

# Porównanie wydajności i możliwości współczesnych silników do gier komputerowych

Krzysztof Rudnicki

**Promotor**

dr inż. Michał Chwesiuk

3 marca 2024

# Plan prezentacji

- 1 Definicje
- 2 Narzędzia
- 3 Podsumowanie
- 4 Źródła

# Gra komputerowa

Aplikacja dostępna na platformie "Steam" oznaczona typem "Game"

# Silnik do gier

Oprogramowanie  
zaprojektowane i stworzone do  
kreacji gier komputerowych
















Ponad 1000 gier w tej  
dekadzie na platformie "Steam"

# Database of everything on Steam.

This third-party website gives you better insight into the [Steam](#) platform and everything in its database.

[Look through our frequently asked questions](#) to learn more about SteamDB, [join our Discord](#).

## Most Played Games →

		Players Now	24h Peak
	Counter-Strike 2	1,377,575	1,497,245
	Dota 2	724,492	727,309
	PUBG: BATTLEGROUNDS	561,363	638,250
	Apex Legends	397,021	454,900
	HELLDIVERS™ 2	275,983	429,446
	Palworld	245,004	271,963
	NARAKA: BLADEPOINT	235,353	290,359
	Last Epoch	226,050	226,097
	Source SDK Base 2007	172,573	201,592
	Grand Theft Auto V	159,338	165,422
	Baldur's Gate 3	124,702	146,223
	Wallpaper Engine	112,404	121,959
	ELDEN RING	111,857	112,406
	Rust	105,657	122,824
	War Thunder	100,474	100,770

## Trending Games

		Last 7 days	Players Now
	Astral Party 🟡		29,930
	Secrets of Grindea 🟡		3,392
	WRC 7 🟡		9,990
	Welcome to ParadiZe		2,292
	Blackwake		1,893
	Space Crew: Legendary Edition 🟡		1,922
	Tom Clancy's Rainbow Six Siege - T...		1,099
	Detroit: Become Human		5,246
	Supermarket Simulator 🟡		34,143
	Age of Wonders 4		5,574
	PICO PARK		2,253
	Mount & Blade: Warband		15,413
	Middle-earth™: Shadow of Mordor™		1,315
	Smudge Coin Run	Trending on SteamDB	
	BRoS - Battle Royale of Survival	Trending on SteamDB	

## Popular Releases →

		24h Peak	Price
	Astral Party	24,287	Free

## Hot Releases

		Rating	Price
	Mina's Lagoon	88.23%	23.00

▼ **Type**

<input checked="" type="checkbox"/> Game	103615
<input type="checkbox"/> DLC	50204
<input type="checkbox"/> Music	6363
<input type="checkbox"/> Application	1885
<input type="checkbox"/> Video	1603
<input type="checkbox"/> Series	350
<input type="checkbox"/> Unknown	151
<input type="checkbox"/> Tool	57
<input type="checkbox"/> Demo	46
<input type="checkbox"/> Beta	11



▼ **Release Year**

<input checked="" type="checkbox"/> 2025	35
<input checked="" type="checkbox"/> 2024	3898
<input checked="" type="checkbox"/> 2023	14359
<input checked="" type="checkbox"/> 2022	12092
<input checked="" type="checkbox"/> 2021	11004
<input checked="" type="checkbox"/> 2020	9373
<input type="checkbox"/> 2019	7671
<input type="checkbox"/> 2018	7901
<input type="checkbox"/> 2017	6107
<input type="checkbox"/> 2016	4273

Show more



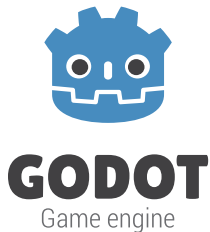
▼ **Technologies**

🔍 SteamDB detects used tech

Engine.

<input type="checkbox"/> Engine.Unity	24964
<input type="checkbox"/> Engine.Unreal	7569
<input type="checkbox"/> Engine.GameMaker	2631
<input type="checkbox"/> Engine.RPGMaker	1683
<input type="checkbox"/> Engine.PyGame	1550
<input type="checkbox"/> Engine.RenPy	1520
<input type="checkbox"/> Engine.Godot	1032
<input type="checkbox"/> Engine.Cocos	391
<input type="checkbox"/> Engine.XNA	355
<input type="checkbox"/> Engine.KiriKiri	178

# Wybrane silniki



Ren'Py



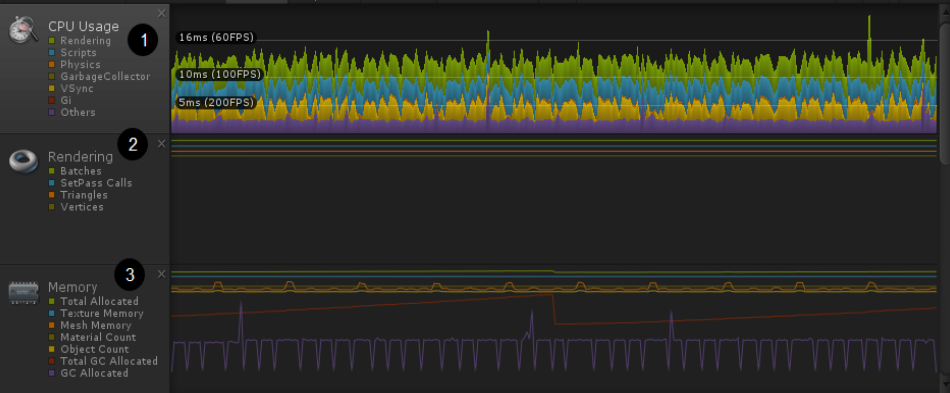


# Wydajność silnika

- Klatki na sekundę (FPS)
- Zużycie CPU, GPU, RAM i VRAM
- Liczba draw calls
- Czas ładowania assetów
- Czas odpowiedzi na interakcję gracza

# Możliwości Silnika

- Renderowanie grafiki
- Silnik Fizyczny
- Multiplatformowość (VR)
- Skryptowanie logiki gier (AI)
- Gry online
- Sklepy z assetami



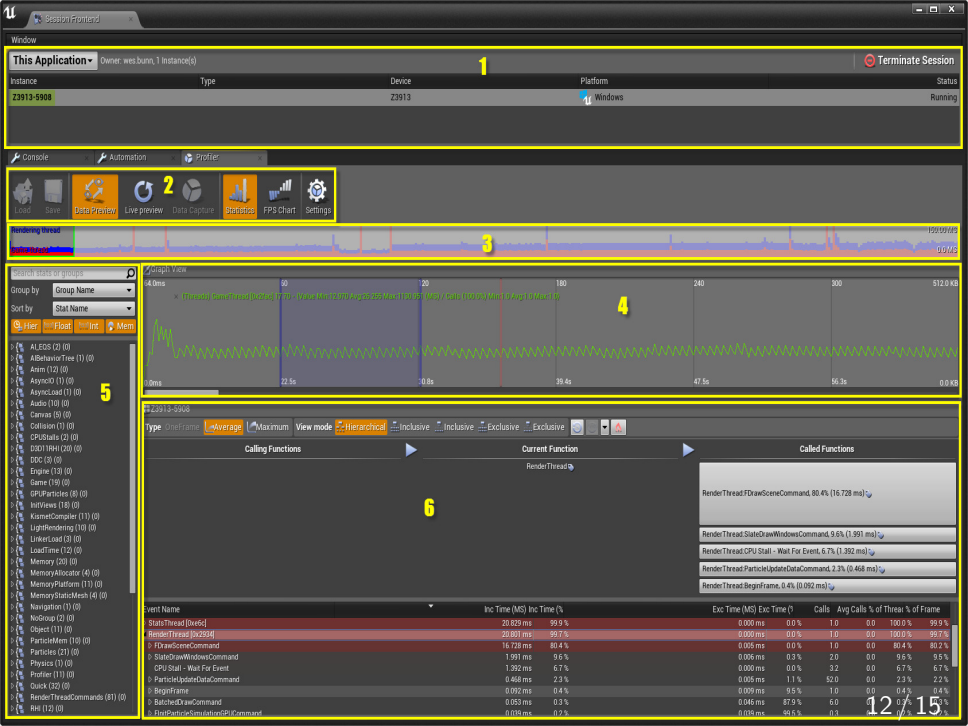
Hierarchy

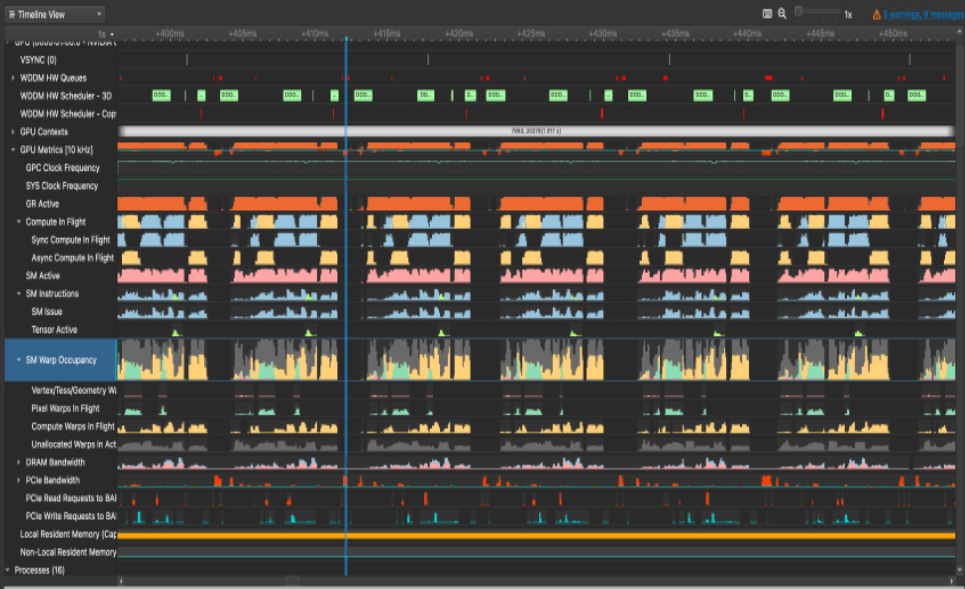
CPU:11.53ms GPU:0.00ms Frame Debugger

Overview

	Total	Self	Calls	GC Alloc	Time ms	Self ms
▶ Camera.Render	48.7%	16.3%	7	0 B	5.62	1.88
▶ BehaviourUpdate	24.5%	9.7%	1	1.3 KB	2.83	1.11
Overhead	11.6%	11.6%	1	0 B	1.33	1.33
UIPanel.LateUpdate()	3.8%	3.8%	2	64 B	0.44	0.44
▶ Physics.Processing	3.7%	2.2%	2	0 B	0.43	0.26
TextRendering.Cleanup	1.2%	1.2%	19	0 B	0.14	0.14
▶ GUI.Repaint	0.8%	0.2%	1	0.9 KB	0.10	0.02
Profiler.FinalizeAndSendFrame	0.7%	0.7%	1	0 B	0.08	0.08
TrackFollower2.FixedUpdate()	0.7%	0.7%	20	0 B	0.08	0.08
Train.LateUpdate()	0.6%	0.6%	1	0 B	0.07	0.07
MonoBehaviour2.FixedUpdate()	0.6%	0.6%	620	0 B	0.07	0.07
▶ AudioManager.Update	0.5%	0.4%	1	0 B	0.06	0.05
▶ Physics.ProcessReports	0.2%	0.0%	2	0 B	0.03	0.00
Physics.FetchResults	0.2%	0.2%	2	0 B	0.03	0.03

Select Line for per-object breakdown





Expert System View

Settings

CUDA Async Memory with Pageable Memory

The following APIs use PAGEABLE memory which causes asynchronous CUDA memory operations to block and be executed synchronously. This leads to low GPU utilization.

Suggestion: If applicable, use PINNED memory instead.

CL command:

SKIPPED: /Users/hnd/Downloads/Vulkantrace.sglite could not be analyzed because it does not contain the required CUDA data. Does the application use CUDA runtime libraries?

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# Summary

Thesis is about creating a game engine specialized in match-three multiplatform games using OpenGL

# References/sources

- <https://docs.gl/>
- <https://learnopengl.com/>
- The Chernobyl
- Game Engine Architecture, Jason Gregory