

Marius Luca

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LANGUAGE SKILLS

- Romanian – native
- English - advanced
- French - basic

PROGRAMMING SKILLS

- C++/C++11
 - Direct X 9/11/12
 - Vulkan
 - GNM/GNMX
 - OpenGL3+
 - OpenGL ES2/3+
 - WebGL/WebGL2
 - Angle
 - wxWidgets/MFC/Win32 API
 - boost
 - OpenAL
- CMake
- Python
- C#
- HTML/CSS/Java Script
- Java
- SQL (MSSQL/MySQL)
- ASM (x86)
- PHP
- ASP
- VB Script
- Cross platform development:
 - Windows/Windows Universal Apps
 - PS4/PS4 Pro
 - Xbox One
 - Linux/Google's Gaming Platform
 - OSX
 - iOS
 - Android
 - emscripten
- Linux administrator skills

EDUCATION

- **10/2010 - 06/2012**
 - **Politehnica University of Bucharest** Masters Complex Multimedia Signals Processing
- **10/2006 - 06/2010**
 - **Politehnica University of Bucharest** Diploma Computers and Automatics department specialized in Systems Engineering
- **09/2002 - 06/2006**
 - **Colegiul Tehnic Miron Costin** - High School Computer Science

PROFESSIONAL EXPERIENCE

09/2008 - present Experience in **C++/wxWidgets/OpenGL/WebGL2/Vulkan/DirectX11/DirectX12**

Job Title: 'Dreamer Game Engine' – personal project

- implemented in C++, using wxWidgets, a portable GUI library for multiple operating systems
- various rendering backends (OpenGL/WebGL2/Vulkan/DirectX11/DirectX12)

10/2018 - present Experience in **C++/D3D11/D3D12/GNM/GNMX/Vulkan**

Job Title: 'Software Engineer/Render programmer' project for **'Ubisoft' (Bucharest RO)**

- bugfixing, profiling and optimizations of the engine and rendering code (PIX/RenderDoc/NVIDIA Nsight/internal tools)

03/2017 - 10/2018 Experience in **C++/D3D11/D3D12/GNM/GNMX/Vulkan**

Job Title: 'Software Engineer/Render programmer' on the **'Assassin's Creed Odyssey'** project for **'Ubisoft' (Bucharest RO)**

URL: <https://assassinscreed.ubisoft.com/game/en-us/home/>

Game Engine: In-house engine **'AnvilNext 2.0'** (<https://en.wikipedia.org/wiki/AnvilNext>)

- implemented shore wave sound emitter system (grid of probes/depth buffer/stencil mask used for cheap method of determining interactions)
 - emit sounds for rolling waves
 - emit sounds for waves dissipating into the shore
 - emit sounds for collisions between waves and environment/entities
- work on custom river system used on rough terrain
 - work on water visuals, flow and transition to FBM/FFT water
 - work on entity interactions (displacements/particle trails)
- work on water/underwater look and feel
- work on rain optimizations
- bugfixing, profiling and optimizations of the engine and rendering code (PIX/RenderDoc/NVIDIA Nsight/internal tools)
- fixes and optimizations specific for the new GGP platform (Google's Gaming Platform)

04/2016 - 03/2017 Experience in **C++/D3D11/GNM/GNMX**

Job Title: 'Software Engineer/Render programmer' on the 'Ghost Recon Wildlands' project for 'Ubisoft' (Bucharest RO)

URL: <https://ghost-recon.ubisoft.com/wildlands/en-us/home/>

Game Engine: In-house engine 'AnvilNext 2.0' (<https://en.wikipedia.org/wiki/AnvilNext>)

- implement GPU hang tracing on PS4 (similar to NVIDIA Aftermath on PC)
- work on supportig D3D11 deferred contexts GPU markers
- implement multigpu support on PC
 - support NVIDIA SLI using NVAPI (NVIDIA's core SDK that allows direct access to NVIDIA GPUs)
 - support AMD Crossfire using AGS (AMD GPU Services Library)
- bugfixing, profiling and optimizations of the engine and rendering code (PIX/RenderDoc/NVIDIA Nsight/internal tools)

10/2014 - 09/2015 Experience in **C++/Javascript/DX9/WebGL/ES2/OpenGL3+/Angle**

Job Title: 'Software Engineer/Game Engine Developer' on the 'Runescape 3 (NXT Client - port from java to C++11)' project for 'Jagex' (Cambridge UK)

URL: <http://www.jagex.com/>

Game Engine: In-house engine 'NXT/RuneTek 7'

- worked on the C++ cross platform game client
 - worked on python/cmake/bamboo build system and CI for new cross platform engine (windows/linux/osx/emscripten/ios/android)
 - implemented the memory tracking and tagging system
 - worked on profiling and optimizations using Intel VTune/Intel GPA/Nvidia Nsight
 - refactored runescape model format to allow faster loading and easier merging of meshes at runtime
 - multithreaded mesh combining based on material properties
 - multithreaded assets loading code that was blocking in the previous client
 - worked on rendering command gathering, sorting and merging

06/2014 - 10/2014 Experience in **JavaScript/HTML5/WebGL**

Job Title: 'Software Engineer/Game Engine Developer' on the 'Runescape 3 (HTML5 Client)' project for 'Jagex' (Cambridge UK)

URL: <http://www.jagex.com/>

Game Engine: In-house engine 'HTML5/RuneTek 7'

- worked on the HTML5 game client
 - rewrite rendering code to support command gathering and sorting to help reduce OpenGL state changes
 - profile and optimize shaders
 - implement various post processing effects like DOF/BLOOM/SSAO

02/2013 - 06/2014 Experience in **C++/DX9/Java/C#/Lua**

Job Title: 'Software Engineer/Game Engine Developer' on the 'Transformers Universe' project for 'Jagex' (Cambridge UK)

URL: <http://www.jagex.com/>

Game Engine: In-house engine based on 'RuneTek 5'

- worked on memory allocation tracking and tagging for the game client
 - implement external memory tracking system that injected hooks at runtime into the clients memory allocation functions (similar to the way Intel Pin inserts callback hooks)
 - implement memory tracking scoped tags to allow easy identification of the memory owners
 - implement memory tracking context tags to allow monitoring tasks that occurred over multiple threads
 - generate graphs and statistics based on the collected data
- worked on various game client bug fixes and optimizations
- work on Maya exporter plugin
 - worked on loosy keyframe compression for animations
 - implement "engine preview" mode where the artist could view models/materials/animations in a new viewport that used the engine rendering pipeline

06/2012 - 12/2012 Experience in **C++/OpenGL/DX9/DX11**

Job Title: 'Software Engineer/Game Engine Developer' on the 'Starsonata MMO' project for 'Starsonata, LLC' (Bucharest RO)

URL: <http://www.starsonata.com/>

Game Engine: Open source engine 'Irrlicht Engine' (https://en.wikipedia.org/wiki/Irrlicht_Engine)

- worked on rendering features and optimizations for the game client:
 - implemented post processing effects SSAO (screen space ambient occlusion)/HDR (high dynamic range)/Bloom/Various distortions
 - implemented new effects for lasers/force-fields/warps
 - optimized billboard and text rendering by generating groups and minimizing the number of D3D calls
 - switched layered background rendering to premultiplied alpha and optimize overdraw
 - convert textures to BC1/BC3 (DDS with DXT1/DXT5) based on the clients hardware capabilities for lower memory usage
 - implemented icosahedrons based geospheres
 - implemented a unified task manager that uses an unblocking concurrent queue (relies on atomic operations instead of mutexes)
 - moved mesh/texture loading to the new task manager

12/2008 - 11/2011 Experience in **C++/Boost/wxWidgets/OpenGL/DX9/MySQL**

Job Title: 'Software Engineer/Game Engine Developer' on the '**Dawntide MMO**' project for '**Working as Intended, LLC**' (Bucharest RO)

URL: <https://en.wikipedia.org/wiki/Dawntide>

Game Engine: Commercial engine '**Gamebryo**' (<https://en.wikipedia.org/wiki/Gamebryo>)

- worked on the game client development witch used the Gamebryo game engine
 - worked on client/server communications
 - worked on various post processing effects (Bloom/Heat haze)
 - worked on camera, animations, movement, trading and various other gameplay related features
 - worked on CEGUI user interface for various gameplay elements
 - worked on prioritizing relevant sound events that needed to be submitted to OpenAL (the number of available channels varied based on the hardware/drivers)
- implemented a NavMesh editor that used the scene geometry to generated simplified navigation surfaces (constructive solid geometry operations/edge collapsing/inaccessible polygon elimination)
- implemented a pathfinding server that used the simplified geometry to calculate movement routes
- worked on the lobby server
 - worked on distributing of players to different zones
 - worked on the global chat system
 - worked on the global factions system
- worked on the zone server
 - worked on proxy/master zones that allowed distributing workloads to different PC's while allowing players to move seamlessly through the world (a total of 448 tiles of 1KM x 1KM existed that got distributed to different zone servers based on the area workload)
 - relied on boost asio to multithread the entity updates in the world
 - worked on the combat and spells system
 - worked on a needs/offers system that allowed the entities to perform complex behaviors (a wolf would actively search for prey to satisfy it's hunger need)
- worked on the patcher client/server
 - relied on libtorrent and XBT tracker server for client update distribution
 - relied on wxWidgets and WebView for client changelog and patcher progress display

06/2008 - 11/2008 Experience in **ASM/C++**

Job Title: 'Software Engineer/Game Engine Developer' on the '**XF-Gaming**' project for '**Better Bionics for Gaming, LLC**' (Bucharest RO)

- developed a series of game mods that allowed using a custom light gun controller
 - using the official SDK for the games Half Life 2/Quake Wars/Crysis
 - move the weapon reticle based on the light gun pointing direction
 - extended game hud for more light gun related actions
 - using reverse engineering and runtime hooks/patches for the games Half Life/Counter Strike/Counter Strike Source
 - hook into weapon reticle position/firing direction/server validations and adjust them to match the light gun
 - hook into the OpenGL rendering to add an extended game hud for more light gun related actions

01/2008 - 06/2008 Experience in **ASP/C#/ASP.NET/SQL**

Job Title: 'Software Engineer' on the '**HYLO**' project for '**BTT&T; Software Development**' (Bucharest RO)

- worked on developing a "smart" search engine (C# web service) based on a previous ASP .NET application
 - worked on phrase correction to improve displayed results
 - worked on various search techniques (up to 9 techniques were used for maximizing the number of results available)

09/2007 - 01/2008 Experience in **C#/MSSQL/JavaScript/HTML**

Job Title: 'Software Engineer' on the '**NetFlow**' project for '**BTT&T; Software Development**' (Bucharest RO)

- familiarized with the CISCO net flow protocol witch was used for network traffic data collection (stored in a MSSQL database)
- worked on data aggregation and statistics generation
- worked on a web application designed to display charts and statistics for the collected data
 - used HTML/JavaScript/AJAX for the front end
 - used a C# web service for database queries and chart generation

06/2007 - 09/2007 Experience in **C++/MFC/Codejock Software- Xtreme Toolkit**

Job Title: 'Software Engineer' on the '**Procumail**' project for '**BTT&T; Software Development**' (Bucharest RO)

- worked on a custom e-mail client/server with support for administrator roles that monitored and approved sent/received emails
 - similar client to Microsoft Outlook
 - server was based on Apache James