Pushing the Limits of Video Game Performance: A Performance Engineering Perspective

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ABSTRACT

Ubisoft constantly pushes the boundaries of game development to create immersive worlds that capture the imagination of millions of players worldwide. To achieve this, performance engineering plays a crucial role in ensuring that games run smoothly on various platforms and devices.

In this talk, we will explore the latest advancements in the field of performance engineering for video games, focusing on runtime performance, network optimization, backend and database optimization, and cloud gaming. We will discuss how machine learning techniques enhance classical profiling and optimize game engine scheduling.

Additionally, we will address the challenges of deterministic replication of assets between clients and optimizing micro-services for cloud gaming experiences. Lastly, we will touch on the importance of performance engineering for non-code aspects of game development, such as animation, textures, props, and assets.

CCS Concepts

• Software and its engineering~Software verification and validation
• Software and its engineering~Software testing and debugging

Keywords: video games, performance engineering

ACM Reference format:
Mathieu Nayrolles. 2023. Pushign the Limits of Video Game Performance. A Performance Engineering Perspective. In *the Proceedings of the 2023 ACM/SPEC International Conference on Performance Engineering (ICPE'23), April 15-19, 2023, Coimbra, Portugal.* ACM, New York, NY, USA, 1 page. https://doi.org/10.1145/3578244.3583738

BIOGRAPHY

Mathieu is a highly experienced technical leader and data scientist with more than a decade of experience. He obtained his Ph.D from the Intelligent System Logging and Monitoring lab (Concordia, Montréal, Canada) in 2018. He is now a Technical Director at Ubisoft where he dedicates his time to software quality, productivity, debugging, and profiling.

As a passionate advocate for driving organizational change and democratizing data-science and machine learning in the video game industry, Mathieu has a unique combination of technical expertise, analytical skills, and management acumen to guide upper-level executives, development teams, and research teams to success.

Mathieu has taught thousands of students and professionals and presented at various international scientific conferences, such as MODELS, MSR, CPPCON and ASE. He has also written several books on open-source technologies and delivered dozens of keynotes in scientific and industrial settings.

ACKNOWLEDGEMENTS

Thanks to all Ubisoft current and former employees that contributed to performances and stability workflows upon which this talk is built.

ICPE'23, April 15-19, 2023, Coimbra, Portugal.

ACM ISBN 979-8-4007-0068-2/23/04.
https://doi.org/10.1145/3578244.3583738