CMSC 498M: Chapter 1
Introduction to Computer Games

Resources:
- Lecture notes from R. McKenna, SUNY Stony Brook, 2007.
- "What is a Good Game?", by M. Overmars, 2007.
  http://www.yoyogames.com/make/tutorials

Overview:
- History and basics of computer games
- Industry facts and figures

What is a Game?

• A game is an activity among two or more independent decision-makers seeking to achieve their objectives in some limiting context. (Clark C. Abt)
• A game is a form of art in which participants, called players, make decisions in order to manage resources through game tokens in the pursuit of a goal. (Greg Costikyan)
• A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome. (K. Salen and E. Zimmerman)
• A computer game is a software program in which one or more players make decisions through the control of game objects and resources, in pursuit of a goal. (M. Overmars)
• A great game is a series of interesting and meaningful choices made by the player in pursuit of a clear and compelling goal. (Sid Meier)
What Things do You Look for in a Game?

It should be **fun**:
- Responsibility of *game designers*.
- Interesting plot/premise, sense of humor, rewards.
- Scoring vs. solving.

It should be **nice to look at**:
- Responsibility of *game artists*.
- Beautiful, realistic, or interesting graphics.

It should be **run correctly and efficiently**:
- Responsibility of *game programmers*.
- Multi-platform, multi-player, multi-threaded.

Key Elements in Game Design

**Goals**:  
- Should be clear to the player. Not too easy to achieve.  
- Success/failure depends on a combination of skill and luck, with skill being the more important.

**Decisions**:  
- Interesting decisions lead to an interesting game.  
- Users need to have knowledge of outcomes to make good decisions.

**Balance**:  
- Between players.  
- Between player and game-play.  
- Among game features.

**Rewards**:  
- Positive feedback. Sense of accomplishment.

**Flow**:  
- Sense of progress: increased abilities, increased challenges.

**Immersion**:  
- A sense of "being there." Graphics, stories, characters, music, effects.
What Things Infuriate you in a Game?

Game-play:
- Weak premise/storyline.
- Too difficult or too easy.
- Overly complicated rules (no 100-page game manual, please).
- Poor pacing (action too fast or too slow).
- Inflexible (players are forced to play a certain way).

Artistic Issues:
- Bad music/sound effects.
- Poor modeling ("what is that?").
- Disorienting graphics.
- Poorly designed point-of-view ("something is standing in my line of sight").

Programming Issues:
- Bugs.
- Unintelligent games.
- Reliance on finding out patterns.
- Slowdowns.
- Multiplayer cheaters.

Why Study Compute Games?

- To get a job in the computer game industry.
- It is fun.
- Games are complex.
- They push the envelope of computing technology.
- How do I write my own?

- Bottom line: Making games is a great way to learn.
Game Genres

**Action** - Rely more on hand-eye coordination than on strategy.
- Doom, Quake, Unreal, Metal Gear, Halo, even Sonic or Mario Bros.

**Adventure** - Linear storyline in a journey of exploration and puzzle-solving.
- Myst, Shadow of Destiny

**Fighting games**
- Soul Calibur, Mortal Kombat, etc...

**Puzzle/Board games**
- Tetris, Monopoly, Risk, Stratego, Scrabble, etc.

**Racing**
- Need for Speed, 18 Wheeler.

**Role-Playing Games (RPGs)** - similar to adventure, but more on character growth.
- Diablo, World of Warcraft, Final Fantasy (what’s wrong with you people?)

**Simulations** - Simulate real-life environments.
- Flight Simulator, The Sims, RollerCoaster, SimCity

**Sports**
- EA Sports NHL series, John Madden football series

**Strategy** - Involve tactical organization.
- Civilization (turn based strategy), Warcraft, Starcraft (real-time strategy)

History of Computer Games

- **1952** – First Computer Game
  "Naughts & Crosses" by A.S. Douglas
  for EDSAC Computer, Cambridge University, U.K.
History of Computer Games


1962 – First Widely Distributed Computer Game “Spacewar” by Steve Russell of MIT for a PDP-1 minicomputer.

1972 – First Home Video Game Console Released "Odyssey" by Ralph Baer with Magnavox.

1973 – "Empire" by John Daleske & Silas Warner of Iowa State University. Early networked multiplayer game.
1975 – “Pong” home version released by Atari.

1977 – Atari 2600 Home Console Released
Combat, Space Invaders.
History of Computer Games


Game Timeline – Atari 2600 Era.

1982 – Video Game Revenues $2 billion.
1983 – The Video-Game Crash.
1985 – Video Game Revenues $0.1 billion.

What happened?
- Market saturation.
- Stale game platforms.
- PC gaming.

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1985 - Nintendo Entertainment System
Shigueru Miyamoto's Super Mario Brothers.

1985+ - Nintendo Entertainment System Era.
History of Computer Games


1991 - id releases Wolfenstein 3D.

1993 - id releases DOOM (John Carmack).

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MMO Era.
Game Industry Facts and Demographics

Reference: The Entertainment Software Association
http://www.theesa.com/

What’s the average age of game players?
- 33

What percentage of gamers are over 50?
- 24%

What percentage of American heads of households play computer or video games?
- 69%

What percentage of gamers are female?
- 38%

What percentage of game players say they play games online one or more hours per week.
- 49%

Who Plays What?

Best-Selling Console Game Genres by Units Sold, 2006.

Source: The NPD Group / Point-of-Sale Information
Who Plays What?

Best-Selling PC Game Genres by Units Sold, 2006.

Top selling Console Games by Units Sold, 2006.
Who Plays What?

Top selling **PC Games** by Units Sold, 2006.

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Who Plays What?

Types of **Online Games** most Commonly Played, 2006.

- **Puzzle/Board/Game Show/Trivia/Card** (50.0%)
- **Action/Sports/Strategy/Role-Play** (15.0%)
- **Shockware/Flash/Browser-Based Mini Games** (10.0%)
- **Persistent Multi-Player Universe** (13.0%)
- **Other** (11.6%)
Who Plays What?

How Much Hard-Earned Money are we Blowing on Video Games?

U.S. COMPUTER AND VIDEO GAME DOLLAR SALES GROWTH

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Source: The NPD Group / Point-of-Sale Information

Who Plays What?

Console (Video) vs. PC (Computer) Game Sales


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Source: The NPD Group / Point-of-Sale Information

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Summary

Summary:
- Computer Games - overview
- History of Computer Games
- Computer Game Facts and Figures

What's Next?
- Graphics programming for games