

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 <i>Pompeu Fabra University</i>	June 2017 – Present Barcelona, Spain
<ul style="list-style-type: none">Focus on interactive graphics, XR, and web-based technologiesCreate multi-platform applications using custom engines (C++/JavaScript/WebGPU)	
Assistant Professor <i>Pompeu Fabra University</i>	Jan. 2023 – Present Barcelona, Spain
<ul style="list-style-type: none">Teaching Creation and Design of Electronic Videogames (Design, Gameplay and Shading)Coding 2D and 3D games from scratch in C++ using OpenGL	
Assistant Professor <i>Pompeu Fabra University</i>	Sep. 2018 – Jan. 2023 Barcelona, Spain
<ul style="list-style-type: none">Teaching Computer Graphics (2D and 3D)From 2D to 3D shading using Physically Based RenderingCustom engine built in C++ using OpenGL	

TECHNICAL SKILLS

Languages: C++, C, GPU shaders (GLSL, WGLSL, HLSL), JavaScript/TypeScript, HTML5/CSS, Python, GDScript, Java, C#
Engines & Frameworks: Unreal Engine, Godot, ThreeJS, Unity, Node.js, 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 <i>Barcelona School of Management (Pompeu Fabra University)</i>	2020 – 2021 Barcelona, Spain
<ul style="list-style-type: none">Created EON: The Last Trial. Alien souls-like with spatio-temporal mechanicsGame and Engine created from scratch using C++/Dx11Worked in Engine, Gameplay and Render tasksfarfetchedworks.itch.io/eon-the-last-trial	
B.S. degree in Computer Science <i>Pompeu Fabra University</i>	2014 – 2018 Barcelona, Spain
FCE (First Certificate in English) <i>Cambridge School</i>	2015 Barcelona, Spain
High School - Technology Baccalaureate <i>Institut Torre de Malla</i>	2008 – 2014 Barcelona, Spain

LANGUAGES

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

PROJECTS

MAX-R (H2020) VR, SDF, WebGPU, Rooms, wgpuEngine	Sep. 2022 – May 2025
<ul style="list-style-type: none">Mixed Augmented and eXtended Reality media pipelineDeveloped Rooms, an XR-enabled tool for creating 3D content (Dreams-like)Created wgpuEngine, a multiplatform C++ 3D engine using WebGPUgithub.com/upf-gti/rooms github.com/upf-gti/wgpuEngine	
PRESENT and Sign-On (H2020) PBR, 3D Animations, Virtual Avatars, JavaScript	Feb. 2021 – Sep. 2022
<ul style="list-style-type: none">Photoreal REaltime Sentient ENTityWorked on web-based custom engines in skin, hair and other physically based rendering propertiesCreate natural virtual digital humans demonstrating emotional sensitivitySign Language Translation Mobile Application and Open Communications FrameworkWorked on Animics, a web-based 3D animation editor for virtual character signingFacilitate information exchange among Deaf people github.com/upf-gti/animics	
SAUCE (H2020) Smart Assets, Web, 3D Animations, Character Behaviours	June 2020 – Feb. 2021
<ul style="list-style-type: none">Smart Asset re-Use in Creative EnvironmentsCreated 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
<ul style="list-style-type: none">Enabling End-to-End HDR EcosystemDeveloped a 3D web application showcasing the use of HDR environments in a real-time PBR pipelineCreated 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
<ul style="list-style-type: none">WebGPU-based render and compute shader playgroundgithub.com/upf-gti/ShaderHub	
LexGUI UI, Web-design, Frontend, TypeScript	Current
<ul style="list-style-type: none">Web library for building web user interfaces using prebuilt componentsgithub.com/jxarco/lexgui.js	
Rooting Route Godot, 2D, 3D, GameJam	Feb. 2023
<ul style="list-style-type: none">Video game created for the Global Game Jam Barcelona 2023 using Godotitch.io/rooting-route	
Lockdown Reality Unreal Engine, GameJam	Jan. 2021
<ul style="list-style-type: none">Video game created for the Global Game Jam Barcelona 2021, inspired in COVID scenarioPoint and Click game mechanics using Unreal Engineitch.io/lockdown-reality	
MANI Unreal Engine, 3D, GameJam, Superliminal	Jan. 2021
<ul style="list-style-type: none">3D video game created as a side project within the Master's in Design and Development of VideogamesSuperliminal based mechanicsitch.io/mani	
The Time Hallows Custom Engine, 2D, Teaching	Oct. 2019
<ul style="list-style-type: none">2D Video game created in 1 week-end as a Teaching AssetUsing 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
<i>Web3D '25 Sienna</i> (doi/10.1145/3746237.3746305)	<i>Sienna, Italy</i>
Grant Holder for Master in Design and Creation of Videogames	Nov. 2019
<i>Barcelona School of Management (Pompeu Fabra University)</i>	<i>Barcelona, Spain</i>
Best Academic Record in Computer Science	Nov. 2019
<i>Pompeu Fabra University</i>	<i>Barcelona, Spain</i>