qt + OpenGL
- Rendering

youareatree.philipshield.com

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COMIC CON STOCKHOLM MCM

VICSTHLM VISUALISATION INTERACTION COLLABORATION


YA3
You • Are • a • Tree
L-System + Kinect
Trädgenerering | Tree Generation
yourrealtree.philipshield.com
COMIC CON
STOCKHOLM
VICSTHLM

Mario’s Feedback to YA3

Your concept is elegant and it presents itself as the perfect framework to add any element you chose, form the whimsical, to the incredibly complex. I believe you have the interaction of creation set on a good track. You may want to lock intermediate steps during the growth so that performers can create a crooked tree. Also, you need to figure out how to navigate the forest of time. Yet, I believe you are close to solving both design challenges, leaving you open to explore the myriad of graphics possibilities we have talked about: texture mapping, bump mapping, mesh morphing, leaves, fruits, pollen, dust, birds, animals, grass, atmosphere, sun, seasons, time of day, shadows, and stars. Literally, the sky is the limit. Grade: Pass with Honors (5/5). Great work!

Mario’s Feedbaco to Hello World Demos on September 15

Mario's reflections on the "Hello World!" Demos: This course is a gamble and a risky one at that. It fully depends on many factors that are outside my control. Most importantly, it depends on the students who must have skill, experience, knowledge, team working abilities, and, above all, time and will to work hard and quickly. In a sense, it is upside down, or backwards. The students start by doing stuff without necessarily knowing stuff. They learn by doing, even before the theory. It is my intuition that there is no better way of learning deeply than by doing, even if you fail. What we must remember is that it is ALL ABOUT THE LEARNING. It is not about the projects or how cool they look or are to interact with. That, of course, will benefit you and us in the long run because we will have wonderful demos and professional portfolios. The course is about the students taking away all they can of what they care about that we can group in the set of concepts and skills that are part of the course. Over the weekend I reflected on what this experience may be like to some of you. Perhaps some know what the goal is, hence why you do what you do at this time. Perhaps some of you only have a mirage of the goal, thus you may not be clear as to why you are doing your current tasks. For these people, it may be a bit like Daniel LaRusso in the original Karate Kid, sanding the floor and painting the fence and waxing the car. In this analogy I would humbly take the role of Mr. Miyagi, setting you off towards seemingly mundane tasks of calling a function here, adding a variable there, and so on. When, in fact, my hope is that the big picture will emerge from those bits and pieces. If you are a little lost, talk to me. I want this to be a great experience for us all. Having said all of this, I actually believe the gamble is paying off very handsomely. Today's demos were fantastic. Everyone can scream, as would Dr. Frankenstein, "IT'S ALIVE!" Now, we need to beautify and civilize these monsters. GOOD WORK EVERYONE!

Mario’s Feedback to All

Mario's reflections on your demos: First, you all have passing with honors (5/5). Congratulations! Now, I am not just saying this. Listen. I started teaching long ago. I taught children how to create, organize, and exhibit their work 23 years ago. We would hold exhibitions for their parents where the kids showed off their work and were extremely proud of it. Now, at KTH, I have been teaching this course for three years and two other courses as well. I have had a couple of hundred students like you. They have been excellent, outstanding in fact. Yet, in all this time, I have never had an entire group make it look so easy. All of you, without exception, have completed the work like it meant little effort to you. (This, of course, is probably not true; it is the impression of professionalism that shines through your work). I am thoroughly impressed. In my favor, I have improved my coordination skills and I have learned more about the Swedish culture as well. Björn has been instrumental in every step and has taught me a great deal of things. Together we have learned a lot. Henrik has always been key in making the students' projects work, of course. And now Pierre has demonstrated great initiative in helping us every step of the way. Congratulations to us all.

Thank you!

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Questions?