



No More Heroes (Grasshopper Manufacture, 2007)
BGM: We are Finally Cowboys
Thanks Will!



SUPER MARIO SALSA

BBBB

SUPER MARIOBROS



The Legend of Zelda Nintendo 1986

- Inspiration

- Miyamoto exploring forests, caves as a child
- LOTR, King Arthur, Celtic myths, Peter Pan

- Sound

- Ravel's Boléro was not in public domain yet (2025)
- Kondo wrote theme in 1 day
- Used Famicom controller mic to defeat enemies
 - Japanese Switch Famicom controllers have mic



- Gameplay

- Nonlinear side quests
- Overworld + dungeon crawling
- Puzzles, stealth, action adventure



ECSE-CSDS 290 Lecture 2 Jan 16, 2024

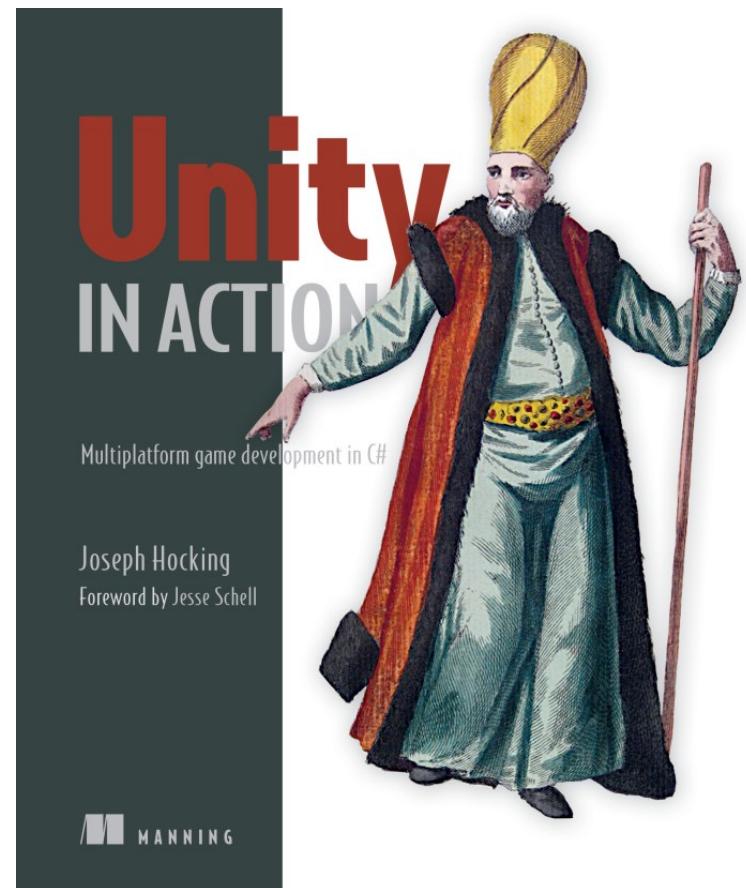
- Today:
 - What is a Game? Why Play Games?, Game Components
- HW 1 Part I: Text Adventure Design Concept Paper
 - Individual written assignment
 - Due Tues 1/21 11:59p
- HW 1 Part II: Create a Text Adventure
 - 4-person Team project
 - Self team sign-up by this Sunday 1/19
 - We will assign remaining students to teams (including partial teams) by Monday 1/22
 - Due Tues 1/28 11:59p Evidence of team meeting
 - Due Mon 2/3 11:49p Publish Text Adventure + **Peer Review**

Late Submission Policy for HW only

- 20% reduction in max earnable points (-2 points) for every 24 hrs late
 - Request exceptions to this policy with documentation
- Assuming 10 point HW due Tues 8:30a
 - Turn in by Wed 8:30a => Can earn max of 8 points
 - Turn in by Thu 8:30a => Can earn max of 6 points
 - Turn in by Fri 8:30a => Can earn max of 4 points
 - Turn in after Sat 8:30a => Can earn max of 2 points
- Does not apply to Final Project
 - Late submissions will not receive credit

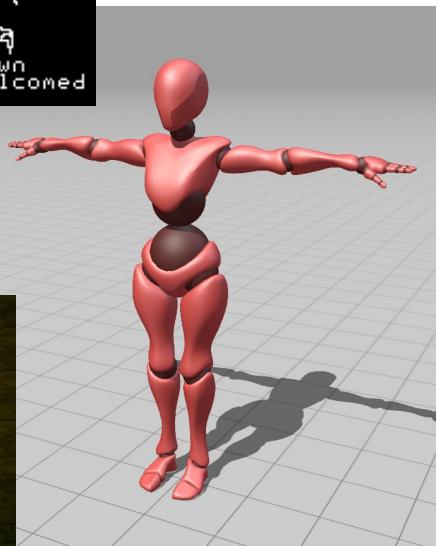
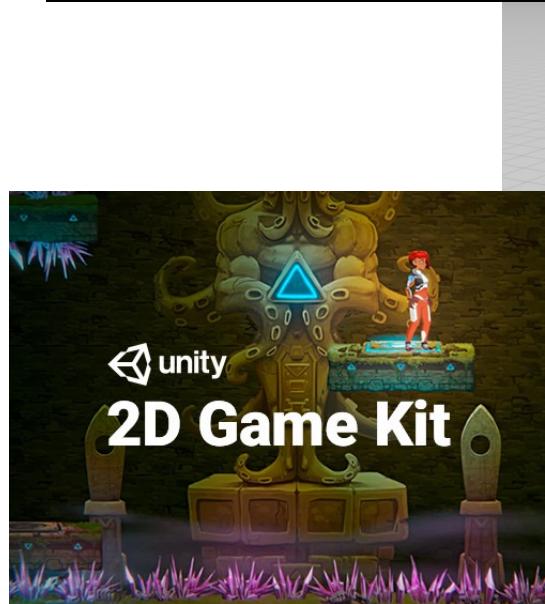
Textbook

- Unity in Action 3rd Edition (Required)
 - Canvas > Modules > Course Info
 - <https://www.manning.com/books/unity-in-action-third-edition#toc>



Course Roadmap

- Weeks 1-3: Game Design, History
 - HW 1 part I: Text adventure concept paper
 - HW1 part II: Text adventure (team)
- Weeks 4-12: Unity Game Engine
 - HW2-3: 3D games
 - HW4: 2D sprites
 - HW5: 3D Avatar animation
 - HW6: 2D Level Design
- HWs are mini-projects (50% of grade)
- Final team project (50% of grade)
 - Publish game on itch.io
 - Final presentation counts as final exam



ESRB Ratings (ESRB.org)

- Est. 1994 by video game producers

The screenshot shows the ESRB Ratings website's "Rating Categories" page. The top navigation bar includes links for RATING, TOOLS FOR PARENTS, BLOG, ABOUT, CONTACT, and a search icon. Below the navigation, a large heading "Rating Categories" is displayed, with a subtext "Rating Categories suggest age appropriateness." A "SHOW ALL" button is visible on the right. The main content area features four large boxes representing rating categories: "EVERYONE" (E), "EVERYONE 10+" (E 10+), "Teen", and "MATURE 17+" (M). Each box contains the rating symbol and the ESRB logo.

Rating Categories suggest age appropriateness.

SHOW ALL

EVERYONE

EVERYONE 10+

Teen

Content is generally suitable for ages 13 and up. May contain violence, suggestive themes, crude humor, minimal blood, simulated gambling and/or infrequent use of strong language.

MATURE 17+

Machine Learning (Generative AI) Policy

- Use only free ML tools (same as for human-made assets) or ai.case.edu
- Treat ML tools like search engines or any other asset/code source
 - DALL-E 3 prompt engineering guide: <https://cdn.openai.com/papers/dall-e-3.pdf>
- Cite it as inspiration/reference or explain its use
 - Name and version of the ML tool
 - Date of use
 - Input prompt
 - Random seed (if possible)
 - Original output and how it was modified or used
- Assets that resemble copyrighted assets will need to be replaced
- CWRU Academic integrity policy still applies (you are responsible)
 - Submission is presented as original, but resembles work created by others (without attribution)
 - Fabrication of playtesting feedback

Copyright Policy

- Royalty-free media may be used, but respect copyrights/licensing
 - Use free, open-source, or creative commons images, sound, 3D models
 - Do not purchase assets
- Work will be published, so use original ideas and characters
 - Only create derivative works (fan fiction) if
 1. Source material has open license
 2. Student obtained written permission
 3. Student owns the rights
- Submissions with violations will need to be redone

The screenshot shows a news article from the Variety website. The header includes navigation links for HOME, BIZ, and NEWS, and a search bar. A sidebar on the right suggests reading next about the Sundance Film Festival. The main headline is "Selena Gomez Files \$10 Million Lawsuit Against Mobile Game for Stealing Her Likeness". Below the headline is the author's name, Gene Maddaus. To the right of the text are social media sharing icons for Facebook, Twitter, LinkedIn, and Email. Below the text is a photograph of Selena Gomez in a black leather corset-style outfit, standing in what appears to be a backstage area. To the right of the photo is a magazine cover for FIRE magazine featuring Selena Gomez, dated November 2015. The cover features several headlines: "FALL-TO-WINTER WONDER PIECES", "I FEEL CONFIDENT, I FEEL EMPOWERED, I FEEL IN CONTROL", "FIX YOUR SKIN, FOR REAL", "BE YOUR UNFILTERED, UPSPEAKING SELF AT WORK—AND STILL GET AHEAD", and "COATS FOR EVERY AREA CODE WITH WINNERS".

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 - <https://www.nsf.gov/news/mmg/>
- NASA
 - Image Library
 - <https://images.nasa.gov>
 - 3D models
 - <https://nasa3d.arc.nasa.gov/models>

What is a Game



What is a Game?

- A game is an activity where, if fairly constructed, two sides given the same advantages will have a roughly equal chance to win
- A puzzle is an activity where, if fairly constructed, one side will have all the advantages, except that the disadvantaged side is expected to win
- A simulation is not a game

Jared Bendis

Creative New Media Officer, CWRU Freedman Center for Digital Scholarship

What is a Game?

- A problem-solving activity, approached with a playful attitude

Jesse Schelle, Prof. Carnegie Mellon, Entertainment Technology Center

What is a Game?

- A closed, formal system that engages players in a structured conflict and resolves its uncertainty in an unequal outcome

Tracy Fullerton, prof. USC, Interactive Media & Games Division

What is a Game?

- A system of rules in which agents compete by making ambiguous, endogenously meaningful decisions

Keith Burgun, author Clockwork Game Design, Game Design Theory

What is a Game?

- A series of interesting decisions

Sid Meyers, MicroProse, creator of SimCity, Civilization...

What is a Game?

- A voluntary attempt to overcome unnecessary obstacles

Bernard Suits, Prof of Philosophy, U. Waterloo

Critical Thinking as a Game Designer

- Games that innovate beyond game definitions can become iconic
- What will the game make the player do?

Why Play Games



Why Play Games?

- Dynamic experience
 - Interactive story
 - Emotions: fear, excitement, failure, humor, surprise
- Challenge and problem solving
 - Control
 - Prediction
- Socialize
 - Competition and Bragging rights
 - Teamwork
- Fantasy
- Exploration
- Interaction
- Storytelling



For Fun!

Balance between too easy and too hard

Balance between too many constraints and too few

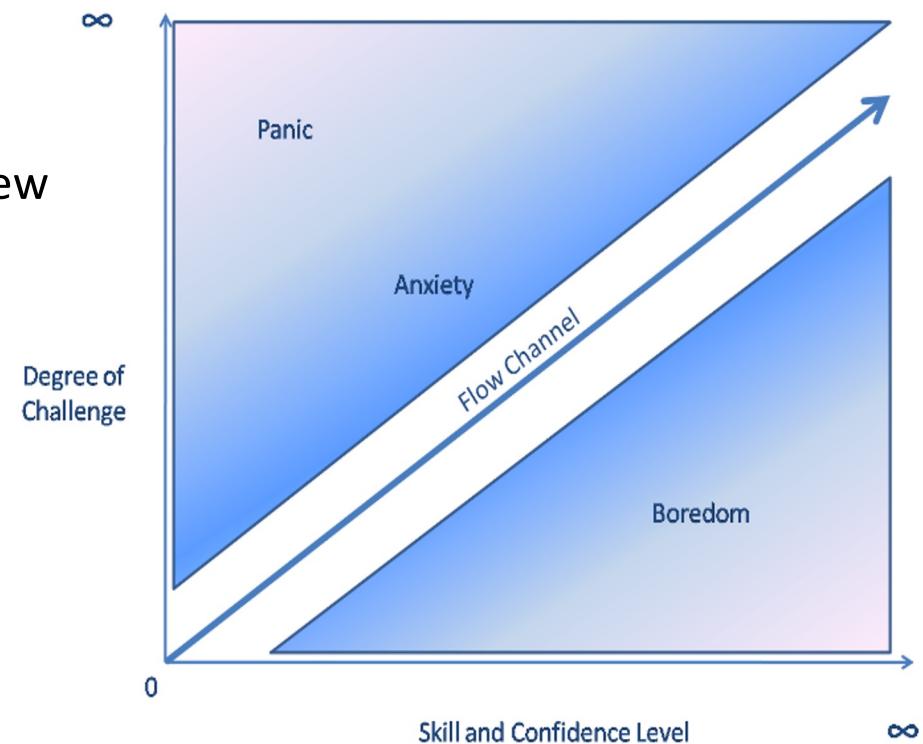
Sense of progress toward goals

Learning rules

Developing strategy

Beating others

Hope



Flow. Harper Collins. Csikszentmihalyi, 1990

"GameFlow: a model for evaluating player enjoyment in games." Computers in Entertainment Sweetser and Wyeth, 2005

Serious Games

- Motivation (Gamification)
 - Pedometer challenges
 - Luminosity
- Learning (Training or Therapy)
 - Education
 - Military
 - Healthcare
 - Empathy



Epic Win, 2011



Snow World, 2008

Goals Beyond Entertainment

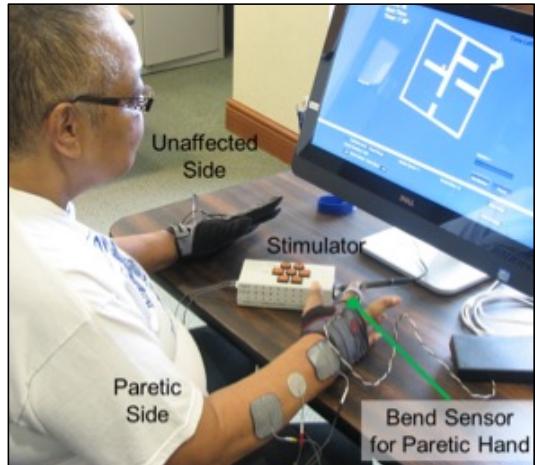


- Build empathy or awareness
 - Never Alone, 2014 (language)
 - Celeste, (anxiety, depression)
 - That Dragon Cancer, 2016 (pediatric cancer)
- Improve classroom engagement

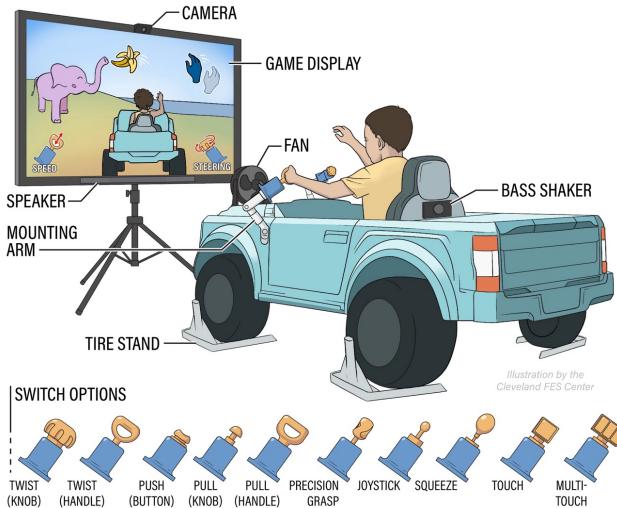


Fu Research Team - Human Computer Interfaces for Medical Rehabilitation

Adult
Stroke

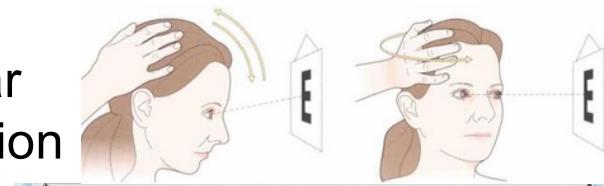


Pediatric
Traumatic
Brain Injury
+
Cerebral
Palsy



Spinal Cord Injury

Vestibular
Dysfunction



Video Game Components

- Story/Narrative
- Conflict
- Goals
- Rules
- Mechanics
- Controls
- Art design
- Sound design

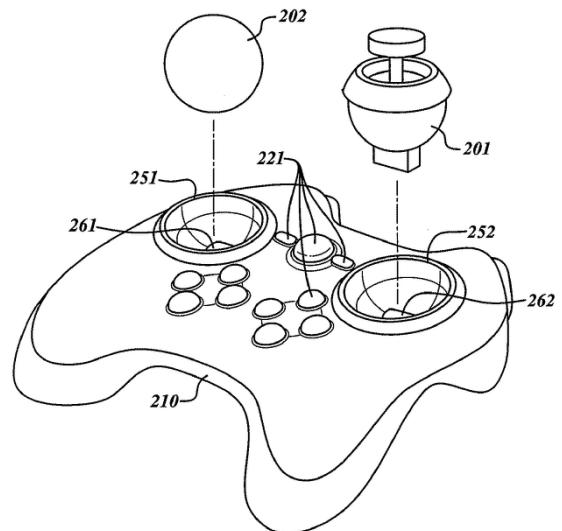


FIG.2

Story

You are a _____

In a _____

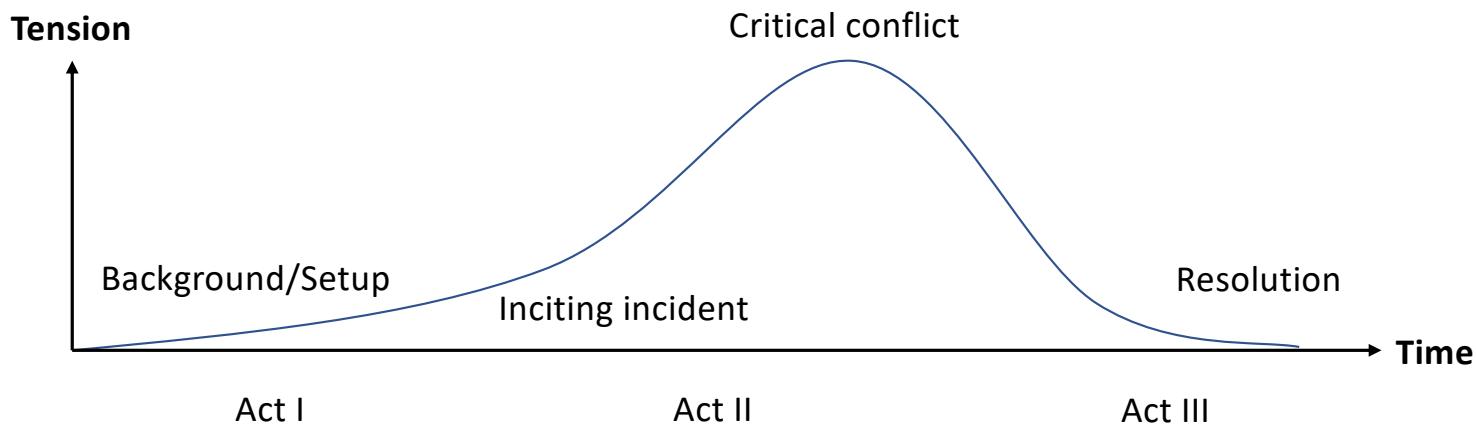
Trying to _____



Pac Man, 1980

Narrative

- Basic 3-act plot structure



- Kishōtenketsu story structure

- Introduction of characters, issues
- Development of hardship, conflicts
- Turning point, twist
- Conclusion

Conflict

Play against another player (competition)

Play against the system (obstacles)

Play on a team (cooperation)

Coopetition

Castle Crashers, 2008



Goals and Indicators

Short Term Goals

- Plan and strategize to the final goal
- Provide motivation/reward intervals

Long Term Goals

- Beat the game
- Avoid Losing
- Play as long as possible
- Achieve the highest score



Journey, 2012

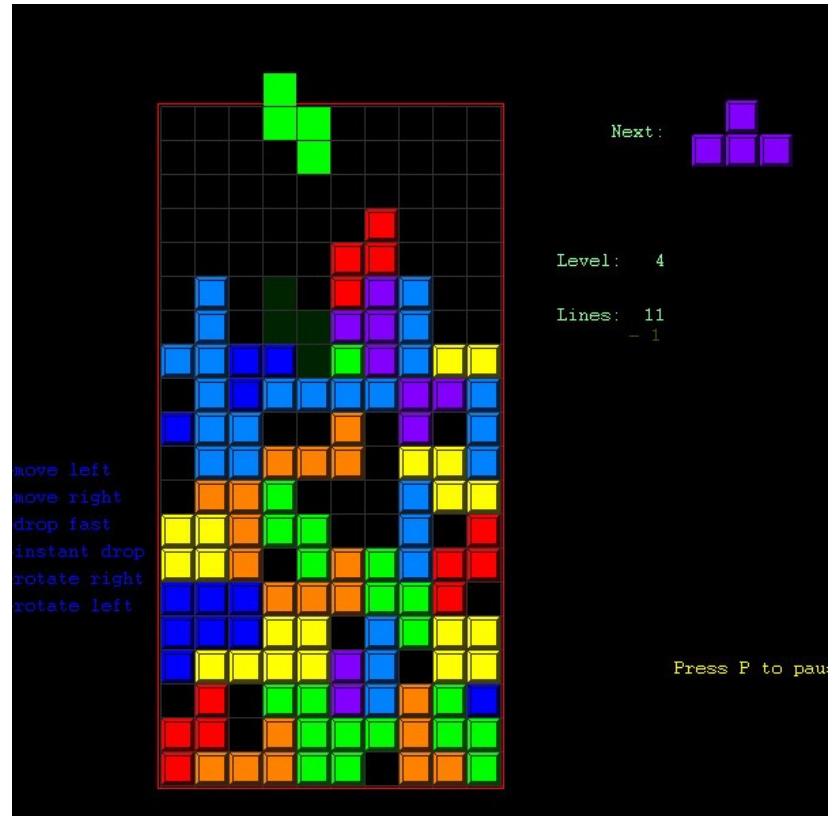
Rules and Constraints

Limits behaviors

Structure game activity

Equality and fairness

Playing a game = accepting the rules



Tetris, 1984

Mechanics

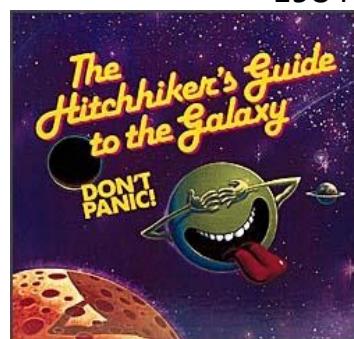
- Conventions that define player actions or progress
- Innovative mechanics lead to genre-defining archetypes
 - Pong
 - Pac-Man
 - Space Invaders
 - Tetris
 - Super Mario Brothers
 - Zelda
 - Quake
 - Temple Run
 - Angry Birds
 - Dance Dance Revolution
 - Warcraft
 - Street Fighter II



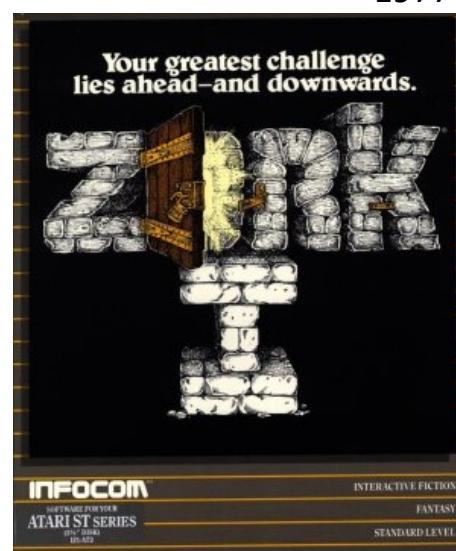
Donkey Kong, 1981

Homework 1 Parts I & II

- Design a Game Concept Individually
- Develop a Text Adventure in a Team of 4
- Condensed game development cycle
 - Brainstorm
 - Design
 - Implement
 - Playtest
 - Refine
 - Publish



1984



1977

Netflix Interactive, 2018-2019



HW1 Part I: Individual Concept (Due Tue 11:59p)

- Roll 3 story wheels & integrate into text adventure concept paper
 - Include screenshot of spin results and your interpretation of the image
 - Max 2 pages single spaced, 12pt
 - <http://atbosh.com/cph-care/storywheel>
 - College writing standards: full sentences, proper grammar/spelling, references
 - Do not misrepresent generative AI work as your own
- Game Title and Genre
- Premise/Narrative/Story
- Player's Role
- Game Goal (How do you beat the game?)
- Gameplay/Mechanics (What abilities, activities, puzzles must be solved?)
- Scoring/feedback of progress and performance to player
- Writing/Art/Music style

Meaningful Integration of Story Wheel

- Research their unique features
- Use those features in gameplay or narrative in a **meaningful** way
- Avoid generic use of objects
 - Test: Replacing item with 3 other items does not significantly change gameplay/story
- Magnifying glass
 - Generic use: sell it for money, hit enemies with it
 - Meaningful use: magnify a clue, focus sunlight to ignite a fuse



HW1 Part II: Text Adventure (Mon 2/3 11:59p)

- Groups of 4 – do not work alone
 - Self-assign teams through Sunday 1/19
 - We will assign teams for remaining students Monday 1/20
 - Submit evidence of first meeting by Tuesday 1/28 11:59p to Canvas
- Quest engine (<https://textadventures.co.uk>)
 - Schedule meetings to work together, explore existing text adventure games
 - Beginner & intermediate tutorials <https://docs.textadventures.co.uk/quest/tutorial/>
- Design document with game map/solutions (20 min game)
- Implement Game
- Playtest & Refine: 5 non ECSE 290 students
- Report: design doc, map/solution, play test log, changelog, game URL
- **HW1 Part II Peer Review: Grade your teammate's contributions**

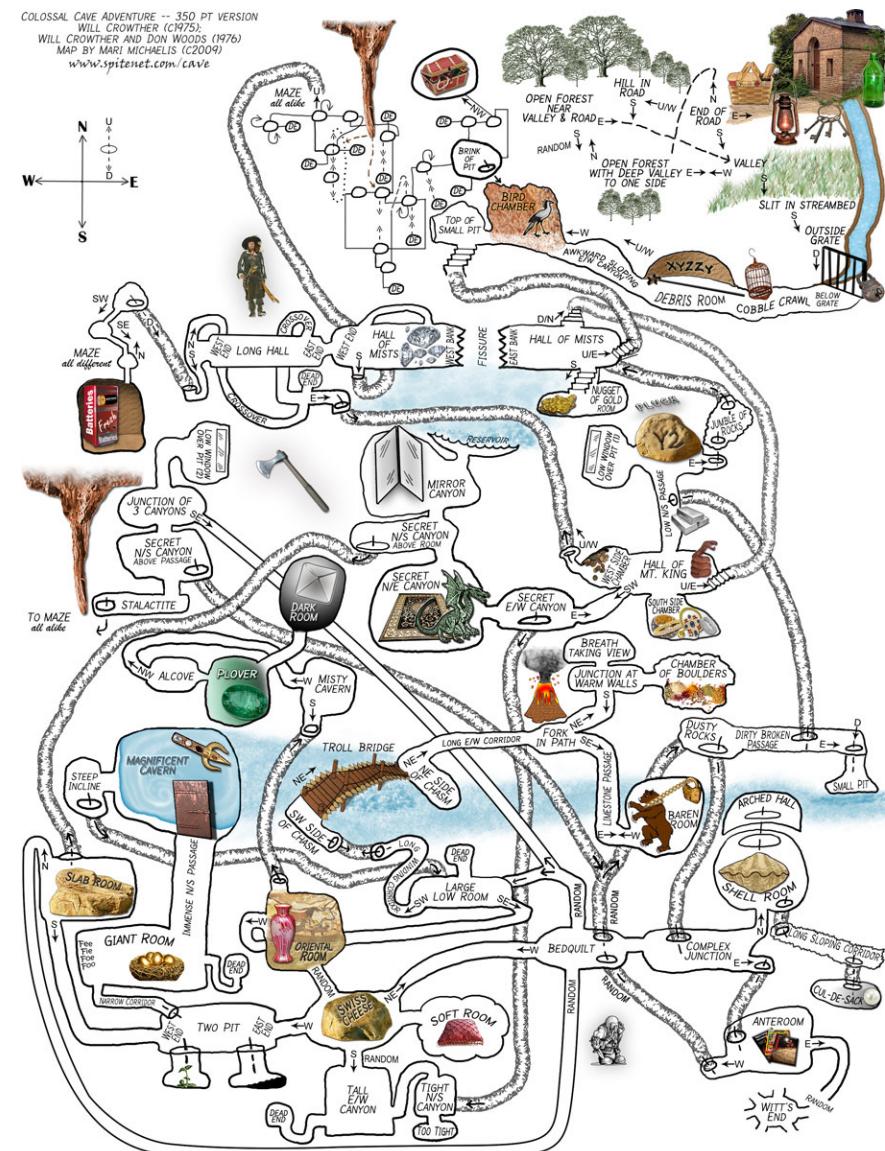
Text Adventure Games

- Also called Interactive fiction (IF)
- 1st game: ‘Colossal Cave Adventure’ (<http://rickadams.org/adventure/>)
 - By Will Crowder, who helped create ARPANET
 - 1976, Stanford AI Lab PDP-10 mainframe (1.15 MB memory capacity)
 - Inspired by Mamoth Cave, Kentucky and Dungeons & Dragons RPG
- Infocom made IF run on PCs and popularized the genre
 - Zork (1979)
 - http://textadventures.co.uk/games/view/5zyoqrsugeopel3ffhz_vq/zork
 - Hitchiker’s Guide to the Galaxy (1984)
 - <http://textadventures.co.uk/games/view/3cbedqimquselmanehhzxg/the-hitchhikers-guide-to-the-galaxy>



Play Colossal Cave Adventure

- C. 1976 by Will Crowder
 - Web version:
<https://rickadams.org/adventure/advent/>
 - SMS version, 2017 by C. Swenson
 - **+1 (669) 238-3683** ("669 ADVENT3")
 - Colossal Cave 3D (Cygnus, 1/19/2023)
 - 3D/VR remake by Roberta Williams

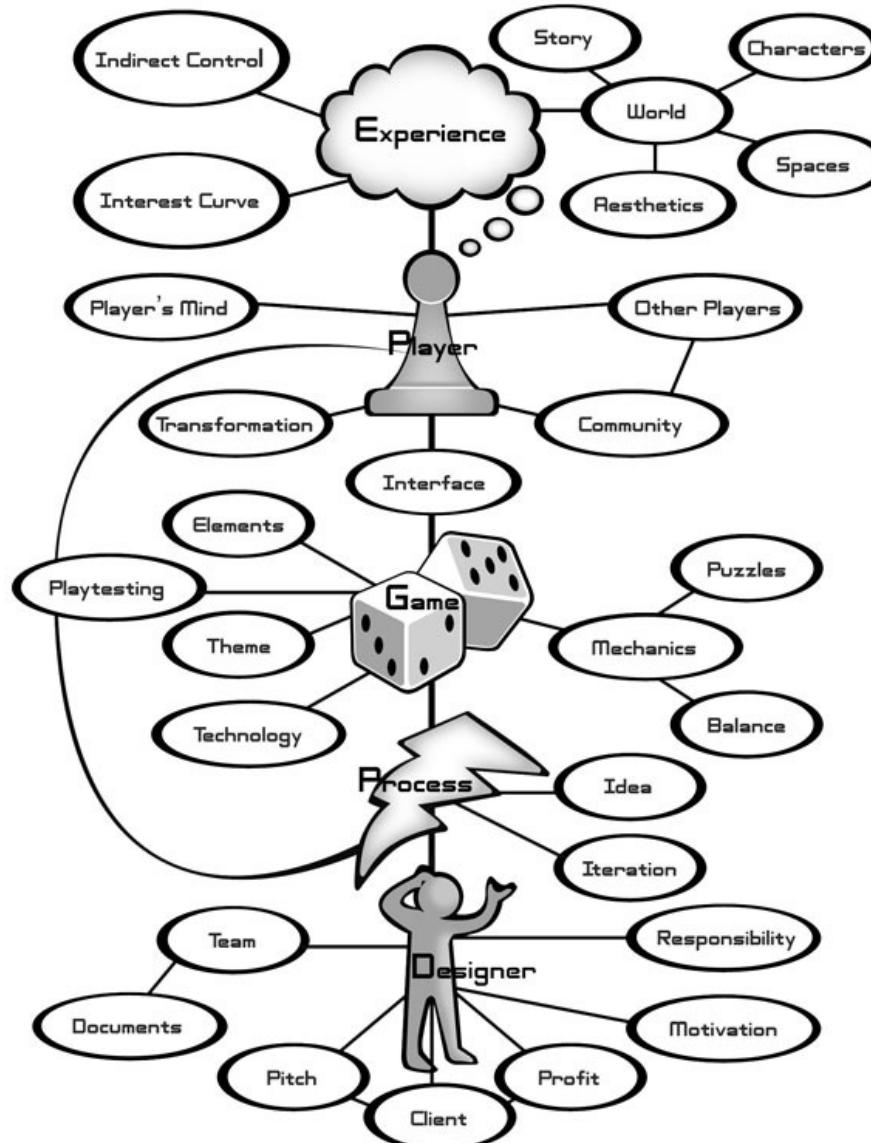


Text Adventure Mechanics

- Requires context and common sense
- Compelling writing
- Requires lack of prior knowledge: puzzles, mazes, maps
- Number of turns
- Score
- Resume after death

Development Steps

- Brainstorm Concept, Genre, Mechanics
 - Output: game design document
- Prototype Gameplay and Level Design
 - Development and playtesting
 - Output: playable alpha with minimal art
- Content Integration
 - Art, music, playtesting
 - Output: beta
- Stabilization
 - Playtesting and polish
 - Output: release



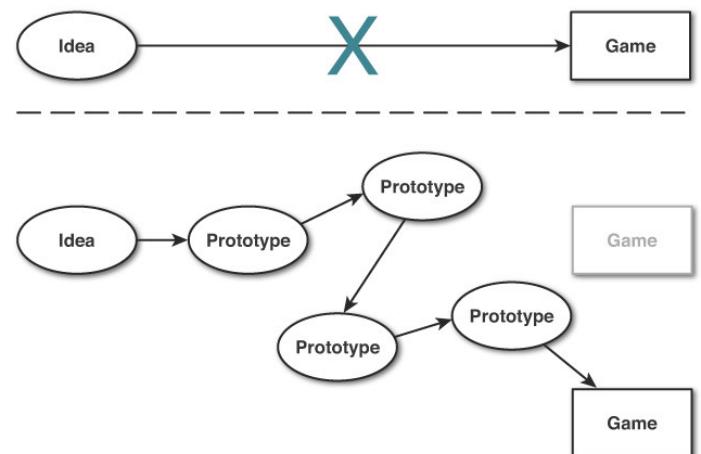
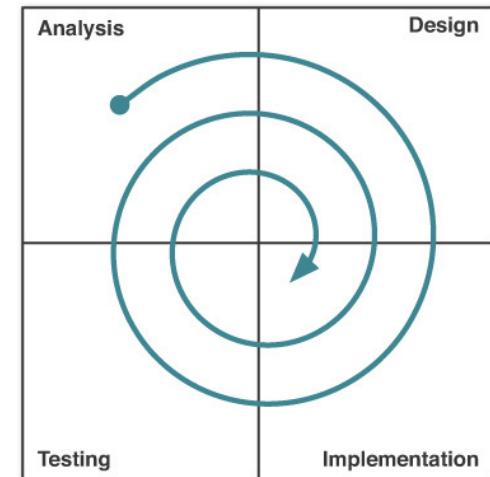
Brainstorming

- Sid Meier: Begin with a concept/story instead of genre
 - Game mechanics are tools to tell the story
- Step 1) List all your ideas
- Step 2) Reduce to a short list based on fit
 - Technology
 - Story
 - Gameplay or mechanic
 - Scope: Do one thing well vs many poorly
- Step 3) Get feedback on your ideas



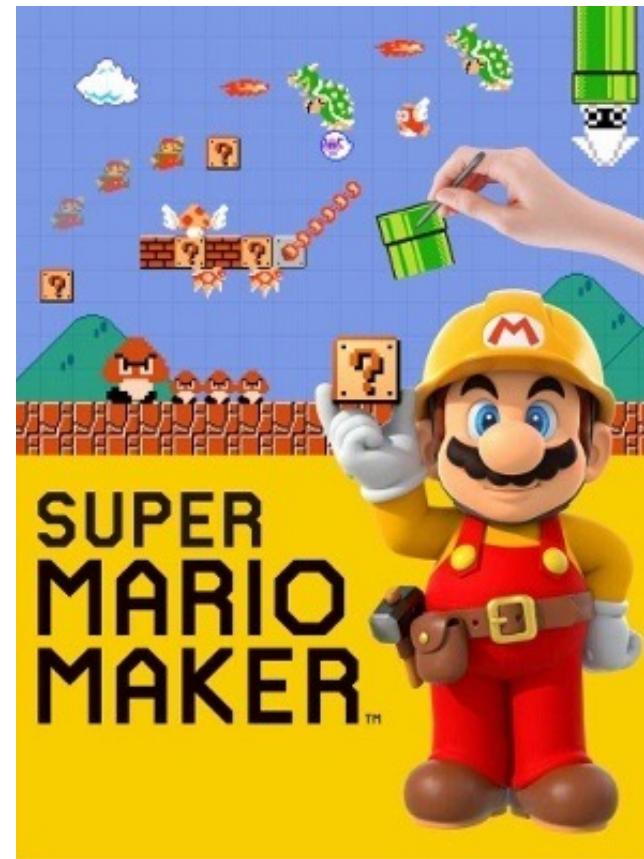
"Game design is 1% inspiration and 99% iteration." —
Chris Swain

- Analysis
 - Who am I designing the game intended for?
 - What prior art exists?
 - What is the fastest path to demo key features?
- Design
 - Bounce ideas off audience, peers, client
- Implement
 - Start with paper before code
- Testing
 - Get feedback often
 - Don't be afraid to make big changes



Level Design

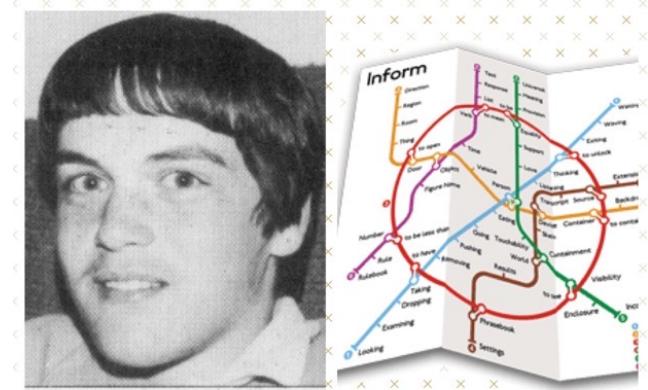
- Teaching/tutorial
- Linear or non-linear goals
- Process
 - Preliminary sketch
 - Architecture and refine
 - Gameplay and refine
 - Refine aesthetics
 - Playtesting



Text Adventures

Bill of Player's Rights

- Graham Nelson
 - Designed interactive fiction (text adventures)
 - Many current games are variants
 - Adventure games
 - Platformers
 - Role playing games
 - First person shooters
 - Horror

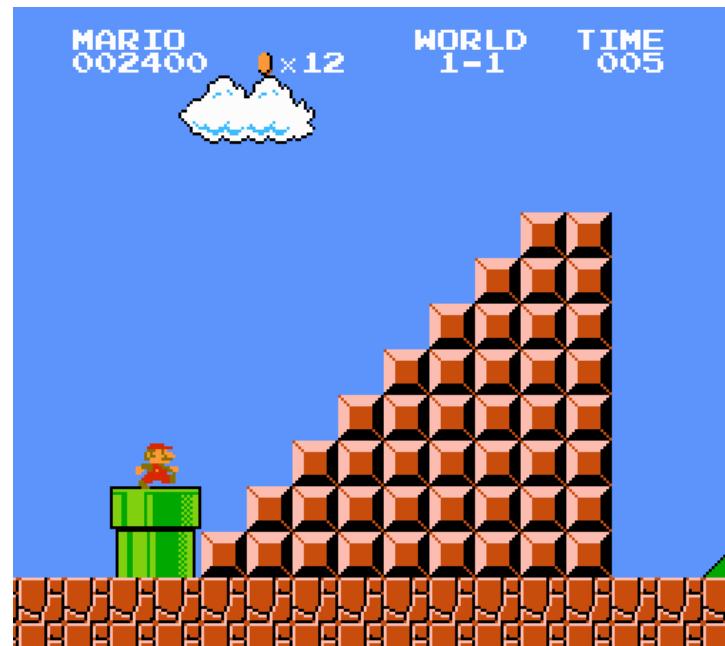


Not to be killed without warning

Unreasonable without a hint:

Room with 3 exits

2 lead to instant death and the 3rd to treasure



Super Mario Bros., 1985

Not to be given horribly unclear hints

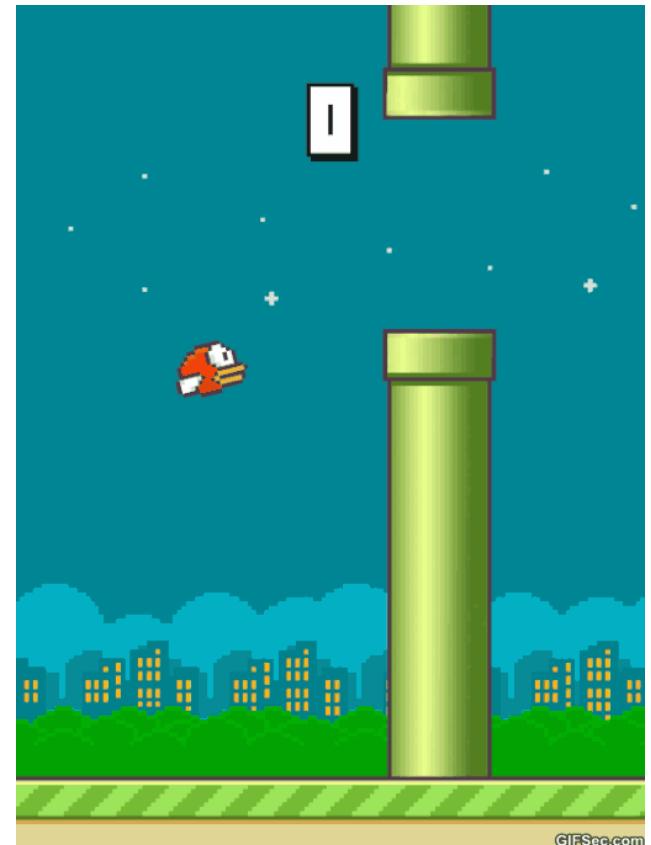
- Event
 - Going north from cave leads to lethal pit
- Hint
 - Pride of lions carved above the doorway
- Good hints
 - Skillfully hidden, very brief, should not need explaining after the event



Prince of Persia, 1989

To be able to win without experience of past lives

- Nuclear bomb under floor to be disarmed. The player knows where to dig because, last time around, it blew up there. (UNFAIR)
- A rocket-launcher with a panel of buttons, which looks as if it needs to be correctly programmed. But the player can misfire the rocket easily by tampering with the controls before finding the manual. (GOOD)
- Something needs to be cooked for the right length of time. The only way to find the right time is by trial and error, but each game allows only one trial. On the other hand, common sense suggests a reasonable answer. (CAN BE OK)



Flappy Bird, 2013

To be able to win without knowledge of future events

Game opens near a shop

You have one coin and can buy a lamp, a magic carpet or a periscope

Five minutes later you are transported away without warning to a submarine, whereupon you need a periscope.

If you bought the carpet, bad luck.



Not to have the game closed off w/o warning

Closed off: impossible to proceed later

Paper wall which you can walk through at the very beginning of the game

Has important info written on it that can only be read if it's intact

Room which can only be visited once per game

If there are two different things to be accomplished there, provide hint

Irrevocable act is only fair if the player is given due warning that it would be irrevocable

Not to need to do unlikely things

Asking a policeman about something he could not reasonably know about

Waiting in dull places

Elf turns up bearing a magic ring only after player waits 5 turns in a room

If you intend the player to stay somewhere, put something intriguing there



Not to need to do boring things for the sake of it

Putting objects needed miles away from where the problem

Boat in the middle of a desert

4 disc tower of Hanoi puzzle might entertain, but not an 8

Destiny loot cave

