

Víctor Ávila

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Portfolio: <https://avilapa.github.io/portfolio/>

Profile

Enthusiastic and motivated programmer with experience in C++, game development engines such as Unity and Unreal Engine 4, and real-time computer graphics techniques. With a strong foundation in problem solving abilities, I consider myself great at communication and teamwork skills.

I am seeking to provide my team with proactivity, creativity and hard work, and to share my knowledge and my sense of humor, while learning from them and developing my skills.



Education

Sheffield Hallam University (SHU)

Sheffield, England

BSc (Honours) Computer Science for Games

Graduated: expected 2019

Escuela Superior de Arte y Tecnología (ESAT)

Valencia, Spain

BTEC Level 5 HND in Computing and Systems Development

Graduated: 2018 with **Distinction**

Technical Skills

Programming Languages

C++, C, GLSL, C#, ARM Assembly, Java, Swift, HTML, CSS

Source Control

Perforce, Git

3D Graphics

OpenGL 3.X / 4.X, DirectX 11

Game Development

Unity3D, Unreal Engine 4

Debugging

Visual Studio, RenderDoc

Other Skills

Scrum, Video Editing

Languages

English

Professional Proficiency

Spanish

Native Proficiency

Catalan

Native Proficiency

References

Gustavo Aranda

Programme Leader

ESAT

garanda@esat.es

Lucas González

Project Manager

ESAT

lgonzalez@esat.es

Personal Projects

Fuel Renegades (Steam Published Game)

October 2017 - July 2018

Overview

Arcade racing multiplayer game (4 players split-screen, up to 8 players online) with polished mechanics and smooth game feel, built in Unreal Engine 4 and published on Steam.

Associated with: ESAT (Final Project).

Contributions

- Player vehicle design and implementation: full implementation of vehicle movement mechanics with special emphasis on its feeling and speed.
- Proper use of UE4 substepping system to achieve solid gameplay performance and framerate independent physics across computers with a wide range of specs.
- Implementation of several post processing effects.
- Several UI design including the Main Menu.
- Making of the [video trailers](#) for the game.

Link: https://store.steampowered.com/app/878110/Fuel_Renegades

Custom OpenGL C++ PBR Engine

October 2017 - July 2018

Overview

First contact with building a 3D OpenGL and C++ rendering engine from scratch. The focus of this project was to learn as much as possible about organizing engine frameworks and implementing physically based rendering techniques.

Associated with: ESAT (Graphics Programming).

Features

- Multithreaded agnostic graphics API.
- Component oriented engine.
- Physically Based Rendering techniques:
 - Material pipeline (PBS, Metallic/Roughness workflow).
 - Image Based Lighting (Radiance and Irradiance environment mapping).
 - Atmospheric Scattering (Rayleigh and Mie Scattering).
- Post Processing Pipeline: SSAO, Bloom, Light Scattering (God Rays), Shadow Mapping, FXAA, Lens Distortion, Tone Mapping and multiple one-pass filters.
- Procedural generation of infinite voxel worlds.
- UI integration (ImGui).
- Sound integration (OpenAL).
- Physics integration (Bullet Physics).

Link: <https://www.youtube.com/watch?v=J9CEyYF8yrU>

CPU Rasterizer in Raspberry Pi 3

May 2018 - June 2018

Overview

Small CPU based rasterizer of convex meshes built in C++ for Raspberry Pi 3, with special emphasis in applying diverse optimization techniques.

Associated with: ESAT (Low Level and Optimization).

VXR (Open Source Engine)

July 2018 - Ongoing

Overview

Multithreaded, C++, multi-platform oriented, general purpose, real-time rendering tool. This project emerged from the desire to apply all the knowledge gained from building a previous engine, and have a performant framework with a great API where I can develop anything I feel like in my free time.

Associated with: Personal Project.

Features

- Multithreaded agnostic graphics API.
- Great API design with two separate API's available:
 - A highly performant lower level one where the user easily manages render commands to be later executed on a separate thread.
 - A higher level component oriented one, based on Unity GameObjects and Components, built on top of the lower level API.
- UI integration with an editor.

Link: <https://github.com/avilapa/vxr>

VXT (Open Source Path Tracer)

November 2018 - Ongoing

Overview

First contact with ray tracing and offline rendering techniques in C++. Multithreaded CPU based path tracer built from scratch.

Associated with: Personal Project.

Features

- Multithreaded Tiled Rendering in CPU.
- Creation of Image Previews in the process.
- Objects: Sphere, Box, Axis Aligned Plane, Volume, AABB (all capable of being Translated and Rotated).
- Bounding Volume Hierarchy Acceleration Structure.
- Materials: Lambertian, Metal, Glass, Isotropic (Fog/Smoke), Diffuse Light.
- Textures (used in all materials): Image Based, Noise, Custom.
- Realistic Camera: Depth of Field, Motion Blur.

Link: <https://github.com/avilapa/vxt>

Awards

- Best Videogame (Second Place), Student Game Contest '18, AEV Valencia.
- Best Technology (First Place), Student Game Contest '18, AEV Valencia..