Charlotte Mackay

Game Developer / Designer

https://charlottem7.github.io/Portfolio/
https://github.com/CharlotteM7 | https://www.linkedin.com/in/charlotte-mackay/

Profile

Game Developer and Game Designer with an MSc Distinction in Advanced Computer Science and a First-Class BSc in Computer Science for Games. Strong in UE5 (Blueprints & C++), systems design, puzzle design, AI behaviour trees, and procedural generation. Skilled at rapid prototyping, iterative design, and turning mechanics into playable experiences. Looking for an entry-level role where I can contribute to gameplay, tools, or systems.

Technical Skills

Game Development
Unreal Engine 5 (Blueprints & C++), Unity, Gameplay Framework, Behaviour Trees, Blackboard & AI Perception, Animation Blueprints, Level Design, Greyboxing, World Partition, Procedural Generation, UI/UMG.

Programming
C++, C#, Python, JavaScript/TypeScript, Java, PHP. Algorithms, data structures, optimisation, multi-threading, networking fundamentals.

Tools
Git, Perforce, Jira, Notion, Visual Studio, VS Code, Blender, CMake.

Projects

Educational Cryptography Puzzle Game (MSc Dissertation)
UE5 • C++ • Blueprints • Systems & Puzzle Design
A third-person puzzle game teaching cryptography concepts through clue-based progression.

- Designed and implemented modular puzzle systems (substitution, patterns, decoding)
- Built quest and interaction systems in Blueprints + C++
- Developed data-driven puzzle logic for flexible tuning
- Implemented UI feedback, hint systems, and accessibility adjustments

Procedural World Generation System (BSc Dissertation)
UE5 • C++ • PCG Tools • Terrain/LOD Systems
A runtime procedural generation system for large, varied terrain.

- Implemented Perlin-noise terrain generation with biome rules
- Added asynchronous chunk streaming with LOD optimisation
- Generated foliage dynamically from terrain metadata
- Integrated world partition workflows to support large environments

Puzzle Solver App
React • Web Workers • three.js
Multi-solver interface capable of solving N-Queens, Polyspheres, and pyramid puzzles.

- Built recursive solving algorithms with optimisation
- Offloaded solving to multi-threaded Web Workers
- Visualised solutions in 3D using three.js
- Designed clean UI for switching solver types

Multiplayer Pong

SDL2 • C++ • Java TCP Server

A twist on classic Pong with multiplayer networking and expanded gameplay.

- Implemented full client/server communication with Java sockets
- Added client-side prediction for smooth play
- Developed power-ups, particles, and extended game modes
- Built full UI menus and replayable game loops

Experience

Data Access & Commissions Advisor | Santander Consumer Finance UK   Jan 2023 to Mar 2025

Worked with complex data systems and regulatory processes, ensuring accuracy, compliance, and clear communication. I quickly learned new tools, analysed, and resolved cases within strict timeframes, demonstrating my reliability and attention to detail.

Technical Admin Advisor | Santander Consumer Finance UK   Aug 2021 to Jan 2023

Handled technical queries, database lookups, and system-driven investigations. Developed analytical skills, identified process issues, and maintained high productivity and accuracy. Regularly distilled complex information into clear explanations for customers and internal teams.

PSA Finance | Training and Projects Manager   Apr 2019 to Aug 2021

Delivered training, documentation, and workflow improvements across the customer services department. Worked on multiple digital projects, contributing to QA testing, CRM system adoption, and user-journey improvements. Experience managing requirements, onboarding teams, and supporting system rollouts. Skills that translate directly into working on software teams.

Customer Services Call Centre Manager | PSA Finance   Apr 2017 to Apr 2019

Led a team in a high-volume environment, analysing data, improving processes, and making informed decisions quickly. Strengthened communication, leadership, and operational problem-solving; valuable for collaborative development work.

Various admin and leadership roles | Santander Consumer Finance UK   Jan 2011 to Apr 2017

Held multiple positions with increasing responsibility. Quickly learned new systems, adapted to changes, and improved processes where possible.

Education

MSc Advanced Computer Science - Distinction
University of Sussex (2024-2025)

BSc Computer Science for Games – First Class Honours
University of Brighton (2021-2024)

Other Qualifications:
Diploma of Higher Education – Business Management (Open University, 2016–2018)
PRINCE2 Foundation & Practitioner (2014)