AI in Gaming

Research Activity

Applications of AI/ML — Medina County Career Center

Types of AI Used in Gaming

Artificial intelligence shows up in almost every modern game, but not always in the ways you might expect. The gaming industry uses AI in three broad categories: Playing (controlling characters), Creating (building content), and Modeling (managing the experience behind the scenes). Review the tables below to see the most common techniques in each category.

Playing AI *AI that acts as characters in the game*	
AI Technique	**What It Does**
Pathfinding	How characters navigate the game world — finding routes, avoiding obstacles
Finite State Machines (FSM)	Characters switch between behavior modes like Patrol → Chase → Attack
Behavior Trees	A decision flowchart that lets AI prioritize actions (e.g., heal first, then fight)
Utility AI	AI scores every possible action and picks the best one for the current situation
Machine Learning NPCs	Characters that learn from player behavior and adapt their strategy over time

Companion / Squad AI	Friendly AI that follows, heals, fights alongside, or takes orders from the player
Rubber-Band AI	AI that speeds up when behind or slows down when ahead to keep the game competitive

Creating AI

AI that builds the game world and content

AI Technique	What It Does
Procedural World Generation	Algorithms create landscapes, planets, or terrain instead of a human designing every inch
Procedural Dungeon / Level Design	Randomly assembled rooms, corridors, and encounters that change each playthrough
Procedural Loot / Item Generation	Weapons, armor, and items with randomized stats, names, and rarity
Procedural Quest / Story Generation	AI creates missions or storylines on the fly based on player choices
AI Dialogue Systems	NPCs generate or select conversation responses dynamically instead of a fixed script
Wave Function Collapse	An algorithm that generates tile-based maps or textures by following pattern rules

Modeling AI

AI that works behind the scenes to manage the experience	
AI Technique	**What It Does**
Skill-Based Matchmaking (SBMM)	Analyzes player stats to create fair matches against similarly-skilled opponents
Dynamic Difficulty Adjustment	The game secretly gets easier or harder based on how well you are playing
Anti-Cheat Detection	AI monitors millions of matches to identify suspicious behavior and hackers
Player Behavior Analytics	AI studies how players interact with the game to guide future updates and design
AI Upscaling (DLSS / FSR)	Neural networks predict missing pixels so your GPU can render better graphics faster
AI-Assisted Bug Testing	Bots play the game thousands of times to find glitches before release
AI Animation / Motion Blending	AI smooths transitions between character animations to look more natural

Your Task

Step 1: Pick Partner and a Game

Choose a game that both of you enjoy or know well. It can be any game — console, PC, mobile….
Write down the name and a brief description of what kind of game it is.

Marvel Rivals is a 6v6 third person shooter typically on PC

Step 2: Research the AI

Do some research on your game to figure out what types of AI it uses. Refer back to the three category tables and identify every technique that applies. For each one you find, write a short explanation of how your game specifically uses it.

You should be able to find at least two techniques, but most popular games use several. Be specific — do not just say "my game uses AI." Describe what the AI actually does.

Where to look: Developer blogs, GDC (Game Developers Conference) talks on YouTube, game wikis, the game's official website, or Reddit communities. If you use Reddit, try to verify the information with a second source.

It uses engagement-optimized matchmaking, as well as PvAI matches against bots, and voice chat moderation

Step 3: Explain How It Works

Pick one of the AI techniques you identified in Step 2 and dig deeper. Research how that technique actually works under the hood and write an explanation in your own words. Imagine you are explaining it to a friend who does not take this class. Your write-up should cover:

•	What is the basic idea behind this technique? (In plain English.) **Voice chat moderation takes a list of predetermined words and filters out the ones the are said in match, and if it is similar enough it will give a warning to the player**
•	How does your game use it? Give a specific example. **It is used in matches with players that use voice chat, and it filters out a player that uses toxic language and can give out a warning or a ban based on amounts of offences**
•	Why do developers use this technique instead of doing it by hand? **Because it is impossible to listen to every match all at once and filter out toxic language for every match**

The goal is clarity in your own words, por favor! Do not copy and paste from a website. If you understand it well enough to explain it simply, you understand it.

What to Turn In

Submit a single document (Google Doc, Word, or PDF) to GitHub that includes:

1. **Your game name and description**
2. **The AI techniques your game uses,** with a short explanation of each one
3. **Your deep-dive explanation** of one technique — how it works, how your game uses it, and why
4. **Your sources** (at least 2 credible sources)

** Be prepared to describe to the class what you've discovered and learned **

https://www.reddit.com/r/marvelrivals/comments/1mn0f1g/can_someone_explain_eomm/

https://www.reddit.com/r/gaming/comments/1mdw80h/marvel_rivals_will_now_automatically_record_all/