

Guillermo Bosca

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About Me

I have studied video game programming with an emphasis on **low-level and graphics engineering**. With a foundation in linear algebra, 3D math and multithreading I move comfortably between engine-level systems and shader/VFX work. I enjoy creating **performant and scalable code** and bridging the gap between engineering and art. Currently learning more about Vulkan and real-time graphical effects through shaders.

Technologies Vulkan, Unreal Engine 5, Unity, Godot, OpenGL, RenderDoc, Blender, Shader Graphs, Perforce, Git, Angular, SQL, MongoDB, Firebase, Android Studio

Programming Languages C++, C, C#, ARM64, GLSL, HLSL, Lua, Java, TypeScript, JavaScript, Python

Languages Spanish (Native), English (C1 - IELTS Band Score 8.0 / 9.0), Japanese (N5)

Projects

Graphics / Game Engine from scratch in Vulkan & C++ (2025-2026)

- Entity Component System following a Data Oriented Design.
- Advanced streaming system of Textures and Meshes with memory management for optimization.
- External Advanced Profiler tool connected via UDP.
- Vulkan infrastructure and organization

Real Time 3D Fluid Simulation in Vulkan & C++ (2025-2026)

- Simulation from scratch following the DFSPH paper algorithm.
- Optimization with Compute Shaders.
- Small port to Native Vulkan Android app.

Voxel Terrain Renderer (C / ARM64) (2026)

- Real-time voxel terrain renderer with heightmap, camera navigation, and a three-tier LOD system.
- Terrain rendering algorithm in ARM64 Assembly improving performance.
- Performance optimizations including lookup tables, loop unrolling, fixed-point arithmetic, and cache-aware memory access patterns.
- Profiled and benchmarked all implementations to measure and validate optimization effectiveness.

Infinite Terrain Demo Scene in OpenGL Wrapper (2025)

- Grass system using Geometry Shaders and Perlin Noise.
- Simple GPU particle system.
- Realistic ocean using Geometry Shaders and waves.

Experience

Front End Developer (Internship) - Ladorian (2023)

- Helped with the creation of the new business end platform.
- Developed in Angular using Figma and helping with iterations.

Code Teaching Assistant (Internship) - Codenautas (2023)

- Helped teaching basic programming concepts
- Had the initiative to create a small Godot project with step by step documentation

Education

HND in Computing (Game Programming)	(2023-2026)
<i>HND Degree</i>	
ESAT	
Development of Multiplatform Applications (DAM)	(2021-2023)
<i>Higher degree</i>	
PROGRESA	
Japanese Language School in TOKYO	(2022)
<i>Language Certificate of Studies abroad</i>	
ISI ランゲージスクール	
Data Analysis	(2022)
<i>Professional Online Certificate</i>	
GOOGLE - COURSERA	
Microsystems and Networks (SMR)	(2019-2021)
<i>Vocational Course</i>	
PROGRESA	