




游戏设计与开发

Game Design and Development

Introduction







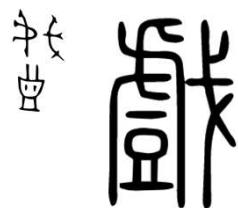

游戏历史

Game History







游戏的含义

游，旌旗之流也。
人或动物的水中行动，
现也包括陆地行动

戏，三军之偏也。
戈，兵器。
戏，角力也。






Game

- game**
 - a form of **play** or **sport**, especially a **competitive one** played according to **rules** and decided by **skill, strength, or luck**.
 - a physical or mental **competition** conducted according to **rules** with the participants in direct opposition to each other
- Etymology for game**
 - Middle English *game, gamen* "**delight, amusement, play, contest, pursuit of animals in sport,**"
 - Old English *gamen, gomen* "**amusement, jest, pastime,**"
 - Germanic **gamano-* (whence Old Saxon & Old High German *gaman* "**amusement,**" Old Norse *gaman* "**sport, amusement**"), of uncertain origin

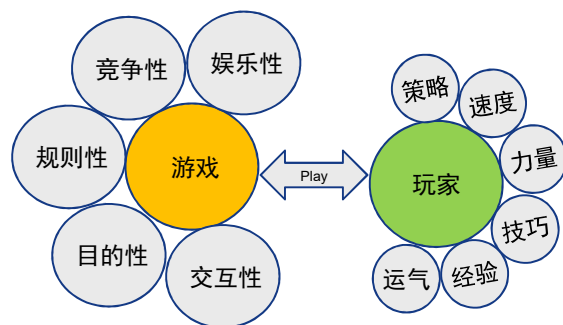
Play: the conduct, course, or action of a game

— Webster Dictionary





游戏的性质



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游戏的哲学观点

子曰：饱食终日，无所用心，难矣哉！不有博弈者乎？为之，尤贤乎已。



《论语·阳货》

孔丘 (公元前551-前479)

"...man only plays when in the full meaning of the word he is a man, and he is only completely a man when he plays.."

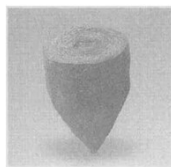


On the Aesthetic Education of Man
- Friedrich Schiller(1759-1805)

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古代的游戏



河姆渡遗址
新石器时代(约7000年前)



Royal game of Ur
(约4500年前)



石博枰(秦)



六博(东汉)

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唐·周昉《内人双陆图》



双陆



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古代游戏书



谱双 (宋·洪遵)



Libro de Ajedrez,
Alfonso X el Sabio (1283)

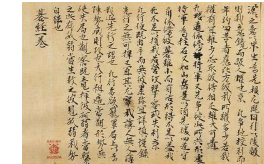
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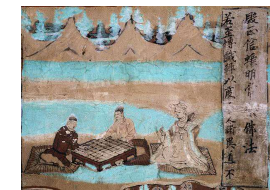
敦煌碁经



寿昌城遗址出土(唐)



碁经 (西周)

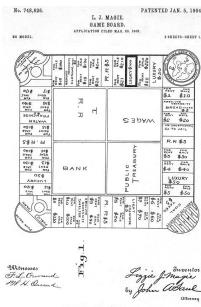


莫高窟《维摩诘经变·对弈图》(宋)

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现代桌游



Landlord's Game(1904)



Monopoly(1935)

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电子游戏 (Video Game)

⑤ 电子游戏是伴随着计算机而诞生的新的游戏形式

思考题：

- 计算机给游戏带来了什么新的变革呢？
- 电子游戏与传统游戏有什么大的不同呢？

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电子游戏 (Video Game)

- ④ 是伴随着计算机而诞生的游戏形式
- ⑤ 是对传统游戏的巨大超越
 - 依靠计算处理，游戏速度快很多
 - 游戏的虚拟空间不受物理限制
 - 游戏表现力强，形态更丰富

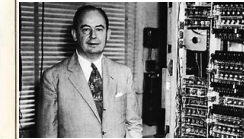
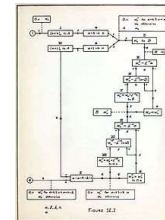
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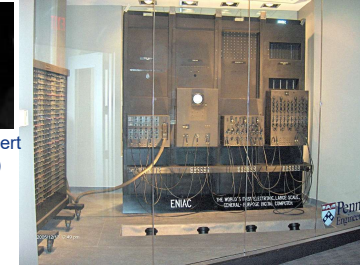
ENIAC (1945)



John Mauchly J. Presper Eckert
(1907-1980) (1919-1995)



John Von Neumann
(1903–1957)



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Shannon's game machines(1950)



Claude Elwood Shannor
(1916-2001)

Philosophical Magazine, Ser. 7, Vol. 41, No. 314 - March 1950

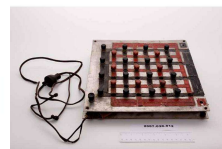
XXIII. Programming a Computer for Playing Chess
By CLAUDE E. SHANNON

Bell Telephone Laboratories, Inc., Murray Hill, N.J.¹
[Received November 8, 1949]

1. INTRODUCTION

This paper is concerned with the problem of constructing a computing machine or "program" for a modern general purpose computer which will enable it to play chess adequately on a practical problem, the question is of theoretical interest, and it is hoped that a satisfactory solution of this problem will act as a wedge in attacking other problems of a similar nature and of greater significance. Since possibilities in this direction are:

- (1) Machines for designing filters, equalizers, etc.
- (2) Machines for designing relay and switching circuits.
- (3) Machines which will handle routing of telephone calls based on the individual circumstances rather than the fixed routing.
- (4) Machines for performing symbolic (non-matrix) mathematical operations.
- (5) Machines capable of translating from one language to another.
- (6) Machines for making strategic decisions in simplified military operations.
- (7) Machines capable of scheduling a railway.
- (8) Machines capable of logical deduction.

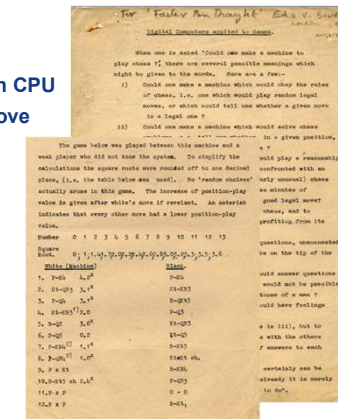
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Turing's chess game (1952)

- ⊕ **Turochamp**
 - as a paper machine
 - he acting as a human CPU
 - > half an hour per move



Alan Turing (1912-1954)



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Early Origins of Video Games

Bertie the Brain (by Josef Kates) (1950)



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Early Origins of Video Games

1958 "Tennis for Two" (William Hoginbotham, Brookhaven National Lab)

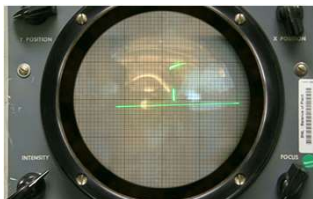
- Oscilloscope-based two-player game with primitive "controller"



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"Tennis for Two" (1958)



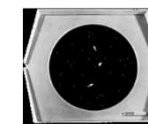
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Early Origins of Video Games

1961 Spacewar (Steve Russell, MIT "Tech Model Railroad Club")

- First fully-interactive video game
- First special-purpose game "joysticks" added later



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Spacewar (1961)



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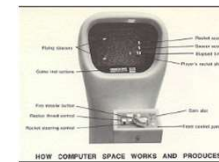


Commercial Arcade Games

1971 Computer Space (Nolan Bushnell, Nutting Associates)

- First commercial coin-operated arcade videogame
- 1500 units built, but it did not sell well

街机：专用于某一个游戏的计算设备



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Commercial Arcade Games

1972 PONG (Nolan Bushnell, Atari)

- First commercially-successful arcade videogame
- Entirely *solidstate* (no ROMs or microprocessors)
- 8,500 machines sold at \$1200 each



"AVOID MISSING BALL FOR HIGH SCORE"



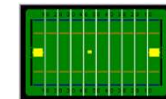
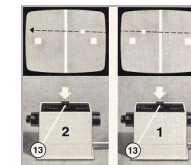
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Home Video Game Systems

1972 Odyssey (Ralph Baer, Magnavox)

- First commercial home video game system
- Uses only 40 transistors and 40 diodes!
- 100,000 sold the first year at \$100 each
- Support different games



4,874



Home Video Game Systems

1977 Atari 2600

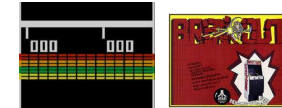
- Microprocessor-based hardware
- ROM cartridges
- ~30 million sold (till 1992)



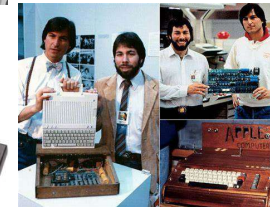
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Atari's Breakout (1976)



1977



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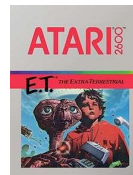


Video game crash of 1983

⊕ E.T. the Extra-Terrestrial (1982)



June, 1982



Dec. 1982

5.5 weeks



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Notable Early Video Games

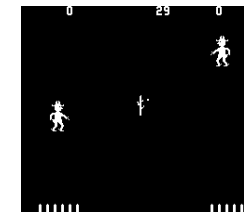
1974 TANK (Kee Games / Atari, Inc.)

- ⊕ First arcade videogame to use ROMs



1975 Gunfight (Taito / Midway)

- ⊕ First arcade game using a microprocessor



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- ⊕ Inspired by GunFight using Intel 8080
- ⊕ Tomohiro Nishikado
- ⊕ 1978 (Taito)
- ⊕ Very successful
- ⊕ The pixelated enemy alien has become a pop culture icon



- **1977 Space Wars (Cinematronics)**
First arcade game to use vector display technology (later used in Atari's wildly successful "Asteroids")



- 1983 Dragon's Lair (Starcom / Cinematronics)
 - First arcade game to utilize laser-disc technology 1980



- **1984 I, Robot / “Ice Castles” (Atari, Inc.)**
 - **First game to use 3D polygon rendering technology**
- **1992 Virtual Racing (Sega)**
 - **First multi-player driving game using force-feedback steering, realistic graphics and “physics”**





Game Consoles



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Mobile Games



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VR Games




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Serious Game/Functional Game

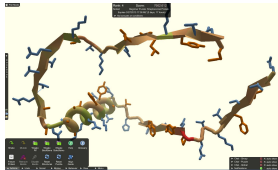


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FoldIt (2008 - now)

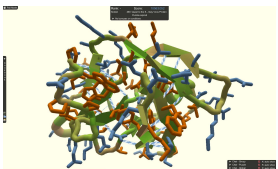

⑤ Crowdsourcing computer game for scientific research



1005b: Coronavirus Spike Protein Binder Design
Status: Active

Summary

Name: 1005b: Coronavirus Spike Protein Binder Design
Status: Active
Created: 06/27/2020
Points: 100
Expires: 08/05/2021 - 23:00
Difficulty: Intermediate

AlphaFold(Deepmind,2018)

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上海交通大学

SHANGHAI JIAO TONG UNIVERSITY



1896 1935 1987 2006

思考：你能运用电子游戏 创造什么价值？

What value can you create
by using video game?

软件学院数字艺术实验室
Digital ART Lab, SJTU