

# Daniel Camba

C++ and 3D Graphics Software Engineer

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## ABOUT ME

I am a passionate Software Engineer with experience building tools and applications focused on the final user: 3D games & simulators, low-level tasks around OpenGL, GLSL and multi-threading as well as RESTful APIs, token-based authentication, licensing systems and vanilla frontend.

## EXPERIENCE

### Freelance Developer 09/2019 - Present

Development of management applications for small businesses in my hometown, learning to deal firsthand with the client and their needs.

- Dashboard to consume REST API (built in Go), for a SQL Database after performing a migration from an Excel file (using Pandas).
- Bakery's profit and expenses summary in PDF with charts & metrics.
- Eye-Candy log system of Arduino sensors metrics using Python serial.

I divide my daytime in job and study, to still up to date in the graphics field: Building my own 3D Engine from scratch (using OpenGL4 and C++17), with features as multi-window, batch rendering and focused on performance; reading a lot about Vulkan to understand how it works and update my engine to use it. Also following my master thesis, I am learning about compressing animations, time normalization and cache-friendly approaches.

Check out my 3D Engine at <https://github.com/cambalamas/Vonsai>

### R&D Engineer 06/2018 - 07/2019

Polytechnical university of Madrid – Bioengineering Group

- Maintenance of side and legacy C++ projects fixing memory-leaks, minor bugs, addition of multi-threading and C++17 features.
- Co-developer of a 3D training env, built on Unity 3D for the creation, edition and simulation of minimally invasive surgery tasks.
- Lead developer on the migration from a monolithic to a RESTful API system, saving in 75% the code to maintain with a common interface for database operations with user-auth and licensing system.

### Backend Engineer 01/2017 - 04/2017

Profocus Estudio - Ecommerce Photography Studio

Workflow improvement, from product reception to the invoicing stage, reducing one-week tasks to two-day tasks. Saving time and resources.

## PROJECTS

### Side projects : (Videos and code on my portfolio)

- **CATCHED** : A non-interactive game to explore AI based on decision trees with safe areas, targets and power-ups.
- **GRIMOIRE** : Interactive Hack & Slash game with melee and range combat; crowd management, waves and difficulty grading.
- **WATERCOLOR** : Draw 3D as watercolor using deferred shading, many Perlin noises, toon-shading and implementing hand-wobble.
- **PROCEDURAL TERRAIN** : Using patches for tessellation shaders, Perlin for random height map and L.O.D. based on camera distance.

### MSc Thesis : Interactive Motion Graph

From scratch 3D interactive animator that load real motion-capture data and computes interpolations between different animations.

### BSc Thesis : Interactive mockup definition

Allows you to prototype the behaviour of an application using mockups for a better customer's understanding of the final product.

## SKILLS

★★★

C++17, 3D Maths, OpenGL, Shaders, GLFW, HTML, CSS, JS, SQL, REST APIs

★★★

Multi-threading, memory-management, Unity, Python 3.x, Go.

★★★

CUDA, TDD, Docker, Qt, Vulkan, NoSQL, Arduino.

## TOOLS

CMake, Catch2, Valgrind, GDB, Plotly.

## EDUCATION

2017 - 2019

### MSc Computer Graphics

OpenGL, CUDA, 3D Maths

University Rey Juan Carlos Madrid, Spain

2012 - 2017

### BSc Computer Science

Patterns, Algorithms, UI/UX

University of Vigo Ourense, Spain

## HOBBIES

CrossFit

Cooking

Photography

Do not hesitate to contact me for anything at [hello@cambalamas.com](mailto:hello@cambalamas.com)