

# Shigeru Miyamoto, Designer Koji Kondo, Composer

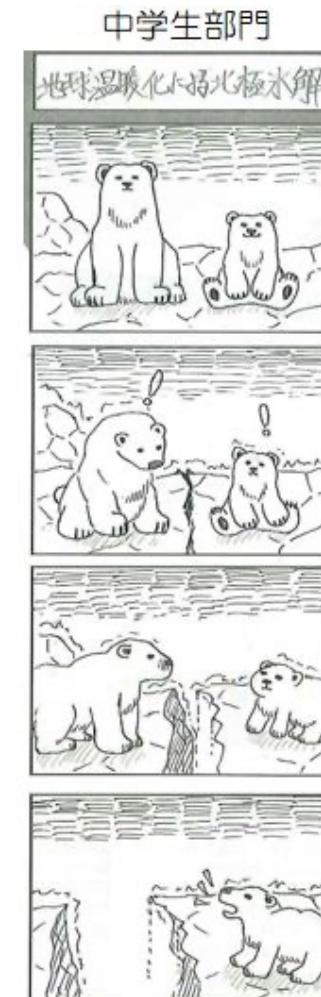
- Both inspired by Space Invaders
- Miyamoto joined Nintendo 1977
- Kondo first composer hired at Nintendo, 1984
- Donkey Kong (1981): Mario jumps barrels to rescue Pauline
- Super Mario Bros. (1985): jump on enemies to rescue Peach
- The Legend of Zelda (1986): fight, solve puzzles to rescue Zelda
- Inspired by
  - Western TV shows
  - Japanese kishōtenketsu comics (manga)

The Tonight Show, 2016



# 4-Pane Yonkoma Manga

- Kishōtenketsu Story Structure
  - Ki (起 Qǐ) Introduction of characters, issues
  - Shō (承 Chéng) Development of hardship, conflicts
  - Ten (転 Zhuǎn) Turning point, twist
  - Ketsu (結 Jié) Conclusion



中山 綾香さん

# Anthems

- Hail to the Chief
  - Composer: James Sanderson, 1812
  - Lyrics: Albert Gamse
  - Adopted by US Dept. of Defense: 1954
- John Williams movie compositions



# ECSE-CSDS 290

# Intro to Computer Game Design and Implementation

Spring 2025 Glennan 408

Instructor: Michael Fu ([mjf24@case.edu](mailto:mjf24@case.edu))

Office Hours: Tue 10-11a Glennan 517A

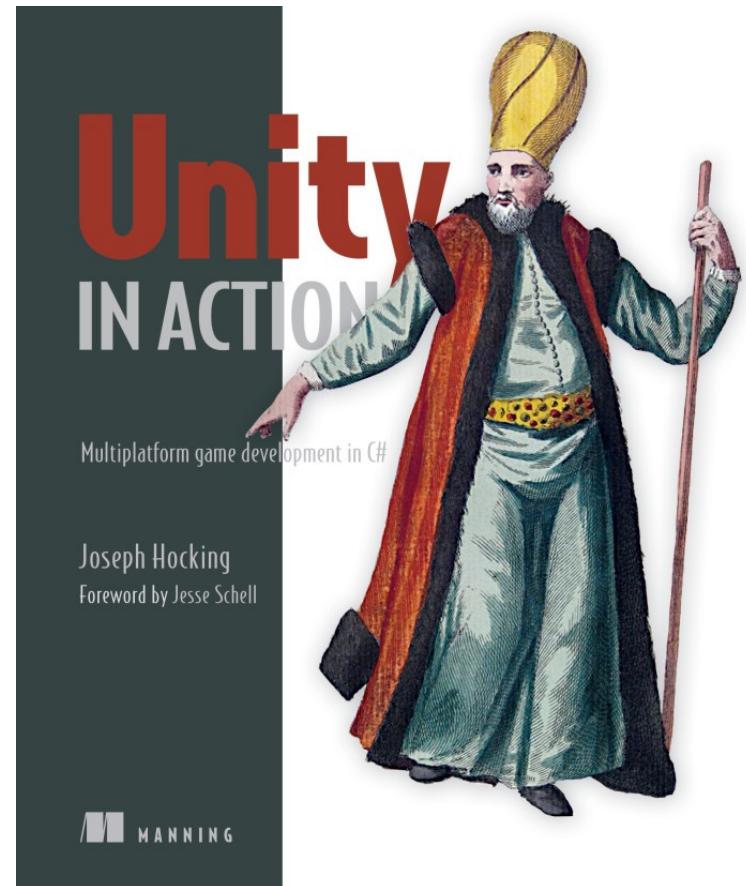
# Course Logistics and Expectations

# Teaching Assistants

- Adriana Kamor: atk88@case.edu
- Leyi (Roy) Yu: lxy443@case.edu
- William Cankar: whc44@case.edu
- TA office hours location: Virtual Worlds Lab Olin 405
  - Times listed in Canvas > Modules > Office Hours
- Review Sessions
- In-class grading
- Final project mentors

# Textbook

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

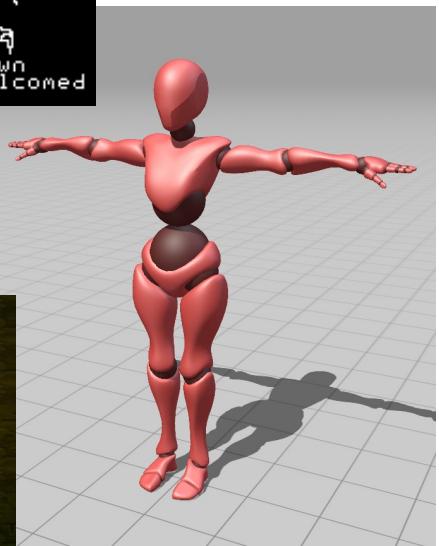
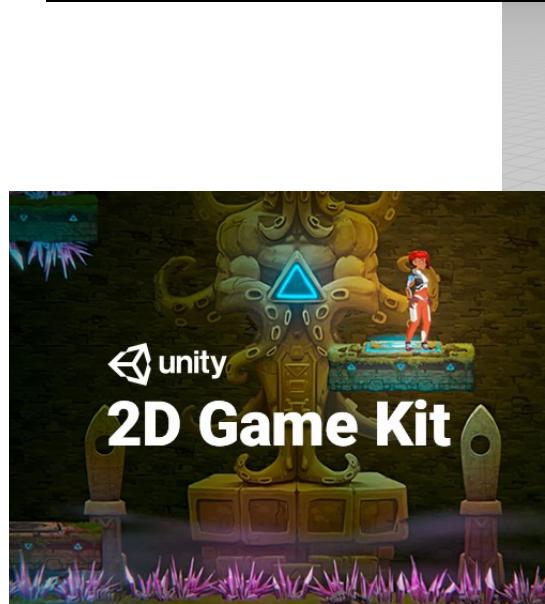


# Class Meetings

- Lectures in Glennan 408 through March
  - Recordings will be posted on Canvas > Echo 360
  - Zoom used for special cases only
- HW 2-5 graded in class or office hours via live demo to TAs
- HW 1 and HW 6 graded offline
- April (wks 12-15): breakout rooms for 4-week Final project
  - Breakout rooms TBD
- Mandatory Final Presentations (official final exam time): 12-3p Tues May 6

# 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



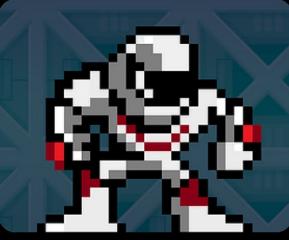
- <https://ecse-csds290.itch.io/>
- Class Choice Awards
  - Best Design Innovation
  - Best Implementation Quality
  - Best Overall

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 CASE WESTERN RESERVE  
UNIVERSITY EST. 1826

[engineering.case.edu/research...](#)

Original games by Case Western Reserve University ECSE/CSDS 290 Intro to Game Design and Implementation students



**GraviGo**

Run, jump, shoot, and toggle gravity in this exciting side scrolling platformer!

Platformer

[Play in browser](#) 



**Vitamin Voyage (2024 Team 19)**

Journey through the President's body to help him digest his food and learn about the essential vitamins!

Educational

[Play in browser](#)  



**2M-PM (Best Innovation 2024 Team 18)**

MULTI-PERSPECTIVE MANIPULATOR

Platformer

[Play in browser](#)  



**Pupper Placement**

Become the top dog in this fun puzzle management game! Place dogs to ensure their happiness and watch money pile up!

Puzzle

[Play in browser](#) 



**The Chimera Of Antarctica**

Survival

[Play in browser](#)  



**Gears of Time**

Save the world from a mysterious zombie invasion in this time-traveling Metroidvania Adventure

[Play in browser](#)

# Resources

- Homework code in Canvas Modules > Class Files
- Lecture slides, review sessions, recordings in Canvas > Modules
- Ask and answer assignment questions via Discord
  - Discord sign-up in Canvas > Modules > Discord Server
    - **Fill in Google Form with your Discord username**
  - Allows students to help each other
    - Do not expect TAs to respond last minute or late
  - Student conduct rules apply to Discord server
    - Consider it the same as speaking up in class
    - Not a comedy venue
    - Avoid memes
    - Avoid banter not related to class

# Course Expectations

- Students do not need to be “gamers” or artists to do well
  - Use of royalty-free/open-licensed media is allowed
  - Gaming laptop/GPU is not necessary for Unity Engine
- Students need to be active learners to do well
  - Review lecture slides for assignment guidance
  - Seek answers in online forums, tutorials, and documentation
  - Ask questions to peers, office hours, review sessions

# Course Expectations

- Participation is part of your grade
  - Live demo for grading in class
    - Request permission from TAs to submit demo videos or grade in office hours
  - Email early if things come up that affect attendance or grading
  - Behave professionally to TAs and appeal discrepancies to Prof. Fu
- Game content should be ESRB Teen (think PG-13)
  - Warn class about controversial content prior to presenting it
- Submission times as defined by Canvas
  - Email staff immediately if anything comes up and provide documentation (broken computer, etc...)

# 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+**

# Late Submission Policy for HW only

- 20% deduction (-2 points) for every 24 hours late
  - Automatically applied via Canvas grade policy
  - Request exceptions to this policy with documentation
- Assuming 10 point HW due Tues 8:30a
  - Turn in by Wed 8:30a = 2 points deduction (can earn max 8 pts)
  - Turn in by Thu 8:30a = 4 points deduction (can earn max 6 pts)
  - Turn in by Fri 8:30a = 6 points deduction (can earn max 4 pts)
  - Turn in after Sat 8:30a = 8 points deduction (can earn max 2 pts)
- Does not apply to Final Project
  - Late submissions will not receive credit

# HW1 Part I: Game Concept (Due next 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>
- 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
- Do not misrepresent generative AI work as your own

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

- Groups of 4 – do not work alone
  - Self team sign-up through Sunday 1/19
  - We will assign remaining students to teams (including partial teams) by Monday 1/20
  - Submit evidence of first meeting by Tuesday 1/28 11:59p to Canvas
- Quest engine (<http://quest.textadventures.co.uk>)
  - Explore existing games
  - Beginner & intermediate tutorials: <http://quest.textadventures.co.uk>
- 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

# 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 her in a similar outfit, with the title "FIRE" at the top and various promotional text and images for the magazine.

# 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

Questions?

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*

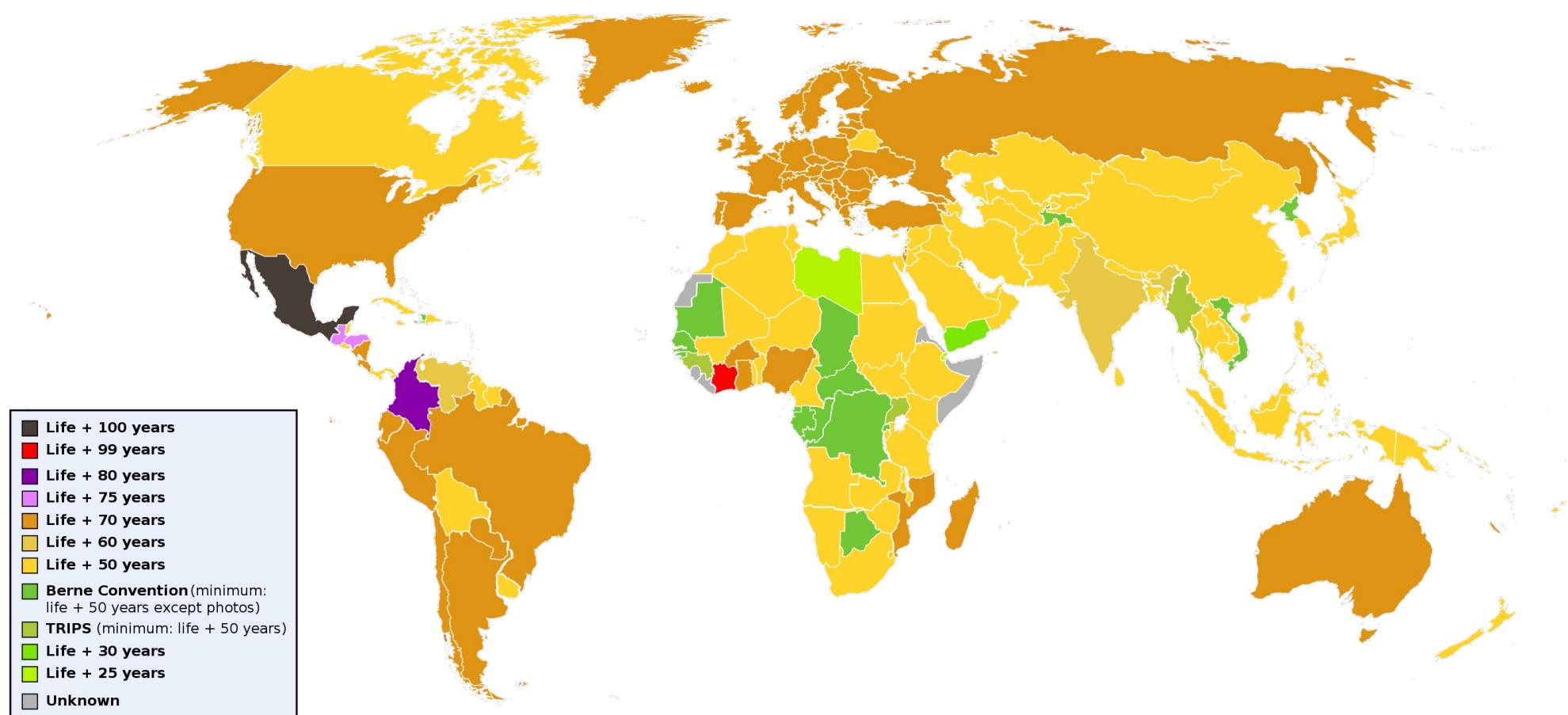
# Critical Thinking as a Game Designer

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

# US Copyright Act of 1976 (copyright.gov)

- Protects original works of authorship fixed in tangible medium of expression
  - Literature, poetry, novels
  - Recordings, music, songs, lyrics
  - Art, photographs, movies
  - Computer software, architecture, etc
- Not protected by Copyright
  - Titles, names, slogans, short phrases (protected by trademark TM)
  - Ideas, methods, concepts, systems (may be patented)
- Automatic protection upon creation in a fixed, tangible form
  - Can register at US Copyright Office for legal proof
  - Recognized by many treaty countries (WTO, etc.)

# Global copyright durations

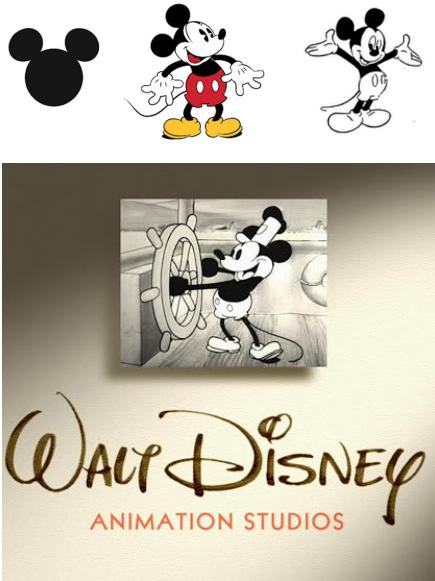


# Public Domain Works

- US copyright duration
  - Life of creator + 70 yrs
    - works by authors who died in 1955
  - Publication date + 95 yrs anonymous/hired work
    - Corporate works published before 1930
    - Originally life + 50 yrs or publication + 75 yrs
    - Extended 20 yrs in 1998 by Copyright Term Extension Act
  - Sound recordings before 1925 (100 yrs)
    - Music Modernization Act for recordings from 1923-1946
- In the public domain for 2025
  - Popeye, Tintin, Buck Rogers, Singin' in the Rain, An American in Paris, Boléro
  - <https://web.law.duke.edu/cspd/publicdomainday>
- Photographs of 2D public domain art cannot be copyrighted
  - Cleveland Museum of Art Digital Collection: <http://openaccess-api.clevelandart.org>



"Public Domain Day 2025 Montage"  
by Jennifer Jenkins, CC BY 4.0



Trademarks do not expire due to time!

### TRADEMARK

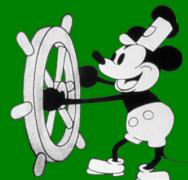
You cannot use Mickey in a way that misleads consumers into thinking your work is produced or sponsored by Disney.

### NEWER COPYRIGHTS

You cannot use new, copyrightable versions of Mickey until those copyrights expire.

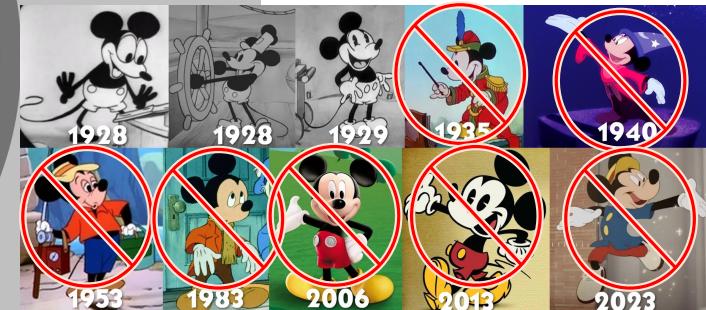
## PUBLIC DOMAIN 2024

You are free to copy, share, and build on Mickey Mouse 1.0!



Winnie-the-Pooh, **Sherlock Holmes**, Snow White, Cinderella, Dracula, Frankenstein's Monster, Robin Hood, Santa Claus, and the Wonderful Wizard of Oz

Public Domain Status of Mickey Versions



# Machine Learning Tools

- OpenAI, ChatGPT, DALL-E, MidJourney
  - Assets (images, 3D models, music)
  - Code (scripts, components)
  - Concepts (game designs, concept designs)
- Copyrights: to be defined by ongoing litigation
  - US copyright law covers creative works by humans
  - Companies arguing fair use as a collage tool
- ML algorithm owned by company
  - Paid and free versions available
- Terms of use: defined by company
  - DALL-E gives users ownership of [input] and [output]
  - Midjourney provides Creative Commons License

<https://hongfz16.github.io/projects/AvatarCLIP.html>

Théâtre D'opéra Spatial, Allen 2022 (1<sup>st</sup> place Colorado State Fair 2022 digital category)



Nao\_u @Nao\_u\_ · Follow Shoon, 2022

Midjourneyで生成した絵を使って横スクロールシューティングゲームを作ってみた

7:23 PM · Aug 13, 2022

17.2K Reply Share Read 73 replies

AvatarCLIP  
SIGGRAPH  
Hong, 2022



A skinny ninja that is raising both arms.

# Machine Learning Tools

- Copyrights: Algorithms likely trained on copyrighted works
- Terms of use are evolving
  - Definitions of input and output are evolving
    - Controversial prompts can be disallowed
    - Consistency is unknown
    - ML tools can not currently explain inspiration
- Disrupted industries feel threatened
  - Artists: Deviant Art DreamUp
  - Journalism: Cnet, BuzzFeed using OpenAI
  - Software Engineering: GitHub CoPilot
  - Game Development: Unity Muse, Nvidia ACE
- Increased risk for clones, lazy designs
- Refined designs become lasting exemplars

DALL-E “coca-cola”  
(Jackson Jacobs, 2023)



PromptBase: Trending Feb 4, 2023

AvatarCLIP: A *tall and fat Iron Man* that is *running*.



Prompt: "A cat in space"  
<https://kindlepreneur.com/ai-art-for-authors/>

# Machine Learning Policy

- Andersen v. Stability AI (since 2023)
  - Class Action Lawsuit against **Stability AI, Deviantart, Midjourney, Runway AI**
  - <https://www.npr.org/transcripts/1152653269>
  - <https://news.artnet.com/art-world/artists-vs-stability-ai-lawsuit-moves-ahead-2524849>
  - **Complaint:** “21st-century collage tool[s] that remixes the copyrighted works of millions of artists whose work was used as training data”
  - Aug 2024: Discovery phase
    - Stable Diffusion may have been built “to a significant extent on copyrighted works” and was “created to facilitate that infringement by design”
- NY Times vs. Open AI and Microsoft (since 2023)
  - Court holding arguments to dismiss the complaints on January 14, 2025.
- <https://sustainabletechpartner.com/topics/ai/generative-ai-lawsuit-timeline/>