SAMUEL LAPORTE

PERSONAL DETAILS

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WORK EXPERIENCE

Final integrative project Jan 2024 - Apr 2024

CAE, Montreal

Project to add Linux support for an internal builder (Java application):

- Deeply analyzed the existing codebase, comprising nearly 2 million lines
- Utilized static analysis tools to identify problematic areas and unnecessary dependencies
- Created UML diagrams, including class, sequence, and interface diagrams, to represent the current architecture of the application
- Documented and implemented modifications, with a focus on improving the maintainability and scalability of the system
- Modified existing code to support the integration of Linux commands into the company's build system
- Modernized the architecture following the most up-to-date design patterns
- Changed the dependency management tool to use Maven.

L The additions and modifications made to this project were directly integrated into the DevOps team and ã å â × è Ö currently used in production to compile all of the company's software assets. Company developers have observed greater ease in maintaining the code, and the use of modern dependency management tools greatly streamlines the tasks of maintainers.

Full-stack Developer Internship Jun 2023 - Oct 2023

SimpleK, Assomption

Development of software using Blazor and Dotnet

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- Analysis and presentation to the director and supervisor of various software on the market for temporal data collection
- Development of a web application for streaming security cameras
- Testing the performance (latency, bugs, etc.) of the web application in production on machines.

PERSONAL PROJECT: DESIGNING A GAMING ENGINE

- Actively leading the development of a game engine, with a focus on innovation and scalability
- Researching and implementing best practices for designing robust and scalable applications
- Developing robust systems, including ECS systems, platform-independent APIs, and multi-threaded job systems
- Continual learning to enhance my skills and stay updated with emerging technological trends
- Deeper understanding of existing software (such as Unity or Unreal Engine) to utilize them more intelligently
- Shader (GLSL) expertise
- Documentation of the architecture with various diagrams.

EDUCATION

Bachelor's degree in Software Engineering (Multimedia Profile) Jan 2020 - Apr 2024
Polytechnique, Montréal

Student Exchange Feb 2023 - Jun 2023
EPFL, Lausanne (Suisse)

- Exceptional opportunity to study at the prestigious University of Lausanne, where I had the privilege of attending enriching courses taught by renowned researchers.
- Focused on specialized areas such as ray tracing for realistic visualization and parallel software architecture.
- Acquired advanced knowledge through theoretical and hands-on courses led by experts in these specialized fields.

COURS

Video Game Architecture Jan 2024

- Object-oriented model
- Entity-Component-System (ECS) model
- Profiling and debugging
- Parallelism and data synchronization models
- Continuous integration of video games
- Network architecture and scalability

Advanced Computer Graphics (Switzerland) Feb 2023

- Mastery of fundamental concepts such as basic physical quantities, light interaction with surfaces, and numerical resolution of mathematical problems to create realistic images.
- Advanced skills acquired in areas such as participatory media, subsurface light transport models, and Markov chain Monte Carlo methods.
- Design and implementation of practical assignments related to each major topic, demonstrating proficiency in algorithm solution implementation, particularly in the fields of homogeneous media, environmental mapping, and Disney BSDF.
- Final evaluation conducted by an independent panel of graphics experts (researchers at NVIDIA, Intel Graphics, and Disney).

Parallelism and Concurrency

Feb 2023

Acquisition of important concepts to consider when designing programs involving multiple threads of execution and creation of specialized data structures for parallel computing. Optimization of resources and memory synchronization.