# Guilherme Noronha Jardim

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## EXPERIENCE

### MCDONALD'S | Crew Member

April 2021 – June 2024 | Wigston, Leicestershire

- Practised rapid, detail-oriented task execution under time pressure
- Adapted quickly to new processes and equipment, reflecting agility in adopting new tools and workflows
- Worked collaboratively in a multidisciplinary team, supporting consistent service delivery and shared goals
- Maintained performance consistency across dynamic conditions,

### GORETY'S PORTUGUESE CAFE | Floor Manager

Nov 2024 – Jun 2025 | Canal Basin, Coventry

- Balanced operational priorities while maintaining customer focus
- Handled fast problem-solving and conflict resolution
- Managed POS systems and reconciliations, demonstrating accuracy and accountability in system-driven environments
- Assisted with inventory tracking and vendor communications

## EDUCATION

### UNIVERSITY OF WARWICK

Master of Science in Games Engineering
Expected Sep 2025

### DE MONTFORT UNIVERSITY

Bachelor of Science in Games Programming
***(First-Class Honours)***
Graduated Sep 2024

### DE MONTFORT COLLEGE

Foundation Year - Computing
Graduated July 2021

## SKILLS

### PROGRAMMING

C/C++ | C# | Python | MatLab | HLSL | GLSL | Lua

### SOFTWARE

Git/Github | RenderDoc | Maya | CoppeliaSim | Unreal Engine | Unity | Azure | Doxygen | Jupyter | OverLeaf

### OTHER

OpenGL | DirectX11 | DirectX12 | OOP | Machine Learning | Multithreading

## PROJECTS

### MOUNTAIN SPORTS UNREAL GAME Team Project | Unreal Engine

- Team Lead: Lead the team in achieving the required goals within strict a deadline.
- Physics Controller: Developed a physics-driven sled controller in C++ and Blueprint.
- Torque & Drift: Implemented torque turning and inertial drift correction.
- Input Integration: Utilized Unreal's Enhanced Input for cross-device control.
- Dynamic Audio: Designed a reactive audio system for ambient, slide, and collision sounds.
- Modular Design: Emphasized separation of concerns for streamlined debugging and integration.

### CUSTOM PHYSICS ENGINE | C++

- Custom 2D Physics Engine: Developed a lightweight engine in C++ for rigid-body dynamics, collision detection, and impulse resolution.
- Modular Design: Architected core components with configurable material properties (mass, restitution, friction).
- Configured per-body material properties (mass, restitution, friction)
- Real-Time Rendering & GUI: Implemented an OpenGL rendering loop with GLFW/Glad and an ImGui interface for runtime scene control.
- Automated Testing & Build Automation: Developed extensive GoogleTest cases and used Premake for streamlined build generation.
- In-Depth Documentation: Produced comprehensive HTML documentation using Doxygen.

**COMPUTER GRAPHICS EXPERIENCE** C++ | GLSL | HLSL

- Developed a 3D game level in C++/DirectX11 with textured, lit meshes, vertex shader-driven skeletal animation, and an interactive camera system with realistic movement and bounce
- Implemented a data-driven level loading pipeline enabling rapid scene reconfiguration via custom file formats.
- Built and integrated shaders for ambient, diffuse, and specular lighting, supporting both day and night environments, alpha-tested materials, and dynamic skybox rendering.
- Created a state-based animation controller for game characters with real-time interaction logic and smooth transitions.
- Extended a custom ray tracer in C++ with multi-threaded tile-based rendering, adaptive sampling, and denoising using Intel Open Image Denoise, improving both performance and image quality
- Added physically-based Glass BRDF material, environment lighting with tabulated distribution sampling, and multiple importance sampling (MIS) for realistic illumination.
- Implemented light tracing and constructed a BVH acceleration structure with Möller–Trumbore ray-triangle intersection for efficient ray traversal.

## SOCIETIES

BlackJack, Poker and Chess Society
DMU Game SOC
Formula 1 Society
PostGrad Society

## LINKS

Github: https://github.com/xpt07
LinkedIn:
https://www.linkedin.com/in/guilherme-noronha-b3a707247/

**NETWORKED CHATROOM** | C++

- Designed and implemented a fully functional networked chatroom with C++ using WinSock for networking and ImGui for the user interface.
- Developed a robust client-server architecture supporting multiple concurrent clients, public and private (DM) messaging, and real-time user list updates.
- Engineered a responsive, multi-threaded client with separate threads for message send/receive, ensuring non-blocking communication and GUI responsiveness.
- Integrated FMOD audio notifications for message events and designed an intuitive GUI for public/private chats.
- Used thread-safe queues and mutexes to guarantee reliable, race-condition-free message handling across all clients.

**RASTERIZER OPTIMISATION** | C++

- Achieved 40%+ performance improvement by optimizing a C++ software rasterizer through loop unrolling, branchless logic, and incremental barycentric coordinate computation.
- Analysed and benchmarked performance using custom test scenes, identifying per-pixel computation as the primary bottleneck.
- Applied data-oriented design and manual cache optimization for triangle and vertex processing.

**MOBILE GAME APPLICATION** | UNITY

- Mobile Game Creation: Built a 2D mobile game using Unity and Android Studio.
- Optimized Experience: Designed responsive UI and touch controls for Android.

**2D GAME** | C++

- Developed a custom C++ 2D shooter with sprite rendering, keyboard input, and basic sound.
- Included save and load functions to persist player state, enemies, and score.