KINGSHUK DHOLAKIA

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Portfolio: kingshukd7.github.io/Portfolio

Game Developer

Detail-oriented Game Development graduate with proven experience in Unity, Unreal Engine and C#/C++ through full-cycle game projects, from concept to showcase recognition. Skilled in object-oriented programming, scripting gameplay mechanics, and building interactive systems within Unity. Capable of applying mathematical modelling, probability, and logic validation to support accurate gameplay systems and simulations. Strong in debugging, troubleshooting, and performance profiling to optimize builds across platforms. Experienced in integrating art assets, audio, and UI/UX elements into cohesive gameplay experiences. Adept at preparing structured documentation, collaborating in peer reviews, and ensuring testing and quality compliance. Expanding knowledge of game engine features, digital content creation tools, and industry trends.

Areas of Expertise

Gameplay Programming • Object-Oriented Programming (OOP) • Code Architecture & Debugging • Game Mechanics Design • Project Management • Physics Simulation • Collision Detection • Animation Integration • UI/UX Implementation • Level Design & Audio Design • Storyboarding & Game Balancing • Math Modelling for Games • Team Leadership & Collaboration • Visual Effects Integration • Data Structures & Algorithms • Procedural Generation • Pathfinding Algorithms

Technical Skills

Tools & Engines: Unity | Unreal Engine | Trello | Piskel | GitHub | Canva | Miro | VS Code | FL Studio | MS Office

Languages: C# | C++ | JavaScript | HTML5 | CSS

Specializations: HTML5 Canvas | Procedural Generation | A* Pathfinding | Particle Systems | Physics Programming

Education

Bachelor of Science in Games Development, University of Technology Sydney | 2021 - 2025

Major Courses: Game Design Studio 1 | Game Design Studio 2 | Fundamentals of Interaction Design

Key Projects

Lead Game Developer & Project Manager | Project: Spectrum Ops - Rescue Mission

Tools & Technologies: Unity • C# • Miro • GitHub • Audio Editing Tools | August 2024 – November 2024

Directed a 3-member development team as both Lead Developer and Project Manager by organising tasks in Miro, setting milestones, and maintaining accountability through structured check-ins to ensure consistent progress under strict deadlines. Built the majority of Unity gameplay systems, including core mechanics and interactive features, by translating design ideas into functional code that balanced playability with performance. Developed enemy AI patrol behaviors and detection systems using state machines and Unity's NavMesh for intelligent navigation and player tracking. Implemented physics-based collision detection and response systems to ensure accurate hit registration and environmental interactions. Oversaw the creative and technical audio pipeline, composing original tracks, designing sound effects, and refining sourced assets to establish an immersive and professional soundscape. Created responsive UI/UX elements including health displays, objective markers, and menu systems using Unity's Canvas system. Guided the project from concept to delivery in a highly constrained timeframe, earning top academic marks and formal commendation from the Tutor and Subject Coordinator for leadership, technical execution, and overall game quality.

Game Developer & Artist | Project: Dungeon Golf

Tools & Technologies: Unity • C# • Trello • Piskel • GitHub • Canva | March 2024 – May 2024

Created all enemy sprites and visual assets from scratch in Unity, iterating through multiple design revisions and incorporating peer feedback to achieve a polished and cohesive art style. Implemented smaller mechanics for seamless integration between art, design, and functionality. Developed physics-based golf mechanics including trajectory prediction, power scaling, and ricochet calculations to create satisfying and precise player controls. Built procedural dungeon generation systems using Binary Space Partitioning algorithms to create varied and replayable level layouts. Programmed enemy AI behaviors including patrol patterns, player detection, and combat responses using finite state machines. Collaborated with a multidisciplinary team using Trello to manage tasks, coordinate progress, and build team accountability throughout the development cycle. Achieved the highest possible grade, securing an invitation to the UTS Games Showcase, where the game received direct praise from Ubisoft developers for creativity and execution. Earned wider recognition including a Twitter shoutout from the Game Curator of the Powerhouse Museum, Sydney.

Developer | Project: Procedural Dungeon Generator

Tools & Technologies: JavaScript • HTML5 Canvas • Algorithm Design | February 2025

Developed a professional-grade procedural dungeon generation tool demonstrating advanced algorithmic knowledge applicable to roguelikes and dungeon-crawlers. Implemented three distinct generation algorithms: Binary Space Partitioning for structured room-based layouts, Cellular Automata for organic cave systems, and Drunkard's Walk for winding passage networks. Built configurable parameters including grid size (40-80 tiles), room count (4-16), room dimensions, and corridor width to support diverse

gameplay requirements. Engineered automatic door placement using neighbor cell analysis with probability-based spawning. Optimized generation algorithms to achieve sub-15ms performance for 6,400-cell grids. Created step-by-step animation mode to visualize algorithm execution for educational purposes.

Developer | Project: Pathfinding Playground

Tools & Technologies: JavaScript • HTML5 Canvas • Graph Algorithms | March 2025 – May 2025

Built an interactive pathfinding visualization tool demonstrating core graph traversal algorithms essential for game AI and navigation systems. Implemented four pathfinding algorithms: A* Search with Manhattan distance heuristic, Dijkstra's Algorithm for guaranteed shortest paths, Breadth-First Search for unweighted traversal, and Depth-First Search for exploratory navigation. Developed real-time visualization system displaying node exploration, visited cells, and final path reconstruction with adjustable animation speed. Created interactive grid editor allowing users to place walls and set start/end points. Built recursive backtracker maze generation algorithm to create complex test environments. Engineered performance metrics tracking including nodes visited, path length, and execution time.

Developer | Project: Particle Commander

Tools & Technologies: JavaScript • HTML5 Canvas • Physics Simulation | August 2025 – September 2025

Developed an interactive particle system demonstration showcasing real-time graphics programming and physics simulation techniques used in game visual effects. Implemented multiple particle behaviors including emission patterns, velocity fields, gravity simulation, and color interpolation over particle lifetime. Built configurable parameters for particle count, emission rate, spread angle, velocity, and gravity strength. Engineered efficient particle pooling system to manage thousands of simultaneous particles while maintaining consistent frame rates. Optimized rendering pipeline using HTML5 Canvas batch drawing techniques to maximize performance.

Languages: English, Hindi & Gujarati: Fluent