CS/INFO 4154: Analytics-driven Game Design

Lecture 1: Overview
Course Staff

- me
- Primary TA: Kelvin Jin
- Consultants: Bobby Zhou, Alice Xia
Today

- Why should you take this class?
- How is this class structured?
- How will you be evaluated?
- What are the first assignments?
Today

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Why should you take this class?

• you get to make a game!
You

Your teammates
Why should you take this class?

- you get to make a game!
- real-world impact
Impact
HOT NEW GAMES (see all)

Thermo
PUZZLE  PLATFORM
A unique water-based puzzle platformer where you must use...

BOX!
PUZZLE  BOX  BLOCK
Build, break, and twist your way to victory in this mind-...

That's How We Roll
ACTION  CUTE  GRAVITY
That's How We Roll is a fast-paced adventure-platformer g...
External Reviews!

**Box!**

Rating: 4.1/5 (41 votes)

**Platform:** Flash

Categories: bchol, browser, flash, free, game, jsytryn, kma, ndiebold, platform, puzzle, rating-x, rsong, schen, wpeck

It's the classic story. Boy goes adventuring, boy gets trapped in a cube (nevermind how), boy faces danger and must use his wits and never-ending supply of crates to escape. Though really it's your cleverness that is needed to get the boy out in Box! An interesting and engaging puzzle platform game created by Jeremy Cytryn, Renchu Song, Sam Chen and Will Peck, with art by Kevin Ma and Natalie Diebold, and music from Brigid Choi. Use the [arrow] keys to walk and jump. Press [space bar] to deploy a box in the direction you are facing, and again to destroy a box you are looking at, including ones above and below you. Use [WASD] to look around the corners of the cube to see what's ahead, or to make sure you won't die a fiery death if you drop down.

**Thermo**

Rating: 4/5 (35 votes)

**Platform:** Flash

Categories: awolfers, browser, dcarpenter, flash, free, game, gren, jgross, kjin, platform, puzzle, rating-y, rason

In water, heat rises and cold sinks. That's the premise behind Thermo, the temperate and mercurial new platformer by Andrew Wolfers, Daniel Carpenter, Grace Ren, Joel Gross, Kelvin Jin, and Robyn Nason. (Did I leave anybody out?) In each of the 30 levels you need to first open the exit portal and then get to it... somehow! The activator and portals aren't necessarily where you can get to them, and that's where water comes in. Floating masses of water are strategically-placed throughout the levels allowing you to use your special abilities, if you have them. Passing between red contacts heats you up, enabling you to rise if you start out in water. You'll continue to rise until you hit an overhead surface at which point you'll fall just as you ordinarily would, though you can steer your descent. Blue contacts let you create an ice platform under you while in water. Yellow contacts enhance either ability... you can create up to three ice platforms in water if you're cold, and walk on the ceiling if you're hot! Dull grey contacts return your temperature to normal, but leave any platforms or ceiling-walking abilities if they're active.
190,000 people
Hello Worlds!
Hello Worlds!

1. Million people
The internet is cruel...

“Fez rip off”

“graphics are ugly and too pixelated”

“stupid controls make the game stupid”

“shitty dev should know better”
… but occasionally rewarding

“i hope you’re happy…. you made a game soo good i ignored my important english paper all day just to play it… I hope you’re proud of yourself =p 5/5”
Why should you take this class?

• you get to make a game!
• real-world impact
• data-driven design
Making pots

- no $5
- no fame
- 1 hour

- no $100
- no fame
- 10 hours

- lot $500
- fame
- 100 hours
Heatmap of Deaths
Heatmap of Crashes

Source: Georg Zoeller, “Game Development Telemetry” GDC 2010
Crash Meter

Source: Georg Zoeller, “Game Development Telemetry” GDC 2010x
How do I...

Source: Georg Zoeller, “ MMO Rapid Content Iteration” GDC Online 2011
The road less traveled

68% of players go right

Source: Georg Zoeller, “MMO Rapid Content Iteration” GDC Online 2011x
New York Times League of Legends
GSN Games A/B Testing
GSN Games A/B Testing
GSN Games A/B Testing

Revenue +12.3%
Bounce Rate -25.8%
GSN Games A/B Testing

Choose your numbers

Revenue +11%
4 Experiments

Foldit  Hello Worlds  Refraction
Metrics

- Progress
- Time played
- Return rate
Experiment #1: Audio
With audio, engagement...

A) increased
B) decreased
C) increased AND decreased
D) didn’t change
With audio, engagement...

A) increased
B) decreased
C) increased AND decreased
D) didn’t change
Experiment #2: Animations
With animations, engagement...

A) increased
B) decreased
C) increased AND decreased
D) didn’t change
With animations, engagement...

A) increased
B) decreased
C) increased AND decreased
D) didn’t change
Experiment #3: Secondary Objectives
With secondary objectives, engagement...

A) increased
B) decreased
C) increased AND decreased
D) didn’t change
With secondary objectives, engagement...

A) increased
B) decreased
C) increased AND decreased
D) didn’t change
% of players

Time

Reality

With Coins
Experiment 4: Tutorials

Click on the laser bender to pick it up.
With tutorials, engagement...

A) increased
B) decreased
C) increased AND decreased
D) didn’t change
With tutorials, engagement...

A) increased
B) decreased
C) increased AND decreased
D) didn’t change
Analytics in this class

gdiac.cs.cornell.edu
Friction points
Improvement across releases

Average Playtime Per Player

- FRIENDS: 93.5106383
- NEWGROUNDS: 157.3775982
- KONGREGATE: 284.0444357
Improvement across releases
Heatmaps
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Course Website

- Syllabus information is here
- Should be up-to-date within a 2-week horizon
- Ask me if it’s further in the future
Game Requirements

- Must be…
  - Fun
    - Your grade depends on how much people like it!
  - Novel
    - Cannot be a clone of an existing game
  - Feasible in one semester
    - Avoid full RPGs and real-time strategy games
    - Game can have elements of these
  - Single-player
    - Networking is too painful
Game Requirements

- Deploy to Newgrounds and Kongregate
- In Flash (ActionScript3), HTML5, or Haxe
- FlashDevelop is a great free IDE for Flash
- Phillips 318 has Adobe Flash Builder 4
- See website for help and resources
Your **group** retains all ownership
- You can commercialize it later
- You can make derivative works
- Individual ownership is your responsibility

But Cornell gets a non-exclusive license
- Non-commercial use of final version submitted
- We can post this version on our website
- We claim no other rights to your game
Development cycles

- Release / In-class playtesting
- Postmortem presentation
- Revise plan
- Meet with Erik/TAs
# Semester Schedule

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Form Groups</th>
<th>8/24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 2</td>
<td><strong>Paper Prototyping</strong></td>
<td>8/31</td>
</tr>
<tr>
<td>Week 3</td>
<td><strong>Design Document</strong></td>
<td>9/7</td>
</tr>
<tr>
<td>Week 4</td>
<td>Development</td>
<td>9/14</td>
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<tr>
<td>Week 5</td>
<td><strong>Throwaway Prototype</strong></td>
<td>9/21</td>
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<tr>
<td>Week 6</td>
<td><strong>Alpha Prototype</strong></td>
<td>9/28</td>
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<tr>
<td>Week 7</td>
<td>Development</td>
<td>10/5</td>
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<tr>
<td>Week 8</td>
<td>Development</td>
<td>10/12</td>
</tr>
<tr>
<td>Week 9</td>
<td><strong>Beta Prototype</strong></td>
<td>10/19</td>
</tr>
<tr>
<td>Week 10</td>
<td>Development</td>
<td>10/26</td>
</tr>
</tbody>
</table>

**Pre-production**

**Development**
## Semester Schedule

<table>
<thead>
<tr>
<th>Week 10</th>
<th>Development</th>
<th>10/26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 11</td>
<td>Friends Release</td>
<td>11/2</td>
</tr>
<tr>
<td>Week 12</td>
<td>Friends Postmortem</td>
<td>11/9</td>
</tr>
<tr>
<td>Week 13</td>
<td>Newgrounds Release</td>
<td>11/16</td>
</tr>
<tr>
<td>Week 14</td>
<td>Newgrounds Postmortem</td>
<td>11/23</td>
</tr>
<tr>
<td>Week 15</td>
<td>Kongregate Release</td>
<td>11/30</td>
</tr>
<tr>
<td>Week 16</td>
<td>Final Presentations</td>
<td>12/12?</td>
</tr>
</tbody>
</table>

**THIS CLASS WILL USE THE FINAL EXAM PERIOD**
This course is a lot of work!

- Expect **10 hours/week** outside of class
- Releases are particularly intense
  - Players come in a burst
  - If something goes wrong, *you must deal with it immediately*
A note on dropping

You

Your teammates

operating systems
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Grading

- **Game** (60%)
  - Newgrounds Release (20%)
  - Kongregate Release (40%)
- **Analytics** (30%)
  - Friends Postmortem (5%)
  - Newgrounds Postmortem (10%)
  - Final Postmortem (15%)
- **Participation** (10%)
  - Playtests, postmortems, labs, documents (10%)
Game grades

- Opinion of the course staff (60%)
  - does it meet the requirements?
  - is it fun? groundbreaking?

- Evidence of real-world impact (40%)
  - rating
  - number of players
  - average length of play
  - return rate
  - other impact (comments, walkthroughs, blog posts)
# Game grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Characteristics</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>Experience of a lifetime</td>
<td>Is featured, wins prizes, game of the week/month/year, hundreds of thousands of players</td>
</tr>
<tr>
<td>A/A-</td>
<td>Very fun, addictive, imaginative, polished</td>
<td>Gets to front page, attracts external attention, tens of thousands of players</td>
</tr>
<tr>
<td>B/B+</td>
<td>Sometimes fun and interesting, but lacks polish and has minor flaws</td>
<td>Good but not a standout, thousands of players</td>
</tr>
<tr>
<td>C+/B-</td>
<td>Complete and playable but fun only occasionally, not original, clearly flawed, team ignored feedback</td>
<td>Average, hundreds of players</td>
</tr>
<tr>
<td>C-/C</td>
<td>Complete, not playable, not fun, crashes</td>
<td>Excessive ragequitting</td>
</tr>
<tr>
<td>D/F</td>
<td>Not complete</td>
<td>Nonexistent</td>
</tr>
</tbody>
</table>
Analytics (presentation) grades

• Opinion of the course staff (60%)
  • does it meet the requirements?
  • clarity
  • diction
  • slide composition

• Peer evaluations (40%)
  • did the class understand key details?
  • was the class convinced by your analysis?
Grading Process

Group grade \rightarrow \text{individual modifiers} \rightarrow \text{Individual grade}
Individual modifiers

- Based on **peer evaluations** and **observations of course staff**
- Two peer evaluations: middle and end of course
- Being MVP will increase grade
- Slacking off will decrease grade
- Abandoning team entirely will result in C/D/F
Attendance is mandatory on:

- Playtesting days
  - Paper, Throwaway, Alpha, Beta, Friends, Newgrounds, Kongregate
- Postmortems
  - Alpha, Beta, Friends, Newgrounds, Final (Kongregate)
  - Absent from postmortem = -33% of that postmortem
Academic integrity

- Please do not misrepresent work
  - Work expected to be done by you
    - programming, design, art
    - OK:
      - borrowing ideas from other games
      - properly attributed music, sound effects, libraries, etc.
  - Work expected NOT to be done by you
    - player data
    - OK:
      - voting up your games
      - commenting on your own games
      - encouraging people to promote your games
      - testing your own game while recording is active
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Assignment 1

- Your name
- Updated list of people you wish to work with
- Programmers: preferred programming language
- Designers: preferred design contributions
- Any other information you would like us to consider
- Due: **TODAY**, Aug. 25th, 11:59pm via CMS
Assignment 2: Programmers

Implement Pong in Flash/HTML5/Haxe
package

import flash.display.Sprite;
import flash.display.StageAlign;
import flash.display.StageScaleMode;
import org.flashdevelop.utils.FlashConnect3;

public class App extends Sprite
{
    public function App()
    {
        init();
    }

    private function init():void
    {
        stage.scaleMode = StageScaleMode.NO_SCALE;
        stage.align = StageAlign.TOP_LEFT;
        Flash.Connect3.trace("Et ca marche ?")
        FlashConnect3.trace("NO_SCALE")
        FlashConnect3.trace("SHOW_ALL")
    }
}
package yourgame {

    public class YourClass extends OtherClass {

        private var x:int;

        public YourClass(input:int) {
            x = process(input);
        }

        public override function process(y:int):int {
            return y;
        }

    }

}
package yourgame {

    public class YourClass extends Sprite {

        public YourClass() {
            addEventListener(MouseEvent.CLICK, move);
        }

        public function move(e:MouseEvent):void {
            x = x + 10;
        }
    }
}
Assignment 2: Designers

Draw and animate a character
Assignment 2

- Due: NEXT TUESDAY, Sep. 1st, 11:59pm via CMS
If you think this is hard…
Coming soon…

- Thursday: Game mechanics
- Next Tuesday: Brainstorming and Prototyping
- Next Thursday: Paper Prototyping
Homework for Thursday

• Play three Kongregate games:
  • Mu Complex: Episode 1
  • Clicker Heroes
  • The Company of Myself
Pair Activity