

## **Technical skills & Certifications**

Graphics & Game Dev: Vulkan, OpenGL, WebGPU, GLSL/HLSL, Unreal Engine

Programming Languages: C++, C, C#, Python, JavaScript/TypeScript, Go

Tools: Visual Studio, Git, CMake, RenderDoc, Nvidia Nsight, Blender, Substance Painter, Lys, Cakewalk, GIMP

DevOps: Kubernetes, Azure, AWS, Terraform, Ansible, GitHub Actions, Docker, Linux/Bash

Certifications: AZ-900, AZ-104, AZ-204, CKA

Spoken Languages: English (Native), Japanese (Fluent), Polish (Beginner)

## **Graphics / Game Projects**

### **VKEngine - Vulkan Game Engine (C++ 20)**

A modern Vulkan-based engine built from scratch using advanced optimization techniques and modern GPU features.

- Cascaded Shadow Maps with 4 cascades, PCF filtering, and automatic cascade selection based on view-space depth. Supports alpha-tested shadow casting for foliage.
- Optimized Alpha-to-Coverage (A2C) transparency with sharpening and distance fade prevention via mip alpha scaling for foliage and hair rendering. A separate alpha-blend pass provides true transparency with sorting for windows etc.
- Bindless texture system using descriptor indexing, supports 1000+ textures without rebinding.
- Efficient rendering pipeline: Frustum culling with AABBs (sphere/box tests), per-mesh instanced rendering, and material-based batching with index buffer merging to minimize pipeline state changes and draw calls.
- Multi-threaded culling using C++ 17 parallel algorithms with SIMD intrinsics, achieving sub-millisecond culling times for 10,000+ objects.
- Dual-level AABB system - coarse mesh-level bounds for visibility culling, fine submesh-level bounds for collision detection.
- Industry-standard normal mapping using MikkTSpace tangent calculations during model loading.
- Blinn-Phong dynamic lighting (Directional/Point), environment mapping with Fresnel reflections, 3D spatial audio (SoLoud).
- Skybox rendering, MSAA, mipmap generation & robust swapchain recreation handling.
- ImGui editor allows real-time editing of dynamic pipeline state, scene parameters, render targets & debug visualizations.
- Integrated RenderDoc/Nsight debugging with labelled GPU events and object naming via VK\_EXT\_debug\_utils.
- Leverages modern Vulkan features: Dynamic Rendering, Descriptor Indexing, Dynamic SSBOS with per-frame offsets

*(In Progress: FastGLTF integration, PBR + IBL, skeletal animation, clustered forward rendering, editor features)*

### **OGLRenderer - Physically Based OpenGL Renderer (C++ 17)**

- Implemented Phong -> Cook-Torrance PBR pipeline with metallic-roughness workflow, HDR rendering, tone mapping and gamma correction.
- Added Image Based Lighting via precomputed irradiance maps, environment prefiltering and BRDF LUT integration.
- Normal mapping, PCF Shadow maps, instanced rendering demonstrated with Crytek Sponza scene.
- Integrated ImGui editor with dynamic scene construction, add/remove objects & lights with automatic instancing, and edit object transforms and light properties directly in the engine.
- Skybox rendering, gamepad support, CMake build system, MSAA and multi-resolution support including borderless/exclusive fullscreen.

### **GraphVis - JavaScript and C++**

An interactive tool for visualizing graph algorithms such as Dijkstra's, A\*, Bellman-Ford, Prim's, and Kruskal's. It offers step-by-step demonstrations to make complex algorithms easy to understand and intuitive, helping users grasp how they work in real-time.

### **Software Ray-Tracer - C++ / CPU Path Tracer**

Implemented BVH acceleration, reflections and materials based on *Ray Tracing in One Weekend*.

## **Professional Experience**

### **Insight Enterprises(EMEA): Site Reliability Engineer (December 2023 - November 2024)**

- Deployed Azure Red Hat OpenShift (ARO) cluster via Infrastructure-as-code (Azure Bicep).
- Migrated internal web apps to containers with Kubernetes, GitHub Actions, and ACR.
- Built PowerShell automations for Azure Entra ID and Graph API, improving developer workflows.
- Created CI/CD pipelines and automations supporting multi-team reliability.

### **Phlexglobal(AmerisourceBergen): Site Reliability Engineer (June 2023 - November 2023)**

- Enhanced observability with New Relic GraphQL API, cutting downtime alerts during maintenance.
- Automated Kubernetes deployments and optimized compute cost using AI-driven scaling tools
- Resolved distributed-systems issues (RabbitMQ, Redis, AKS), stabilizing production workloads

### **Insight Enterprises(EMEA): Site Reliability Engineer (June 2022 - June 2023)**

- Developed automations with Ansible, Terraform, and GitHub Actions to manage Azure environments.
- Built an internal secret-sharing web app that was widely used within the organization

### **The Software Institute: Cloud Engineer (April - June 2022)**

- Completed a 3-month intensive DevOps training course covering cloud infrastructure, CI/CD and professional client interactions.

### **FCI Multiple Services (United States): Technical Translator (December 2019 – September 2020)**

- Produced accurate technical and legal translations under strict deadlines from Japanese to English.

## **Education**

### **Queen Mary University of London - MSc Computing and Information Systems (Distinction - 80%)**

**Dissertation title:** Refining the state-of-the-art in Machine Translation, optimizing NMT for the JA <-> EN language pair by leveraging personal domain expertise.

### **University of Sheffield - BA Japanese Studies (2.1 Honours)**

Including exchange year at Seijo University (Tokyo, Japan)

**Dissertation title:** Re-evaluating the role of Industrial Policy in Japan's "Economic Miracle" 1955-1973

Harvard University - CS50 Series (Computer Science, Web, Mobile Development)

Stanford University - CS106A Code In Place (Python Programming):

Final Project (Space Invaders game): <https://compedu.stanford.edu/codeinplace/public/projects/0135.html>