

Platon Vinnichek

Graphics Engineer | [✉ platonvin@gmail.com](mailto:platonvin@gmail.com) | [🔗 platonvin](#)

Education

MIPT (expelled)	Moscow Institute of Physics and Technology
Applied Mathematics and Physics	2022 - 2023

Experience

Lum Engine	Repository	written in C++17
◦ Vulkan C++ Voxel engine written from scratch by myself. Fully dynamic GI, raytraced reflections, insane performance		
◦ Software voxel raytracer	Repository	will be part of Lum engine. written in C99
◦ RaVE - CPU multithreaded SIMD Raytracer for Voxel Engines. Designed to support GPU		
◦ Deferred renderer		part of Lum engine
◦ Vulkan subpass-based approach to shade with first-class support for Tile-Based GPUs		
◦ Radiance Field Global Illumination		part of Lum engine
◦ GPU-driven fully dynamic real-time Global Illumination updated via custom raytracing algorithm. Paired with reflections for glossy materials		
◦ Reflections renderer		part of Lum engine
◦ Real-time reflections raytraced with highly specialized algorithm and voxel acceleration structure. Paired with radiance field for rough materials		
◦ Screen-space Horizon-Based Ambient Occlusion		part of Lum engine
◦ SSHBAO based on Nvidia paper, accelerated with runtime-computed LUT's		
◦ Volumetrics renderer		part of Lum engine
◦ Based on Lambert law and tileable 3D Perlin noise		
◦ Foliage renderer		part of Lum engine
◦ GPU-driven foliage renderer integrated in Lum, based on Ghost of Tsushima 2021 GDC talk		
◦ Lightmapper		part of Lum engine
◦ Real-time PCF-filtered lightmaps		
◦ Temporal Accumulator		currently unused part of Lum engine
◦ Surface-driven temporal accumulation by motion vectors: like TAA but faster and higher quality		
◦ Realtime denoiser		currently unused part of Lum engine
◦ edge-avoiding Å-trous wavelet Spatial Filtering - Reconstruction for Path-Traced Global Illumination		
Assembler	Repository	written in C99
◦ CPU emulator with custom instruction set		
SL-Vec	Repository	written in C23
◦ Powerful C23 macro library for GLSL vector types, casts and functions in C		
Fractal Raymarcher	Repository	Site
◦ WebGL 4D Julia set renderer		written in JavaScript

Remarkable Awards and Honors

Gold, International Al-Farghani Physics Olympiad (IAFPhO)	2021
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