

Alejandro Rodríguez

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PROFILE

Software developer with 8 years of experience as a Research and Development Engineer at Pompeu Fabra University. Experienced in teaching Computer Graphics and Game Development. Passionate about both creating and playing games, I completed a M.S. degree in Design and Creation of Video Games to deepen my expertise. I'm also interested in UI design (currently developing LexGUI library). Now I'm eager to apply my skills to new challenges in software development; gaming industry, interactive applications, or computer graphics.

EXPERIENCE

Research and Development Engineer

June 2017 – Present

Pompeu Fabra University

Barcelona, Spain

- Focus on **interactive graphics, XR, and web-based technologies**
- Create multi-platform applications using custom engines (C++/JavaScript/WebGPU)

Assistant Professor

Jan. 2023 – Present

Pompeu Fabra University

Barcelona, Spain

- Teaching **Creation and Design of Electronic Videogames** (Design, Gameplay and Shading)
- Coding 2D and 3D games from scratch in C++ using OpenGL

Assistant Professor

Sep. 2018 – Jan. 2023

Pompeu Fabra University

Barcelona, Spain

- Teaching **Computer Graphics** (2D and 3D)
- From 2D to 3D shading using Physically Based Rendering
- Custom engine built in C++ using OpenGL

TECHNICAL SKILLS

Languages: C++, C, GPU shaders (GLSL, WGSL, HLSL), JavaScript/TypeScript, HTML5/CSS, Python, GDScript, Java, C#, PHP

Engines & Frameworks: Unreal Engine, Godot, ThreeJS, Unity, Node.js, Tailwind, React

Developer Tools: Git, VS Code, Visual Studio, CMake, RenderDoc

Graphics APIs: OpenGL/WebGL, WebGPU, Vulkan, DirectX

EDUCATION

M.S. degree in Design and Creation of Videogames

2020 – 2021

Barcelona School of Management (Pompeu Fabra University)

Barcelona, Spain

- Created **EON: The Last Trial**. Alien souls-like with spatio-temporal mechanics
- Game and Engine created from scratch using C++/Dx11
- Worked in Engine, Gameplay and Render tasks
- farfetchedworks.itch.io/eon-the-last-trial

B.S. degree in Computer Science

2014 – 2018

Pompeu Fabra University

Barcelona, Spain

FCE (First Certificate in English)

2015

Cambridge School

Barcelona, Spain

High School - Technology Baccalaureate

2008 – 2014

Institut Torre de Malla

Barcelona, Spain

LANGUAGES

Spanish: Native | **Catalan:** Native | **English:** Professional Proficiency

PROJECTS

- MAX-R (H2020)** | *VR, SDF, WebGPU, Rooms, wgpuEngine* Sep. 2022 – May 2025
- Creation of XR and WebGPU related Open-Source tools
 - Developed **Rooms, an XR-enabled tool for creating 3D content** (Dreams-like)
 - Created **wgpuEngine, a multiplatform and open-source C++ 3D engine using WebGPU**
 - github.com/upf-gti/rooms | github.com/upf-gti/wgpuEngine
- PRESENT and Sign-On (H2020)** | *PBR, 3D Animations, Virtual Avatars, JavaScript* Feb. 2021 – Sep. 2022
- Worked on web-based custom engines in **skin, hair and other physically based rendering properties**
 - Create natural virtual digital humans demonstrating emotional sensitivity
 - Sign Language Translation Mobile Application and Open Communications Framework
 - Worked on **Animics, a web-based 3D animation editor for virtual character signing**
 - Facilitate information exchange among Deaf people | github.com/upf-gti/animics
- SAUCE (H2020)** | *Smart Assets, Web, 3D Animations, Character Behaviours* June 2020 – Feb. 2021
- Smart Asset re-Use in Creative Environments
 - Created **tests, game prototypes and other virtual scenarios to demonstrate our 3D animation and character behaviour** design tools
- HDR4EU (H2020)** | *HDR, PBR, 3D Lighting, IBL* Jan. 2018 – June 2020
- Enabling End-to-End HDR Ecosystem
 - Developed a 3D web application showcasing the use of **HDR environments in a real-time PBR pipeline**
 - Created a web tool to build HDR maps for Image Based Lighting (IBL) from a set of SDR images

SIDE PROJECTS

- ShaderHub** | *WebGPU, Shaders, Graphics, JavaScript* Current
- WebGPU-based render and compute shader playground
 - github.com/upf-gti/ShaderHub
- LexGUI** | *UI, Web-design, Frontend, TypeScript* Current
- Web library for building web user interfaces using prebuilt components
 - github.com/jxarco/lexgui.js
- Rooting Route** | *Godot, 2D, 3D, GameJam* Feb. 2023
- Video game created for the Global Game Jam Barcelona 2023 using Godot
 - itch.io/rooting-route
- Lockdown Reality** | *Unreal Engine, GameJam* Jan. 2021
- Video game created for the Global Game Jam Barcelona 2021, inspired in COVID scenario
 - Point and Click game mechanics using Unreal Engine
 - itch.io/lockdown-reality
- MANI** | *Unreal Engine, 3D, GameJam, Superliminal* Jan. 2021
- 3D video game created as a side project within the Master's in Design and Development of Videogames
 - **Superliminal** based mechanics
 - itch.io/mani
- The Time Hallows** | *Custom Engine, 2D, Teaching* Oct. 2019
- 2D Video game created in 1 week-end as a Teaching Asset
 - Using a custom engine made in C++
 - itch.io/the-time-hallows

PUBLICATIONS & ACHIEVEMENTS

- "A Cross-Platform, WebGPU-Based 3D Engine for Real-Time Rendering and XR Applications"** Sep. 2025
Web3D '25 Sienna ([doi/10.1145/3746237.3746305](https://doi.org/10.1145/3746237.3746305)) *Sienna, Italy*
- "Understanding the Wi-Fi and VR streaming interplay: A comprehensible simulation and ..."** Jan. 2026
Journal of Network and Computer Applications (doi.org/10.1016/j.jnca.2025.104391)
- Best Academic Record in Computer Science** Nov. 2019
Pompeu Fabra University *Barcelona, Spain*