Discussion-1: Graphics Systems and Models

Discussion Topic:

Computer graphics are pivotal in creating immersive and visually engaging experiences, from video games to animated movies. How have advancements in computer graphics transformed the entertainment industry? Discuss the impact of realistic rendering, virtual worlds, and character modeling on user engagement and storytelling.

My Post:

Hello class,

I remember playing pong for the first time on an Atari 2600, I was 9 years old, it was 1980.
I was fascinated that I could control and interact with objects on a TV screen, it was magical to me, especially as a poor kid whose parents could only afford a black-and-white TV.
The Atari Corporation released the Pong home version in 1975 (Pong Game, n.d.). Pong was created by Allan Alcorn and it is considered to be one of the first computer games ever created. That same year, 1980, Star Wars: Episode V - The Empire Strikes Back was in theaters. The movie was a blockbuster, the success of the film was based on its great that was enhanced by groundbreaking special effects. The movie special effects team used detailed miniature models for spacecraft and vehicles (Parbot, 1980). Matte paintings to extent sets, Stop-Motion Animation using articulated models, and optical effects for actor live-action.

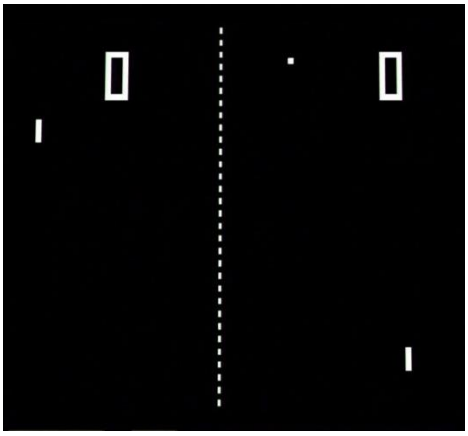
Needless to say, things have changed enormously since 1980. In 44 years, video games have evolved from simple shapes to hyper-realistic worlds, and film special effects went from using miniature models and optical effects to incorporating Computer-Generated Imagery (CGI). For example:

- Realistic rendering now uses advanced algorithms like ray tracing, physically-based rendering (PBR), and global illumination to create incredible visuals and stunning CGI in films.
- Virtual worlds, that is the concept of interacting with objects on a screen bring fully 3D worlds to video game players. Worlds, such as the ones in the video game “NO Man Sky” can be procedurally generated.
- Character modeling uses techniques such as motion capture, facial animation, and dynamic cloth simulation to create 3D detail models and enhance acting performances.

All these advancements in computer graphics have enhanced user and consumer immersion in both films and video games. Movies such as “Avatar” with astounding CGI and video games such as “The Last of Us Part II” with stunning 3D graphics are examples of how far computer graphics have come in creating deeply engaging and immersive experiences.

The pictures below illustrates the evolution of computer graphics in video games from the 1975 to today.

Figure 1
Pong



From "Pong" by the Silver Ball Museum (n.d.). https://silverballmuseum.com/product/pong/Links to an external site.

Figure 2
The Last of Us Part II

From "The Last of Us Part 2 Has Been Upgraded for PS5 - And We've Tested It" by Linneman (2021). https://www.eurogamer.net/digitalfoundry-2021-the-last-of-us-part-2-has-been-upgraded-for-ps5-and-weve-tested-it

Moreover, the elephant in the room cannot be ignored, that is generative AI. The recent advancements in generative AI are revolutionizing computer graphics and how video games and films are made by transforming the way visual content is created, manipulated, and rendered.

-Alex

References:

Pong Game (n.d.). About *Pong*. PongGame.org. https://www.ponggame.org/

Parbot, M. (1980). The making of the empire strikes back [Documentary]. YouTube. https://www.youtube.com/watch?v=YeB-uXGGaEU&t=2s