1. **VIRTUAL REALITY**
2. **INTERACTIVE VIDEO**
3. **INTERACTIVE AUDIO**
4. **GAMES**

MEDIA ENTERTAINMENT

DATE:14TH SHRAWAN

VIRTUAL REALITY

- > IMMERSING IN THE SIMULATION OF REAL WORLD

PRESENTED BY: SUJAL LIMBU

DATE: 14TH SHRAWAN

Sujal, Sarthak, Sagar, Yumesh

3 INTRODUCTION TO VIRTUAL REALITY :

➢ Virtual Reality (VR) is a computer-generated simulation of a three-dimensional environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment.

- **History of VR (Virtual Reality) :**

  ➢ Early concepts and developments (1960s: Sensorama, 1980s: VPL Research)

  ➢ Evolution to modern VR systems

How VR Works ?

- **Hardware Components:**

➢ VR Headsets (e.g., Oculus Rift, HTC Vive, PlayStation VR)

➢ Motion Tracking Devices (e.g., sensors, gloves)

➢ Input Devices (e.g., controllers, haptic feedback systems)

- **Software Components:**

➢ VR Applications and Platforms (e.g., Unity, Unreal Engine)

➢ Content Creation Tools

5

Types of Virtual Reality:

➤ **Non-Immersive VR**

  Description : Interaction through a computer screen.
  Example : Video games on PC/consoles.

➤ **Semi-Immersive VR:**

  Description : Larger displays/projections with some tracking.
  Examples : Flight simulators, large-screen displays.

➤ **Fully Immersive VR:**

  Description: VR headsets with full motion tracking.
  Examples: VR gaming (Oculus Rift, HTC Vive).

Sujal, Sarthak, Sagar, Yumesh

Advantages of Virtual Reality

Enhanced Learning and Training:
➤ Safe environment for practice
➤ Realistic simulations

Immersive Experiences:
➤ Engaging and interactive content
➤ Empathy and perspective-taking

Accessibility:
➤ Remote access to experiences and resources
➤ Virtual collaborations

Realistic Simulations:
➤ VR provides highly realistic and immersive simulations that can mimic real-life scenarios.
➤ Trainees can experience various situations and learn to respond appropriately, enhancing their readiness for real-world challenges.

Applications of Virtual Reality:

7

1. **Entertainment:**
   ➢ Video Games (e.g., Beat Saber, Half-Life: Alyx)
   ➢ Virtual Tourism (e.g., Google Earth VR)

2. **Education and Training:**
   ➢ Medical Training (e.g., VR surgeries)
   ➢ Military and Aviation Simulations

3. **Healthcare:**
   ➢ Therapy and Rehabilitation
   ➢ Pain Management

4. **Other Industries:**
   ➢ Real Estate (virtual tours)
   ➢ Retail (virtual stores)

Sujal, Sarthak, Sagar, Yumesh

8

Challenges and Limitations

- **Technical Challenges:**
- High cost of equipment
- Motion sickness and VR fatigue

- **Content Creation:**
- Need for high-quality, realistic content
- Large file sizes and bandwidth requirements

- **Ethical and Social Issues:**
- Privacy concerns
- Potential for addiction

9

Future of Virtual Reality

- **Technological Advances:**
- Improvements in hardware (lighter, more comfortable headsets)
- Better graphics and processing power

- **Broader Adoption:**
- Integration into daily life (work, social interactions)
- More accessible and affordable VR solutions

- **Innovative Applications:**
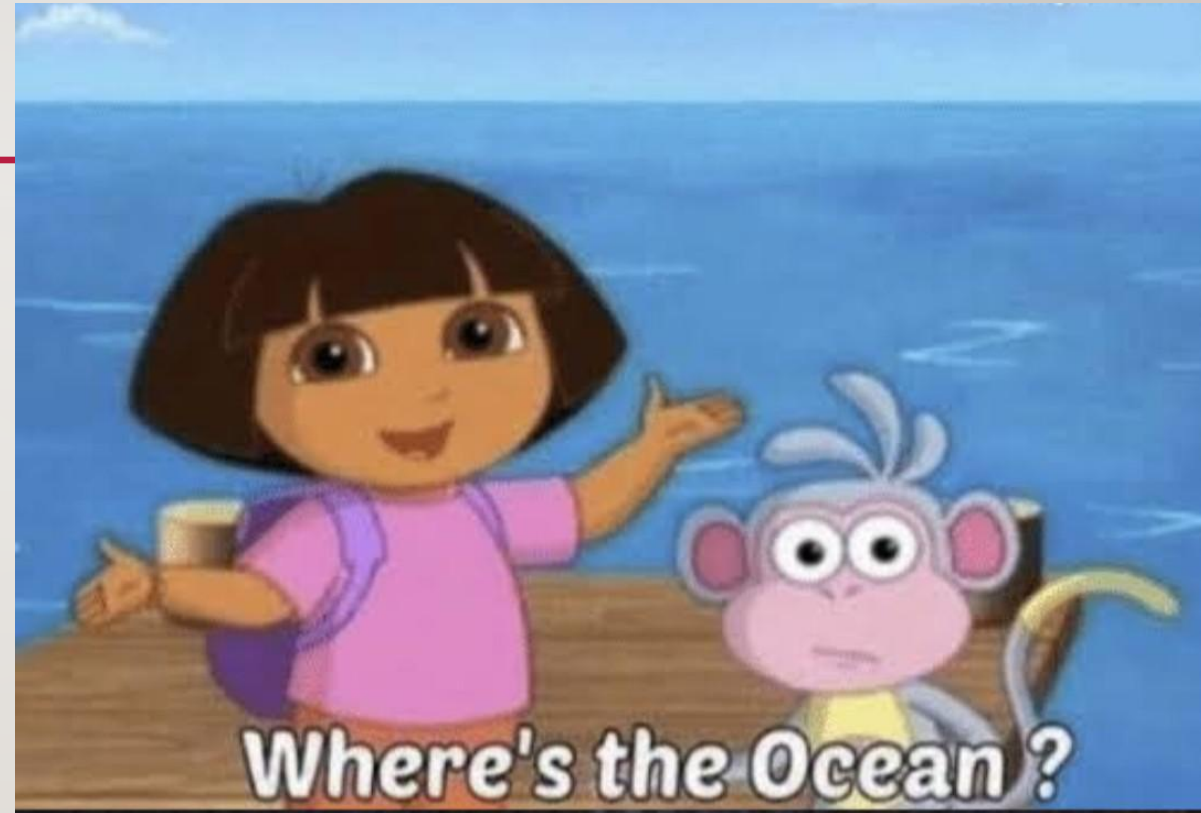- Expanding into new industries (architecture, sports, art)

10

INTERACTIVE VIDEO

=>Tell me and I forget.
Teach me and I remember.
Involve me and I learn.

Presented by: Sarthak Ghimire

WHAT IS INTERACTIVE VIDEO?

➢ A video provided with additional features (other than play/pause,volume gain/lose, speed) like hotspots, chapters, 360° view, livestream, superchat, polls, quizzes, etc can be called an interactive video.

➢ Due to additional features, an interactive video provides better viewing experience to the user than traditional video.

HOW DOES IT DIFFER FROM TRADITIONAL VIDEO?

Aspect	Traditional Videos	Interactive videos
Features	Play/pause, rewind, volume control.	Play/pause, rewind, volume control along with addition of **interactive elements** like 360^0 view, livestream, poll, chapters, etcetera.
User Experience	Okayish with less retention.	Better than traditional videos with maximum viewers' retention.
Technology requirement	Basic hardwares and softwares are enough to create and view videos.	Additional hardwares like VR box and softwares like OBS.
Adaptability	Fixed.	Can adapt as per user's input.

13 EXAMPLES:

➢ Youtube Video

Chapters

Hotspots

EXAMPLES:

2. Live streaming platforms:

OBS

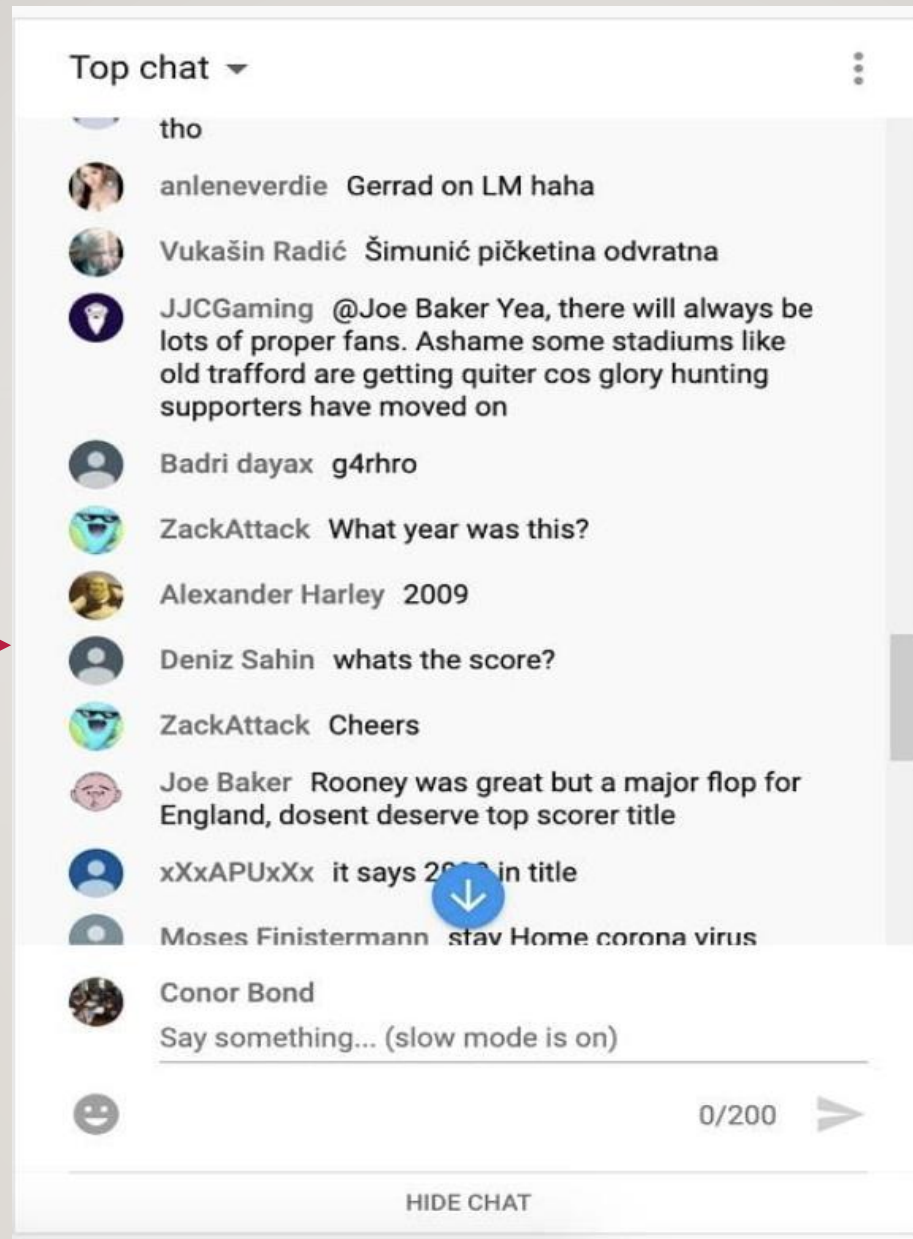Sujal, Sarthak, Sagar, Yumesh
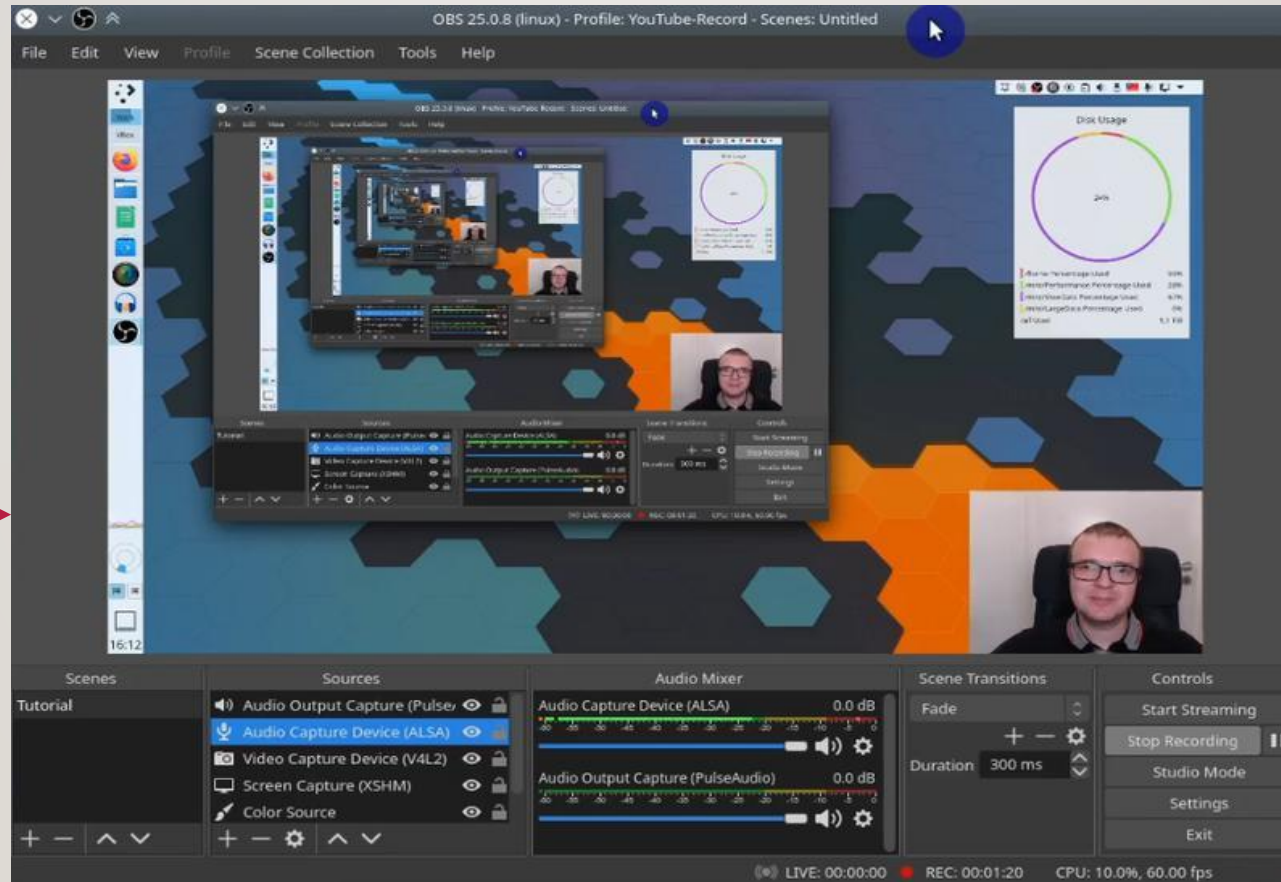
17

Superchat

Swagat Mohanty ₹222.00

Play Kaanch Ke Ghar

Reply

18

Live Chat

19

Poll

Create a poll

Poll

What's your favorite Italian dish?

Pizza

Pasta

Add option...   35

Must contain between 1 and 35 characters

ADD OPTION

EXAMPLES:

3. 360° videos

https://www.youtube.com/@NitroVR360

EXAMPLES:

Adventure type interactive videos:

https://www.youtube.com/watch?v=52ZkFD-YlmY

BENEFITS OF INTERACTIVE VIDEO

- **Engagement**: How interactive elements can significantly boost viewer engagement.

- **Personalization**: Viewers can have a personalized experience based on their choices.

- **Data Collection**: Gathering data on viewer preferences and behavior for better content creation and

  marketing strategies.

CHALLENGES AND LIMITATIONS OF INTERACTIVE VIDEO

- **Technical Challenges**: Issues like video loading times, compatibility across devices, and technical skills required for creation.

- **User Experience**: Balancing interactivity with user experience to avoid overwhelming the viewer.

- **Cost and Time**: The higher cost and time investment needed to produce interactive videos compared to traditional videos.

INTERACTIVE AUDIO

⇒ **THE EPICENTER OF AUDIO AND INTELLIGENCE**

PRESENTED BY: SAGAR POKHREL

Introduction to Interactive Audio

➢ Interactive audio refers to sound that responds dynamically to user interactions within a multimedia environment.

➢ It enhances user experiences by providing auditory feedback that is contextually relevant.

➢ This technology is widely used in video games, virtual reality, and interactive applications to create immersive experiences.

Importance of Interactive Audio

➢ Interactive audio plays a crucial role in maintaining user engagement and enhancing storytelling.

➢ By adapting sound elements based on user actions, it helps create a more immersive and personalized experience.

➢ Effective use of audio can also guide users through complex environments, improving usability and navigation.

Techniques in Interactive Audio

➢ Common techniques include spatial audio, adaptive music, and sound effects that change based on user input.

➢ Spatial audio creates a sense of directionality, allowing users to perceive sounds from specific locations in the virtual space.

➢ Adaptive music adjusts its composition in real-time, reflecting the emotional tone and pace of the interactive experience.

Applications of Interactive Audio

- Interactive audio is widely applied in video games, enhancing gameplay through real-time sound adjustments.

- It is also utilized in educational software, providing auditory cues that support learning and retention.

- Virtual reality environments leverage interactive audio to create a more realistic and engaging experience for users.

Future Trends in Interactive Audio

- The integration of artificial intelligence is poised to revolutionize interactive audio by enabling more sophisticated sound responses.

- Advances in technology will likely lead to more personalized audio experiences tailored to individual user preferences.

- As accessibility becomes a priority, interactive audio will evolve to include features that cater to diverse audiences and needs.

MEDIA APPLICATION
MEDIA ENTERTAINMENT
(GAMES IN MULTIMEDIA COMPUTING)

⇒ **EXPLORING THE INTERSECTION OF GAMING AND TECHNOLOGY**

PRESENTED BY: YUMESH BAN

Sujal, Sarthak, Sagar, Yumesh

31 INTRODUCTION

- A game is an activity or medium in which players engage with a structured set of rules and objectives, often for entertainment, education, or competition.

- In the context of multimedia computing, games are digital experiences that integrate various multimedia elements such as graphics, sound, and interactivity to create immersive and engaging experiences for players.

32 HISTORY OF GAMES IN MULTIMEDIA COMPUTING

- **<u>Early developments and milestones</u>**
  - ➤ 1970s: The rise of arcade games
  - ➤ 1980s: Introduction of home gaming consoles
  - ➤ 1990s: Emergence of 3D graphics
  - ➤ 2000s: Online multiplayer gaming
  - ➤ 2010s: VR and AR innovations

Sujal, Sarthak, Sagar, Yumesh

33

COMPONENTS OF MULTIMEDIA COMPUTING IN GAME

- ➢ Graphics and rendering

- ➢ Audio and sound effects

- ➢ Animation and motion capture

- ➢ User interface and experience (UI/UX)

Sujal, Sarthak, Sagar, Yumesh

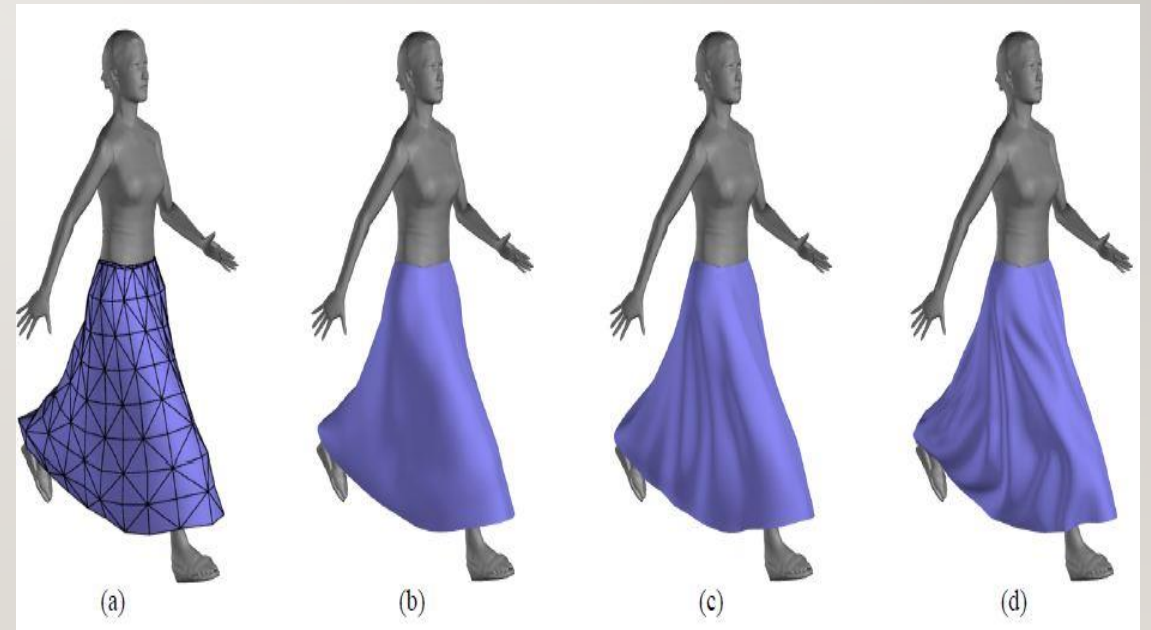# 34 TECHNOLOGIES USED IN GAME DEVELOPMENT

➢ <u>Game engines</u>: Unity, Unreal Engine, Buildbox

➢ <u>Programming languages</u>: C++, C#, Python

➢ <u>Middleware and libraries</u>: Havok, FMOD (developed by Firelight

Technologies)

35 MULTIMEDIA COMPUTING TECHNIQUES IN GAMES
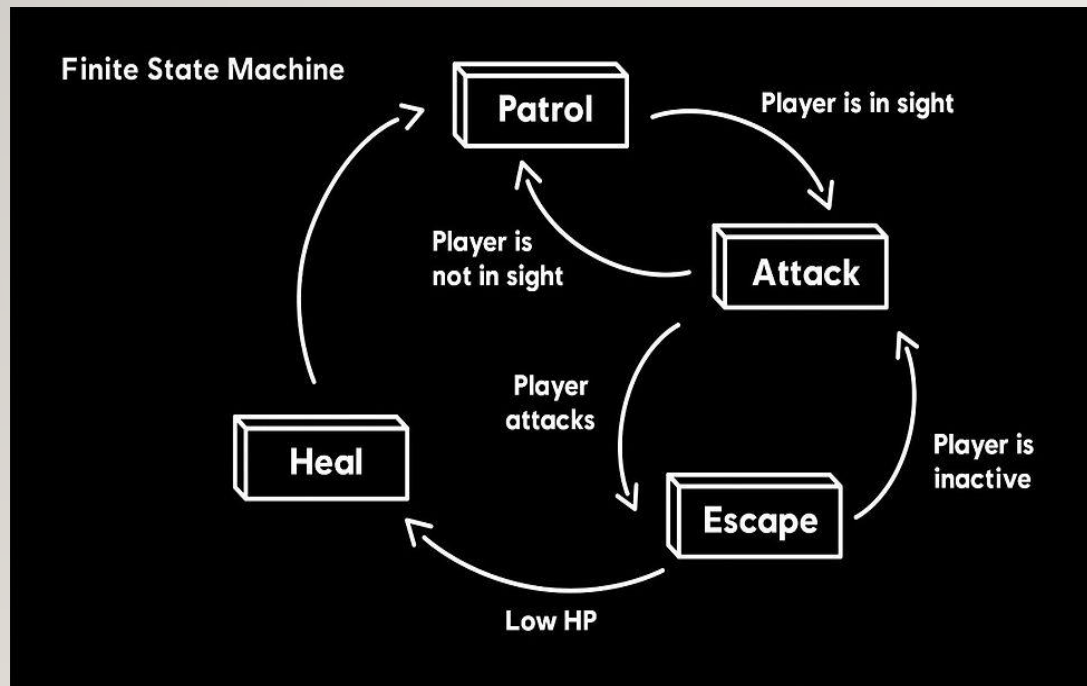
- Real-time rendering and ray tracing

- Physics simulation and collision detection

36 MULTIMEDIA COMPUTING TECHNIQUES IN GAMES…

- Artificial intelligence and NPC behavior

- Virtual reality (VR) and augmented reality (AR)

Finite State Machine

Patrol — Player is in sight

Player is not in sight

Attack

Player attacks

Player is inactive

Escape

Heal

Low HP

Augmented reality
uses the existing real-world environment and puts virtual information on top of it to create a sort of mixed reality.

Virtual reality
uses technology such as a headset to create an immersive 3D simulated environment.

37 CASE STUDY OF GAME

- **Game Name**: Clash of Clans

➢ Developed by Supercell using C++, is a popular mobile strategy game launched in 2012.

➢ The game combines strategy, resource management, and combat.

➢ Innovative Uses of Technology:

- Real-time Multiplayer
- In-game AI
- Cloud Saving

Sujal, Sarthak, Sagar, Yumesh

38 CHALLENGES IN MULTIMEDIA COMPUTING FOR GAMES

- ➢ Performance optimization

- ➢ Cross-platform compatibility

- ➢ Balancing visual fidelity with computational load

- ➢ Lagging and Bugs

- ➢ Glitches and Misuse of external mods.

39   FUTURE TRENDS OF GAMES

- Emerging Technologies:
  - ➢ Cloud Gaming (snake.io , ride.io)
  - ➢ AI-Driven Content Creation (No Man's Sky)

- Predictions for the Future:
  - ➢ Enhanced Realism and Immersion with advanced VR
  - ➢ Interconnected Gaming Ecosystems with cross game platform
  - ➢ Sustainability and Ethical Gaming with inclusivity

40 CONCLUSION

- ➢ We learned about components as well as technologies used in game development.

- ➢ We also reviewed multimedia computing technique in game as well as a case study of a single game.

- ➢ We learned about the challenges and oncoming future trends of games.

Sujal, Sarthak, Sagar, Yumesh

41 THANK YOU…!

ANY QUERIES?