JAMORN **SRIWASANSAK**

Ray Tracing Engineer, NVIDIA

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Experience

Mar 2022 - Now | **Ray Tracing Software Engineer, NVIDIA** (Toronto, ON, Canada)
- Worked on performance and ray tracing related features of Omniverse RTX Renderer.
- Improve the renderer performance: Reducing register usages, Detecting sources of L2 / instruction cache misses, Applying SER in appropriate places.
- Developed commonly used tools for detecting performance issues: heatmap for visualizing the rendering cost and real-time GPU throughput metrics.
- Implemented features needed by artists such as rounded corner material, cross section tool, etc.

Aug 2020 - Feb 2022 | **Graphics Engineer, Polyphony Digital** (Tokyo, Japan)
- Developed new features and maintained C++ code and PlayStation shaders for Gran Turismo 7, resulting in improved run-time performance and better graphics fidelity.
- Implemented and optimized screen-space ambient occlusion and screen-space reflection. (The latter is not used in the final product)
- Worked on lens flare (ghosting flares) system. Implemented a GPU-based photon mapper for reference lens flare simulation. Implemented a real-time lens flare system which approximates the result based simulation data.
- Developed a method for rendering dispersion effects from front car headlights. This new method outperformed the previous by 5x-10x.

July 2019 - Oct 2019 | **Graphics Research Intern, Facebook Reality Labs** (Redmond, WA , USA)
- Developed fast spatio-temporal blue-noise sampling techniques for sampling sparse pixels.
- The internship resulted in two patents.

Aug 2018 - Sep 2018 | **Graphics Research Intern, Polyphony Digital** (Tokyo, Japan)
- Investigated and implemented several state-of-the-art real-time specular occlusion techniques using OptiX and OpenGL.

May 2015 - Dec 2015 | **Contract Software Developer, Lumio3D** (Bangkok, Thailand)
- Implemented a physically-based rendering framework on WebGL.
- Implemented fast approximate anti-aliasing, horizontal-based ambient occlusion, depth peeling order-independent transparency and high dynamic range bloom for devices without multiple render targets support.
- Implemented 3D mesh compression for progressive 3D mesh streaming.

Jul 2014 - Aug 2014 | **Software Developer, VC Group** (Bangkok, Thailand)
- Optimized Python code and MySQL stored procedures for analyzing Call Detail Record (CDR) resulting in a 5x increase in performance. This allows the program to keep up with the number of records required by the customer.

Education

Aug 2018 | **Master of Information Science and Technology** (GPA 4.00/4.00) University of Tokyo
- Studied and investigated many-light rendering with virtual point lights. The thesis focused on the weak singularities problem. Resulted in one publication presented at ACM SIGGRAPH i3D and later published in a journal, ACM CGIT.
- Even though I received my degree in 2018, I continued my studies until March 2020.

Jul 2015 | **Bachelor of Computer Engineering** (First Honor, GPA 3.67/4.00) Chulalongkorn University

Publications

Jamorn Sriwasansak, Adrien Gruson, and Toshiya Hachisuka. "Efficient Energy-Compensated VPLs using Photon Splatting". In: *Proceedings of the ACM on Computer Graphics and Interactive Techniques* 1.1 (2018), p. 16.

Patents

Todd Goodall, Anton S. Kaplanyan, Anjul Patney, **Jamorn Sriwasansak**. "Efficient Motion-Compensated Spatiotemporal Sampling". March 2022 (Filed in 2020)

- A method to sparsely sample pixels in blue noise pattern. These pixels can move according to their underlying motions. In each frame, the method would minimally remove some existing pixels / sample more pixels to maintain blue-noise pattern.

Todd Goodall, Anton S Kaplanyan, Anjul Patney, **Jamorn Sriwasansak**, Thomas Sebastian Leimkuhler. "Blue Noise Mask for Video Sampling". March 2022 (Filed in 2020)

- A method to generate spatio-temporal blue noise mask. The key finding is that blue noise is necessary only in 2D (screen-space) and 1D (time), not in 3D.

Projects

Mortar (2020)	A physically-based renderer with an agnostic backend (supports both DirectX12 and Vulkan). With the help of DXR and Vulkan ray tracing API, the renderer supports a next-event estimation path tracer with a standard GGX microfacet material for both reflection and refraction. It also features recent techniques such as a Screen space Blue-Noise Distribution [Heitz et al. 2019] and ReStir (Spatio-temporal resampling) [Bitterli et al. 2020].
Wurst Renderer (2019)	A C++ offline rendering framework that implements several complex rendering papers (e.g. BDPT [Veach 1998], PSSMLT [Kelemen et al. 2002], PRT [Sloan et al. 2002], ..). Due to confidentiality of some projects, only the old source code is provided on github.
Unified Particles (2018)	A CUDA and OpenGL implementation of unified particle physics [Macklin et al. 2014]. It supports rigid bodies, ropes, clothes, fluid with surface tension [Macklin and Müller 2013, Akinci et al. 2013], and deformable bodies [Müller et al. 2005, Müller et al. 2016].
EVPLP (2017)	An OpenGL and OptiX rendering framework that contains several rendering techniques such as path tracing, Virtual Point Lights [Keller 1997], Virtual Spherical Lights [Hasan et al. 2009] and Progressive Photon Mapping [Hachisuka et al. 2008].

For a complete list, please visit jamorn.me

Skills

Proficient:	C++, HLSL
Experienced:	Python, JavaScript, WebGL, OpenGL, Vulkan, DirectX12, DXR, NVIDIA's OptiX, Embree, CUDA, GLSL, PSSL, Git, PlayStation Razor, PIX (DX12 Debugger), NSight Graphics

"Proficient" implies that I use it daily. "Experienced" implies that I used it before and could understand the code / the API / the tool.

Languages

Thai:	Native
English:	Working Proficiency, TOEFL-iBT: 109 (2019)

Awards and Honors

- Japanese Government (MEXT) Scholarship (2016 - 2020)
- First Honor Degree, Computer Engineering, Chulalongkorn University (2015)
- Outstanding Student Award, Computer Engineering, Chulalongkorn University (2014)
- Proceeded to ACM-ICPC Thailand round (2013)
- Bronze Medal, 6th Thailand Olympiad in Informatics (2010)