

Digital Media & Games

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Digital Media

- Use of media in a digital format allows us to manipulate and transmit it relatively easily since it is in a format a computer 'understands'
- Modern desktop PCs are extremely powerful, capable of performing billions of calculations per second

Graphics

- This power enables a PC to render almost movie quality graphics in real time with convincing user interaction
- Instead of watching a film about aliens, you can be in it...
- The level of user involvement this invokes is challenging film as the major form of media based entertainment



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Graphics & Realism



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Graphics & Realism

<http://www.onemotion.com/flash/spider/>

Sound

- We can now record standard sounds and music and change their characteristics in real time
 - Sound filters enable us to manipulate a sound
 - Echoes, fade out and more
 - MIDI sound formats enable flexible playback and alteration of music
 - We can change tempo, select or change instruments
- The same computer hardware can achieve all these things and is becoming commonplace
- Sound as a form of digital media is a very powerful emotive element in creating the feeling of immersion, a point that has been very effectively exploited in films



Early Console Games

- So, how did we get here?
- Nolan Bushnell and Ted Dabney - University of Utah
 - Spacewar!
 - Monochrome

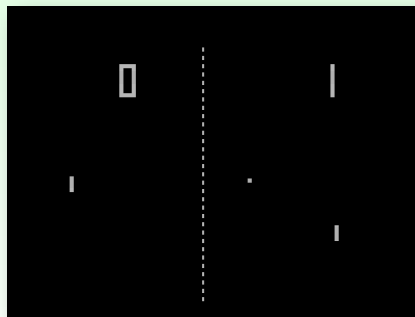


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Early Console Games

- Bushnell & Dabney founded Atari in 1972 and released Pong
 - Monochrome
 - Simple beep sounds (sound sample?)

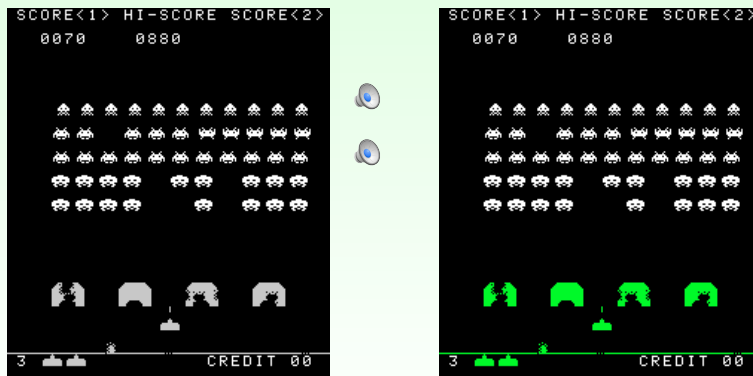


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Arcades / Amusements & Pubs...

- 1978, Taito release 'Space Invaders'
 - Early versions in monochrome, then colour...
 - Increasing pace reflected in sound effects



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Video Arcade

- 1979, Asteroids
 - Originally black and white
 - Like space invaders, used simple sound effects to create tension



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Video Arcade

- 1980, Pac-Man
 - One of the first games to make greater use of colour and sound
- <http://www.djgallagher.com/games/classics/>



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Home Console

- In the early 80's there was a move to bring the games found in arcades into the home - the start of the home gaming revolution
 - Magnavox Odyssey
 - Nintendo Entertainment System (NES)
 - Atari 7800

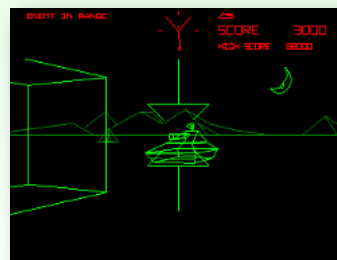


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Home Console

- Initially these games were quite simple with 16 colours and limited sounds
- Input devices were either 4 way digital joysticks or paddles
- Video arcade games had to compete and often achieved this via improved features, interfaces or even consoles you had to get into...
 - Battlezone - early 3D rendering
 - Star Wars



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Late Eighties

- The late eighties marked the true arrival of the home console with arcades finding it increasingly difficult to keep up
 - Sega Mega Drive - Sonic the HedgeHog
 - Super NES - Mortal Kombat



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Late Eighties

- Console Processors capable of handling 16 bit data whereas previous processors were 8 bit - this allowed for a greater range of colours to be displayed, more complex programs to be created and better sound
 - $2^8 = 256$
 - $2^{16} = 65,536$
- Resulted in games like Sonic the Hedgehog & Street Fighter
- Gamers expectations began to rise exponentially
 - Small studios found it hard to create games that would sell well since the work required to create the relevant media became more involved



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Sonic Now...



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Nineties

- The nineties marked the consolidation of the games console although PC games now started to compete
 - PC hardware was evolving at a faster pace than the consoles and would periodically offer more power (e.g. 32 bit processing)
 - Consoles had the advantage of being easier to set up and use and were dedicated to a specific aim. The generic nature of a home computer meant that it did not sit so comfortably or compactly in someone's living room
- The nineties also marked a turning point in game console environments - a move to true 3D rendering

Handhelds

- There had been attempts in the eighties to bring in hand held games
 - Donkey Kong & Pac Man on dedicated hardware
- The nineties marked the true arrival of the general purpose handheld games console with the release of the Nintendo Game Boy and games like Tetris
 - Handheld hardware was not as powerful as the home console device and either presented a simple addictive game or went back to early successful games



2000 to present

- Throughout the 80's and 90's, PC games were developing in step with their console counterparts but tended to be more complex in nature and harder to market.
 - They would often lead the way but then be overtaken by the dedicated hardware used in consoles
 - In principle, they are still the most powerful games consoles since they develop more rapidly and support the broadest range of input devices
 - The power of these devices allows them to create ever more impressive game environments
- It is up for debate as to whether a complex game environment provides more entertainment, sometimes keeping it simple results in a better user experience
 - The plot and mental challenge is frequently more important
 - Once the user becomes 'immersed' in the game, they tend not to notice the detail

Examples - Far Cry 2



Examples - Far Cry 2



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Examples - Crysis



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Media Devices

- It is worth taking a quick look at the wide range of devices that are now used to feed media into and out of computer games
 - Paddle Wheel
 - Mouse
 - Joystick
- Force Feedback
 - Wheels
 - Joysticks
 - Controllers



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Media Devices - Wii Mote

- Nintendo's introduction of the wireless Wii 'mote' is a game changer
 - Tilt sensors allow the user to move the device with a range of motion that is similar to a real action
 - Sometimes with unfortunate side effects...



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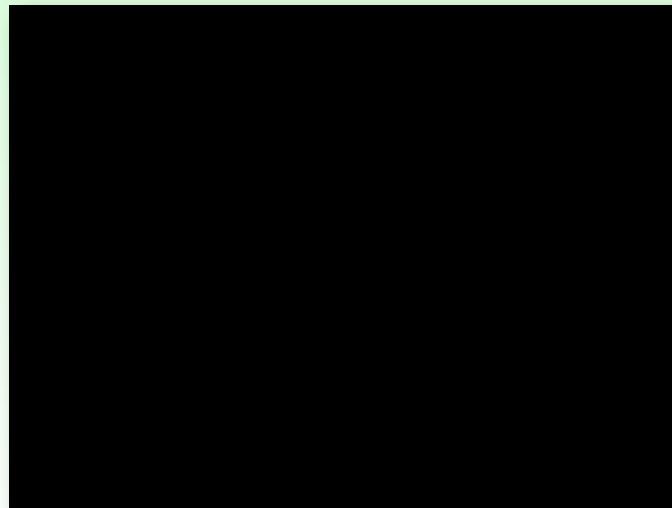
24

Media Input Devices - Head Trackers

- Head trackers such as TrackIR enable a computer to monitor the position of your head with 6 degrees of freedom:
 - move forward/back, left/right, up/down
 - roll, pitch and yaw
- Small movements of your head can be exaggerated in game to allow a player to look around
- Our brains adapt relatively quickly to this disparity and quickly allow you to look around without thinking about it



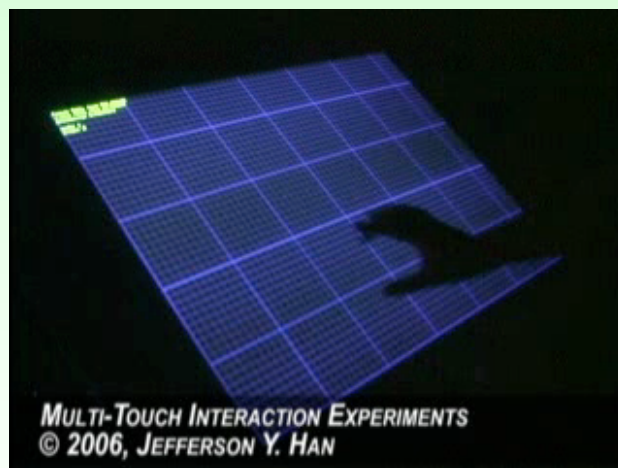
TrackIR Demos



Media Input Devices - Multitouch

- The next generation of media input for both games and general PC use will be driven via multi-touch
 - Multi-touch allows for multiple simultaneous touch gestures instead of the single point and click restriction of a mouse
 - It enables a user to interact with much more intuitive motions of the hands and without the need for a device such as a mouse which distances the user from their actions

Multitouch Demo



Where are we now?

- Very diverse range of games and devices
- Games now provide
 - realism
 - simulators - flight etc
 - warfare
 - escapism / alternative realities
 - World of Warcraft, Everquest, Eve Online
 - alternative communities
 - Second Life
 - sports
 - Wii Fit
 - music
 - Dance Mats, Karaoke, Wii Rock Band

Simulators



First Person Shooters



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RPG Multiplayer Online Communities - WOW



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RPG Multiplayer Online Communities - Eve Online



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Alternative Communities - Second Life



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Questions?