CS4455/6457: Video Game Design and Architecture

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CS4455

Topics

Video Game Design and Architecture

Themes:

- Some things about elements of games
 - Formal elements, dramatic elements, balance, rules
- Design fun experiences that *feel* good
 - The core of a game
- Game technology
 - 3D graphics, audio, physics, AI, game engines etc.

My Learning Objectives for You

Game Architectures

- How games and game engines work
- Interactive Programming
 - Creating Compelling and Fun Interactive Experiences
 - That "Feel" Good
- Getting comfortable throwing prototypes away
- And some game design along the way

Structure of Class: 3 Parts

- Game Engine Architecture
- Game Feel and Interactive Programming
- Game Project
- (Note: 6457 section will also have other topics covered on Thursdays)

Annoying Warnings

- You are responsible for anything we talk about in class. If you miss class, talk to classmates.
- I've had too many complaints about students distracting others by goofing around on laptops. So: NO OPEN LAPTOPS in class, unless we ask you to take them out
 - If you like to take notes on your laptop, fine. But, I may ask you to show me what you are doing, at any moment
- No recording device, without permission
 - If you use Livescribe, etc., let me know
 - You may NOT record any video
 - You must NOT share ANY recording (pics, audio) with anyone outside the class

Text: Game Feel

- Steve Swink
- Focused on how to create experiences that feel good to play



Texts (optional)

- Game Design Workshop, Third Edition: A Playcentric Approach to Creating Innovative Games (Paperback), *Tracy Fullerton*
 - HIGHLY recommended if you want to design and build games
 - I will assign optional readings from this book (GDW)
- The Art of Game Design: A book of lenses (Paperback), Jesse Schell
 - If you want to design games, it's also a good read
 CS 4455









Unity3D

Unity3d.comLEARN IT, NOW!



The free version of Unity for OS X. Includes publishing support for iOS, Android, Windows Store, Windows Phone, BlackBerry, desktop and Web, and a 30 day trial of Unity Pro (with Pro publishing for iOS, Android, Windows Store, Windows Phone and BlackBerry).

Download Unity 4.2

Looking for an older version?

System Requirements License Comparison Release Notes

Developing on Windows?

- Leverage forums, IRC, tutorials, examples, wikis, etc.
- You need to install it on your laptop!
 - DGML has Pro, including asset server

Introductions

- Instructor
 - Blair MacIntyre
 - blair@cc.gatech.edu



- Augmented and Mixed Reality ("interactive 3D in the world"), AR/MR Games
 - Associate Professor, Coc/IC; Adjunt Professor, LMC
 - Design of MR/AR experiences (3D in the world)
 - Background in math, CS, 3D graphics
 - PhD research in distributed interactive 3D software design

Doing Games @ GT Since 2004

Research, classes, consulting

From my lab and company

- Nerdherder
- Rock'em Sock'em Robots
- From some previous classes
 - Cure
 - Matics





TA: Miranda Bradley

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Background

- Savannah College of Art And Design
- BFA Animation
- 1.5 yrs freelance artist
- Interlaced Productions
- Rex's Icy Adventure
- Summer Camp Animation Instructor

2 yrs Maya/Math/ESL tutor



TA: Sebastian Monroy



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Bachelors in Computer Engineering Doing MS CS in Computer Graphics

- Co-op at GTRI-ICL (2010-2012)
- Undergrad Researcher at HumAnS Lab (2013)
- Active member of Georgia Tech Game Studio and VGDev
- 2 years Unity3D experience



Iulian Radu

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Useful Background Knowledge

PROGRAMMING! This is NOT a design class

CS Classes

- Computer Graphics
- Artificial Intelligence
- Networking
- Human-Computer Interaction
- Software Engineering
- Visual Arts
 - 3D Modeling
- Music and Sound Design

What you will do

- Think about games and how they are built
- Think about what makes a game feel good, and play well
- Make 4 prototype "games"
 - Individually, < 2 weeks per prototype
- Create a game
 - In a small team, last 6 weeks

Class Structure and Grading

http://ael.gatech.edu/cs4455f14

Final Group Project

- Design and build a game "toy"
 - Unity3D appropriate for all types of games!
- Everyone must make a significant technical contribution
 - EVERYONE WRITES CODE

Group Project

Build a team

- Teams of 3
- Build a game
- Should include some subset of complex tech
 - 3D game
 - Non-completely-trivial AI
 - Network (2 player)
 - Physics
 - Audio

Resources

Know what's going on!

- Grades on t-square
- Announcements, syllabus and schedule on blog
- Please check often
- DML/Mac Lab
 - Lots of software (Unity3D, Maya, Creative Suite)
- Free models, cheap models
 - Don't spend a lot of time modeling!
- Audio Libraries

Want to Build Games? Then Build Games

Game Jams

– <u>http://www.ludumdare.com</u>

- <u>http://globalgamejam.org</u>
- Clubs
 - VG Dev
 - -ESP
- On your own

Want to Get a Games Job? Finish Some Games

- Think through the details
 - And then do it all (even if not all well)
- Take things to completion
 - It's easy to start, show you can stick to something
- Make an online portfolio!
 - Post things!
 - Your first 100 games will suck, put them up anyway