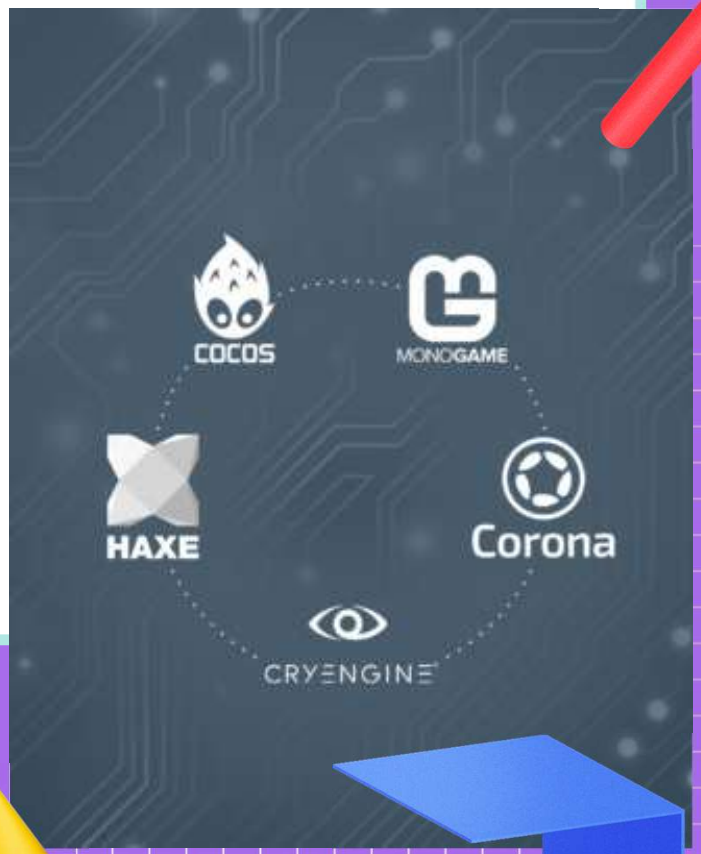
Game Engine

Dr. Behrouz Minaie
AhmadReza Kangavari

Fall 1401



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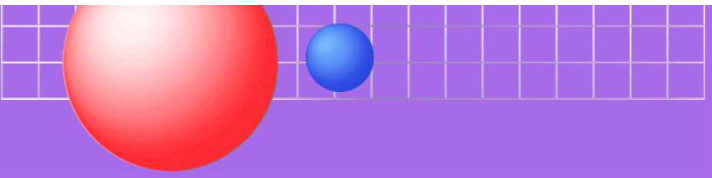
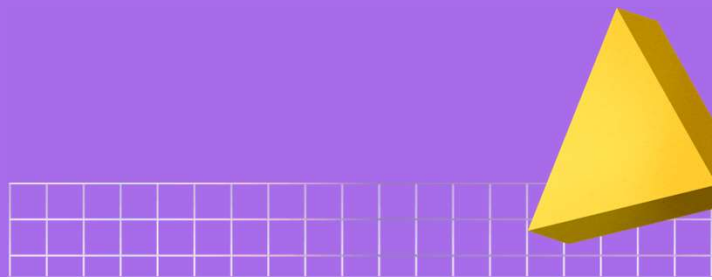
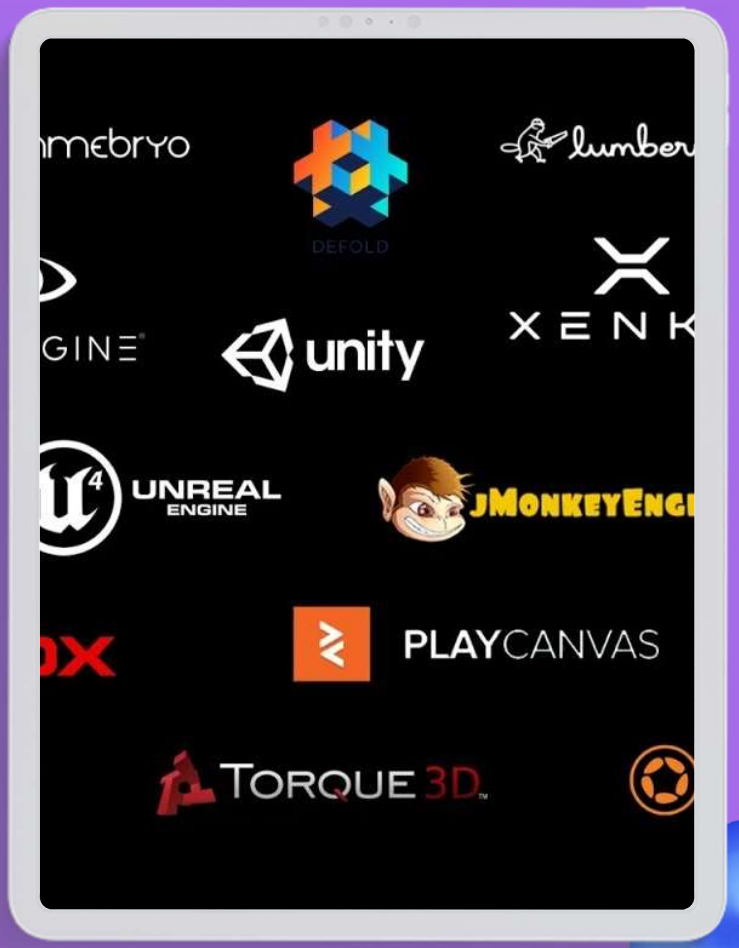


What is Game Engine?



Game Engine Definition

A game engine is a software framework primarily designed for the development of video games and generally includes relevant libraries and support programs . The "engine" terminology is similar to the term "software engine" used in the software industry.



Rendering

Performing operations related to image rendering in the game

Physics & Collision

Collision operation or determination of physical collisions in the game environment

Voice Control

Appropriate voice allocation to various characters and environments

Animation

Creating animations needed in the game

AI

Determining the tasks and functions of artificial intelligence

Memory Management

System memory management when running the game

Network Management

Specify network settings in multiplayer games

The limitations of gaming before graphics engines

Time

Need a lot of time to complete a project

Errors & Problems

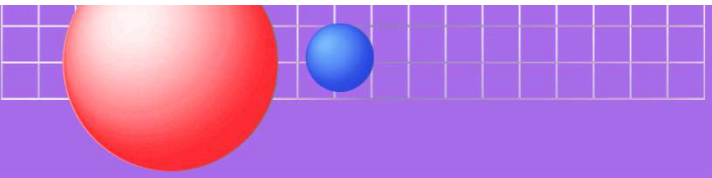
High possibility of errors and problems to solve errors

Cost

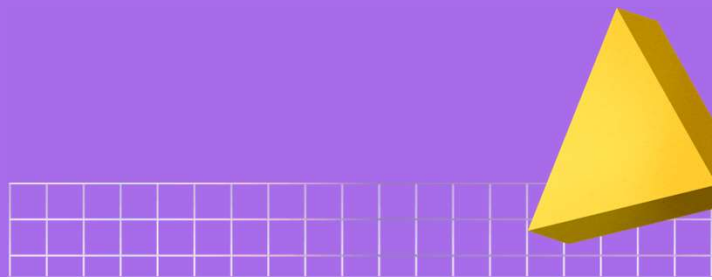
The need for a separate and new program for each new game title

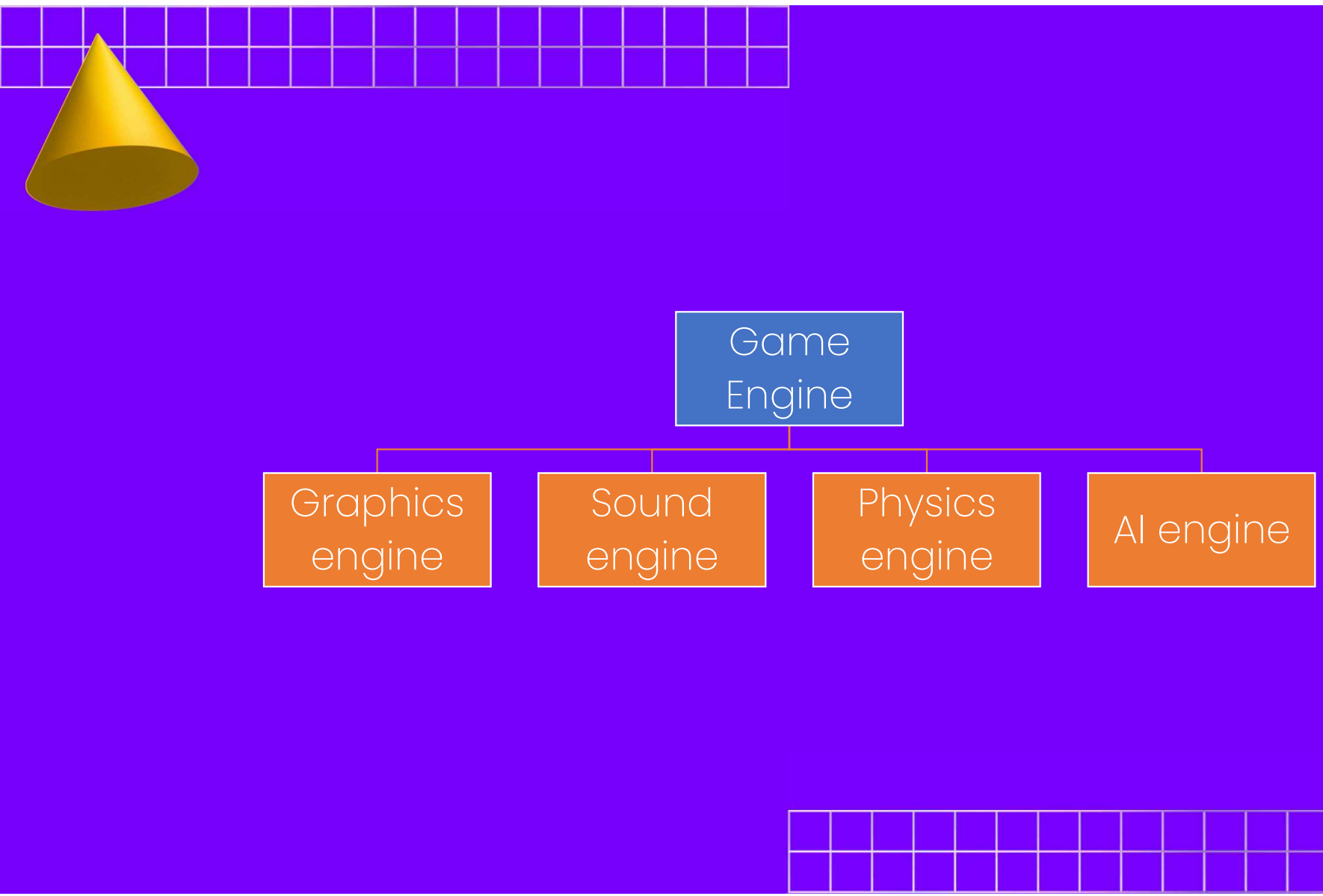
Similarity

A lot of similarity between games that used the same program source



Game Engine Components



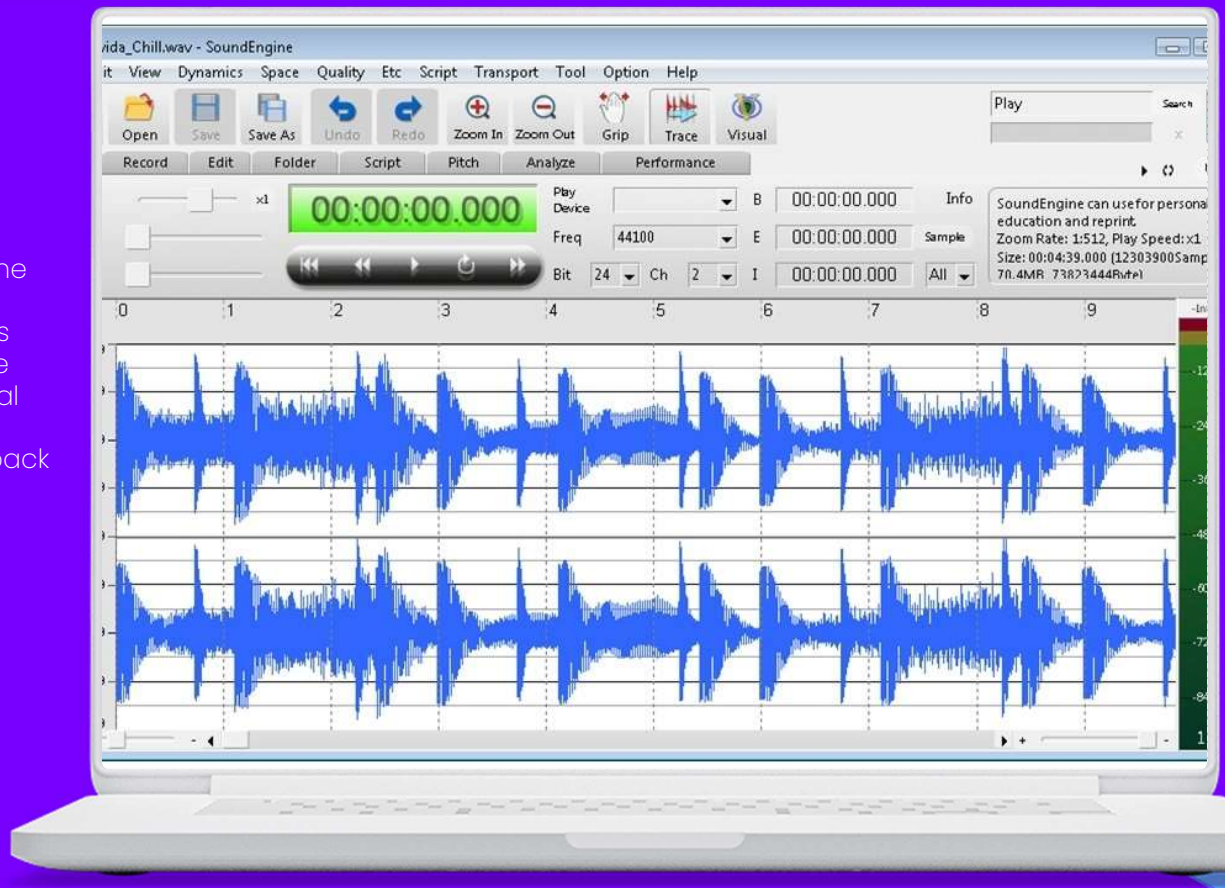

Game Engine
Graphics engine
Sound engine
Physics engine
AI engine

Graphics engine

The main and most important part of a game development tool is the graphics engine because the gamer plays what he sees. This section is sometimes referred to as the rendering engine and includes features related to the optimal rendering of the scene. Usually, graphics engines communicate with graphics hardware based on directx or openGL graphics libraries.

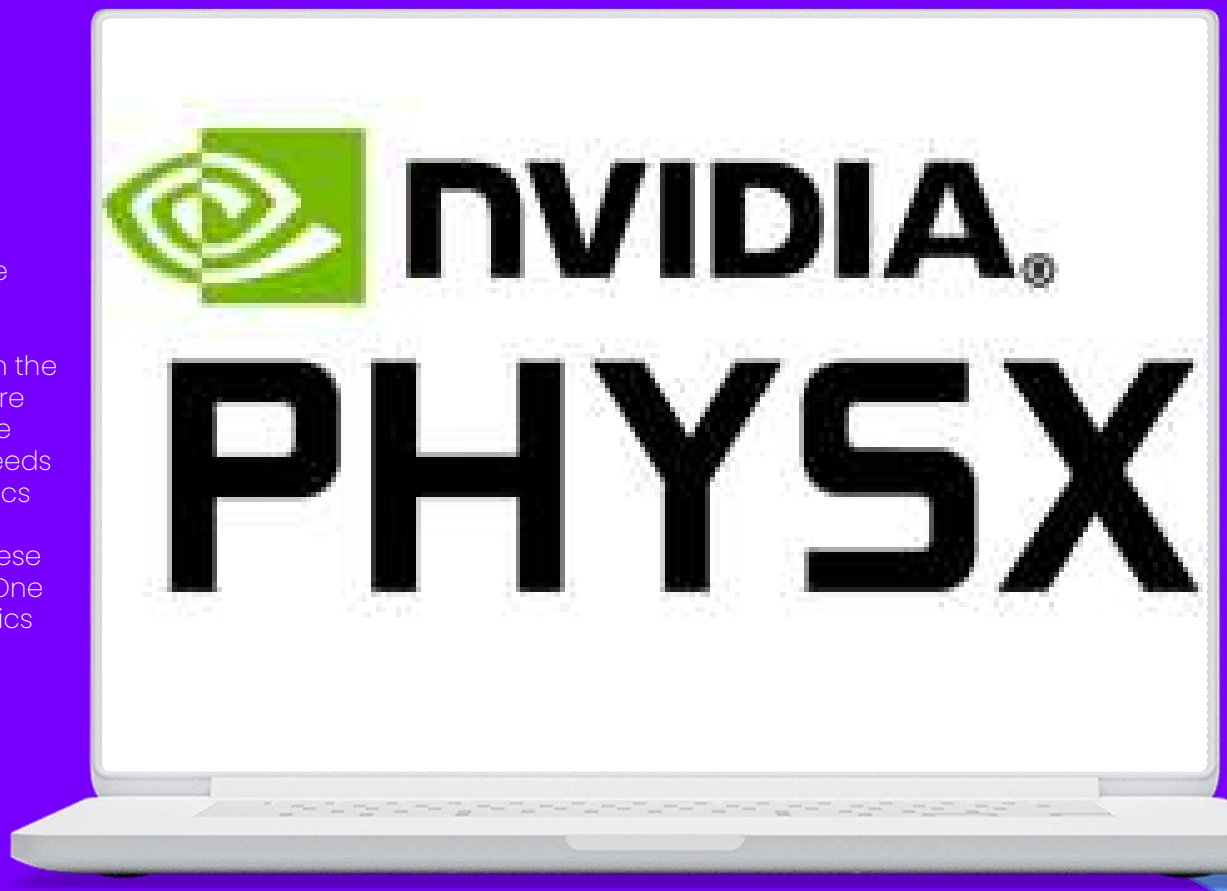
Sound engine

Sounds play an important role in the game, and some games are designed based on sound, such as Guitar Hero. Sound engines include features such as three-dimensional sound, the possibility of sound management, simultaneous playback of several sounds, etc.



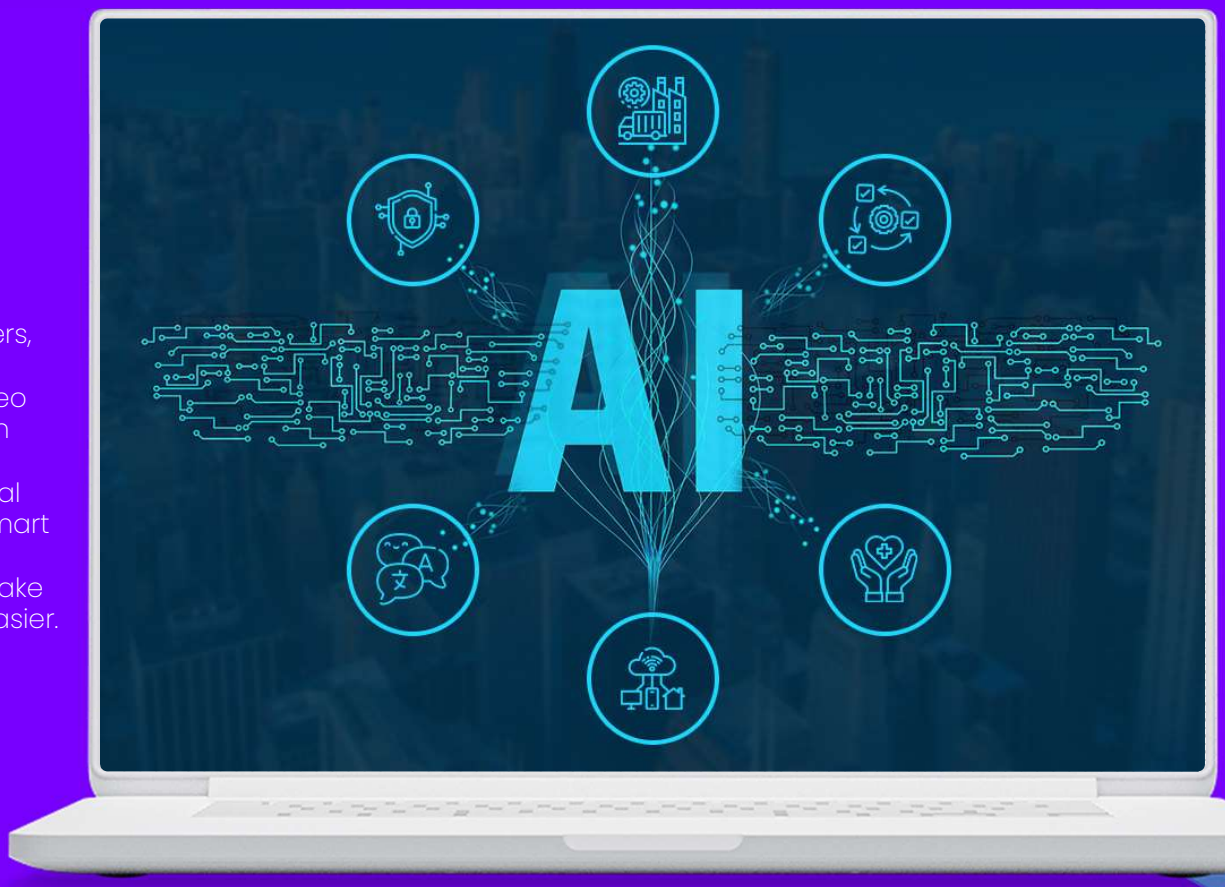
Physics engine

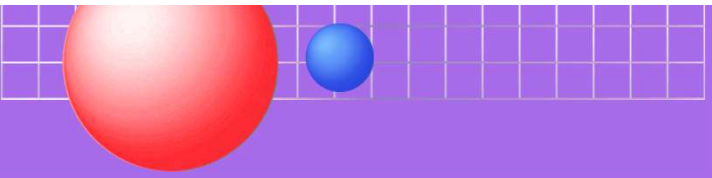
Today, you can hardly find a game that does not use physics. In new generation games, physics is an inseparable part of the game. With the physics, the games look much more realistic and natural. By using these engines, the designer no longer needs to involve himself in complex physics equations and relationships for physical simulation because all these features are built into the engine. One of the most famous and free physics libraries is PhysX.



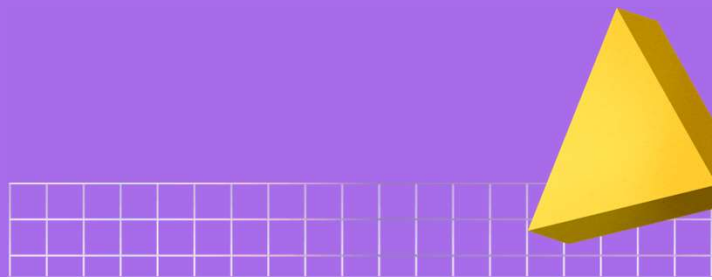
AI engine

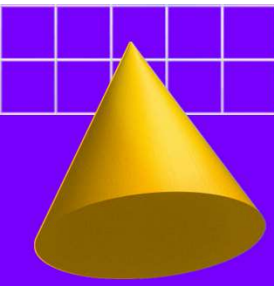
Artificial intelligence is one of the biggest challenges for game developers, especially programmers, and it is one of the areas of competition between different video games. In fact, smarter games can better communicate with the audience and attract them. Artificial intelligence engines have many smart algorithms such as route finder, tracking, etc. ready in them and make the work of programmers much easier.





Game Engine Types





Game Engines
Roll–your-own Game Engine
Mostly–Ready Game Engines
Point & Click Game Engines

Roll–your–own Game Engine

Despite the high cost, many companies and independent game designers still prefer engines that actually do most of the programming themselves.
From the group of software such as XNA, DirectX and Open GL, they provide their users with the possibility to edit and apply desired changes even at large levels.

Mostly – Ready Game Engines

Most of the famous game engines belong to this group. This group provides a set of facilities to the user to create the desired game. Actions such as rendering, defining the physical properties of the game environment (collisions, etc.) and the like are completely predefined in this group, and there is no need for separate programming for them. Famous engines such as Unreal and Gamebryo belong to this group. Engines that require a small amount of programming and to make a complete game, unlike the first group (low level), do not need a lot of programming and coding and have relatively simpler and fewer work steps.

Point & Click Game Engines

This group of game engines, which are becoming more and more common day by day, provide designers and creators with a complete set of tools and facilities needed to create a game, and the designer can only choose the right tool and place it in the desired place. Action game design. Among these engines, we can mention Game Maker, Torque Game Builder and Unity3d software. These softwares have the maximum possible interaction with the user and minimal coding knowledge is required to work with them. Of course, this does not mean that programming knowledge is not useful for working with them, but its existence is not necessary.

Thanks !