



# Introduction to the Computer Game

Sangchul Kim

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# 1. History of Game



- Earliest Games (Non-Electronic Games)
  - Nintendo(1885)
  - Sega(1960): Established by Marty Bromley, initial for Service Games, coin-operated game machines in a military camp of Tokyo.

참고: Chapter 2, 3D Game Programming  
Using Direct X10”





- Earliest Electronic Games
  - (Oscilloscope Game) "Tennis for Two" by Willy Higinbotham(1958) : (precursor to Pong)
  - (Console + TV Game) "Brown Box" by Ralph Baer(1968)
    - ➔ (after being licensed to Magnovox) "Magnovox Odyssey"(1972)

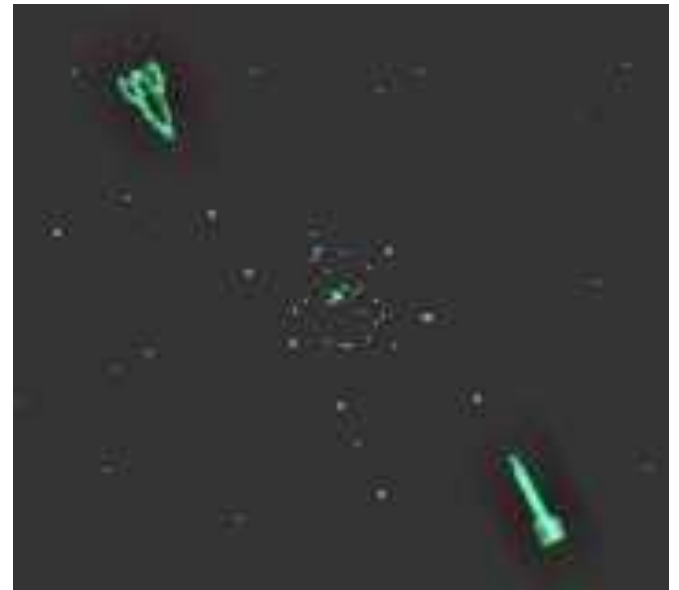
Odyssey





- Earliest Electronic Games
  - (Computer Game):  
    "SpaceWar" by MIT  
    student Steve  
    Russell(1961)  
    **Running onPDP-1**

SpaceWar





- Earliest Commercial Arcade Game
  - First product: "Computer Space" by Nolan Bushnell(1971)
  - First success: "Pong" (Atari, 1972) ← ping pong game





- Advances of Arcade Games
  - Continuous advancement after Pong(1972) by Atari
  - “Pac-Man” by Namco(1980): the most famous arcade game, the Pac-Man character eats dots, escape ghosts, and power-pills for killing enemies.





- Earliest Home Video Console Games
  - Odyssey by Maganovox(1972)
  - Atari Pong (1975)
  - Channel F(1976) by Fairchild Camera & Instrument
    - : First Programmable Console (Cartridges)
  - VCS by Atari(1977) – Programmable Console



Channel F





- Advances in Home Video Console Games
  - Continuous Advances after VCS(1977)
  - After 1981
    - Recession after year 1981
    - NES by Nintendo(1985) - Super Mario Brothers(1985)
      - ➔ Shrinking the market for arcade games
    - Golden Ages of Nintendo
    - Sega Master System (SMS), Genesis, Saturn by SEGA (80's-90's)
      - Sonic the Hedgehog





## –PlayStation by SONY

- PlayStation(1994), PlayStation 2(2000), PlayStation 3(2006), PlayStation 5(2020 ?)

## –New Competitions

- Atari and Sega are losing competitive power
- Nintendo: Game Cube(2001), Wii(2006), Nintendo Switch (2017)
- Microsoft: Xbox(2001), Xbox 360(2005), Xbox One(2017)



- Portable Consoles
  - Nintendo: Game Boy(1989), Nintendo DS Lite(2006), Nintendo Switch Lite(2017)
  - Sony: PlayStation Portable(2004)



- Growth of Computer Games PDP 메인프레임 컴퓨터에서  
만든 게임
  - Mainframe Game: Zork by Infocom  
(1979): 참고: Zork = slang to mean unfinished program
  - Growth of PC Game Market
    - Apple II and Commodore 64 were made for games.
    - Pentium CPU (1993), DirectX (1995)



## – On-Line Game

- Aradath (1984, MUD game by Marc Jacobs) : the first on-line game serviced at a flat rate of dollars a month. ➔ Dragon's Gate
- DOOM (1993), QUAKE(1996) by ID Software : initiative internet games. FPS games.

MUD (Multi-user Dungeon). RPG, Hack and Slash, (초기에는 Text 기반)

## 2. Game Categorization

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- Game Categorization (Game Genres)
  - Skill action game vs strategic game
  - Online vs non-Online
  - 2-D vs 3-D
  - Subgenres



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- Categories of Skill Action Games
    - Features: Real-time, Graphics and Sound, Input Device, Eye and Hand Coordination, Quick Response Time
    - Examples: Fighting, Combat, Maze, Sports, Paddle, Racing
  - Categories of Strategic Games
    - Features: Cognition instead of manipulation by motor skill
    - Examples: Adventure, Role-playing, War, Education





- Online Games
  - MMO(Massively Multiplayer Online):
  - MMORPG (MMO Role Playing Game)
    - MORPG (Multiplayer-Online-Role-Playing-Game)) : 일정지역, 몇 명이서 모임. 예 던전앤 파이터
  - MMOFPS (MMO First Person Shooter)

### 3. 3D vs 2D Graphics Game



- 2D

여러 sprite를 모아서 하나의 파일에 저장

- sprite (2D bitmap that is integrated into a larger scene), tiling
  - Third person perspective games



sprite sheet

타일을 깔듯이 위에서 복사





- 3D

- 3D models, rendering

- First person perspective games

The viewing angle of the user is equal to that of the character → you are seeing on the screen what the character is seeing.





- Second person perspective games
- Third person perspective games
- Refer to <https://youtu.be/cbLeA3px1Bk>.





- Advance in 3D Games (ex: Quake Series(1996-)): Pentium Series (1993-), DirectX Series (1995-)
  - DirectX vs. OpenGL
  - Graphics Accelerator: NVIDIA(1995-), ATI(1991-2010) → AMD로 통합
    - 3D Mark : benchmark program
    - Pixel fill rate: pixel fill rate usually refers to the number of pixels that a video card can render to screen and write to video memory in a second.
- ex) GeForce GTX 1060 6GB 82 Gpixels/s<sup>21</sup>



- History of 3D Games
  - Earliest Examples:
    - Pseudo 3D (or 2.5D) graphics
    - Pseudo 3D: 3D simulated using 2D images and 2d models
    - Example: Outrun by SEGA



# Image Based Rendering

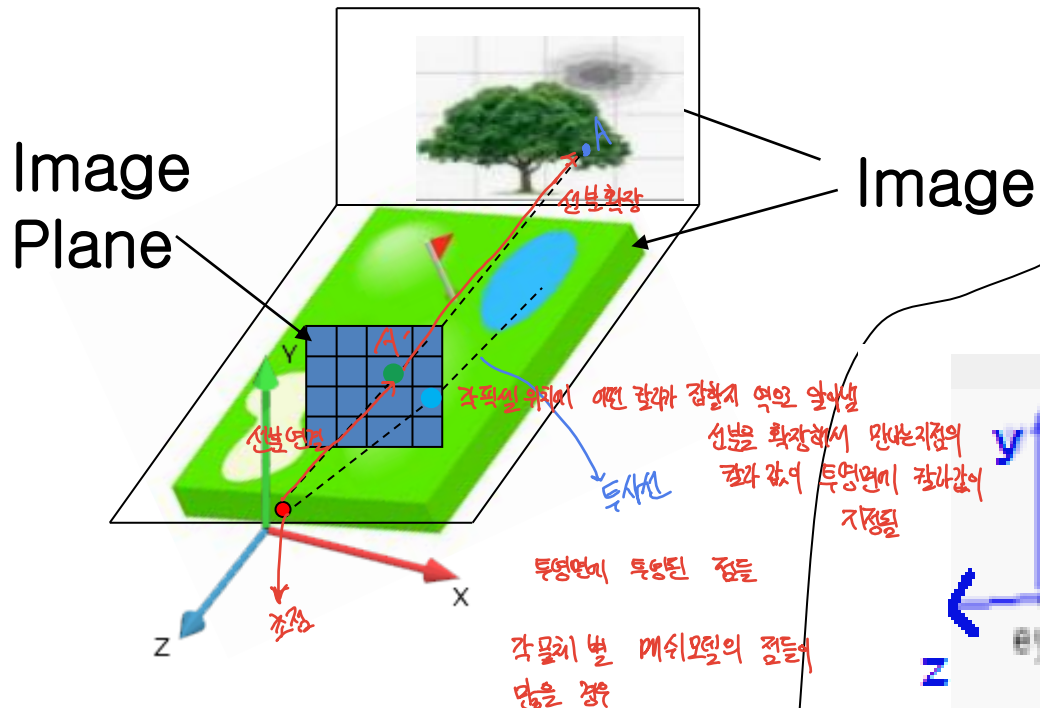
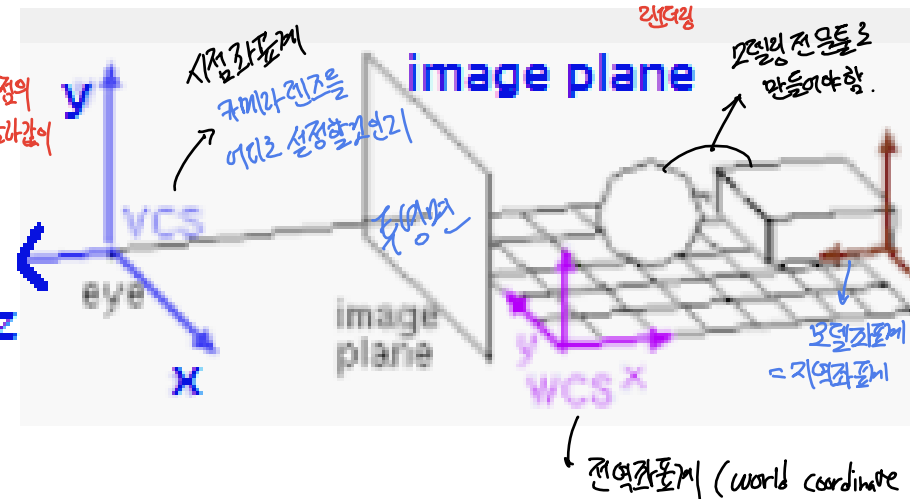


Image Plane = Projection Plane



● : Point of Projection (초점)

정식 3D Viewing

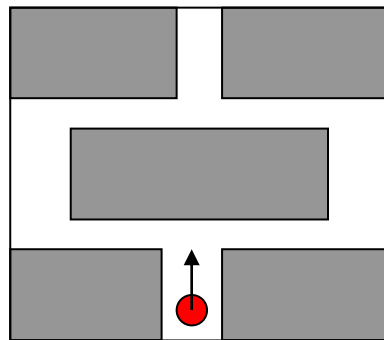


# 2D polygon Map → 3D View



위에서 내려본

View

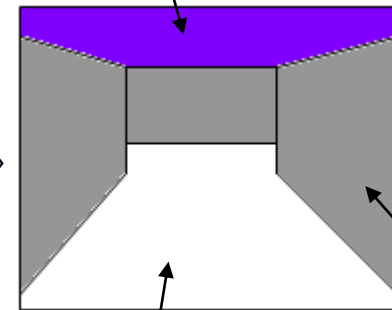


2D Model for  
Maze



Player Character  
관점에서의 view

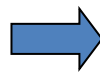
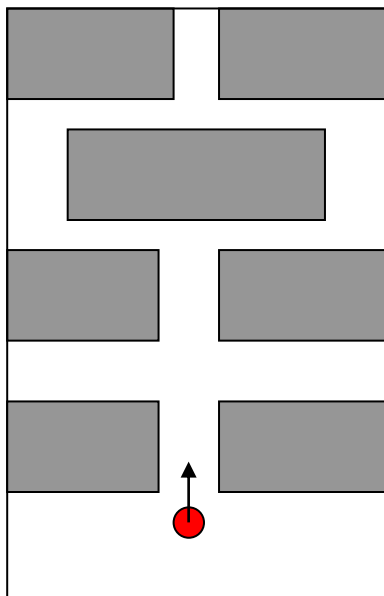
Ceiling



Floor

Wall

높이 정보와 2D model 이미지  
만 주어졌을 때 관점 view  
만들라.



?



- History of 3D Games

- Later:

- Zarch(1987): 3<sup>rd</sup> person perspective shooting, tile-based, 3D.

- Doom(1993): FPS, 3D, multiplayer on the network.

