

# VINAY REDDY PEDDIREDDY

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## EDUCATION

Queen Mary University of London  
**MSc in Computer Game**

Greater London, UK  
Sep 2023- Current

Specialized skills

- ❖ Advanced Game Development, Fundamentals of Game Design, Computational Game Design  
Interactive Agents and Procedural Generation, Computational Creativity, Level Design

Sathyabama Institute of Science and Technology  
**Bachelor's in Computer science**

Chennai, India  
Aug 2018- Sep 2022

- ❖ Top 1% of 2022 computer graduate students
- ❖ **21<sup>st</sup>** Rank in All India Wide Entrance Exam

## RELEVANT EXPERIENCE

*Indie Game Developer — Voxel Web Game*

Aug 2019-Recent

London, UK

**Stack parity:** TypeScript-first, Three.js/WebGL, React, Vite, Node (basics), CSS3D, Blender, Blockbench, Figma, Git

- **Editable worlds, quickly:** Built a chunked voxel engine with **raycast**, **face-aware block edits** and **dirty-chunk rebuilds** for instant feedback—designed APIs so new block types and interactions can be added in a few lines.
- **Engine + gameplay systems:** Implemented **AABB physics** (grounded, slope, step), **FP/TP controller** with pointer-lock and stable yaw/pitch, and an **action system** decoupling input from gameplay logic for rapid iteration.
- **Reusable features for others:** Created an **FPS view-model layer** (hands/weapons on separate render pass) with a small **state machine**—drop-in ready for additional tools/weapons without clipping.
- **AI & agents:** Prototyped NPC FSM with block-aware stepping and animation sync—clean interfaces so behaviours can be extended by other devs.
- **Performance + profiling mindset:** **Greedy meshing**, batched geometry, **low-GC frame loop** (object reuse, cached lookups), and capped ray casts per frame; **toggleable diagnostics** to profile and tune in-engine.
- **Product sense & UX:** Designed mini-game flows (e.g., **King of the Hill**), quick UI in **CSS3D** panels/HUD, and ran fast playtests to balance roles/objectives; shipped art/UX polish (textures, flipbook break VFX).
- **Wore many hats:** Engine + gameplay + UI/UX + content (modelled/rigged assets in Blender/Block bench), docs and small READMEs for setup and contribution.

*Game Designer (Intern)*

FEB 2022- MAR 2023

Creative Monkey Games, Coimbatore, India

- Designed game mechanics, monetization models and interactive features in Unity, improving game functionality by **2x** and enhancing player engagement. Collaboration with cross-functional teams of developers and artists.
- Experienced in Live Ops. Debugged and resolved **50+** technical issues related to physics, gameplay, and interactivity, ensuring a stable and reliable gameplay experience for **500+** beta testers.
- Optimized game performance for iOS and Android devices, reducing load times and ensuring smooth gameplay across multiple devices.
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*Game Design and Development Society Leader*

JAN 2019- Dec 2021

Sathyabama Institute of Science and Technology, Chennai

- Founded and led a game design and development community, fostering creativity and collaboration among students.
- Organized 8+ events per semester, including workshops ("Build Your Own Mini-Game"), lectures ("The Psychology Behind Games"), and team-based game design summits.
- Collaborated with local schools to introduce gamified learning initiatives, promoting student engagement through interactive educational techniques.
- **Key Achievement:** Mentored 100+ students in game development, improving their technical and collaborative skills.

## ACADEMIC PROJECTS

Queen Mary University of London

2023-2024

### ***Designing Mechanics and Optimizing AI Agents in Tabletop Games Framework (TAG)***

- Designed and implemented new game mechanics for competitive board games within the Tabletop Games Framework (TAG), focusing on enhancing player fairness, mastery, and gameplay balance in games like Connect 4 and Poker Texas Hold'em.
- Developed and integrated new AI agents, leveraging TAG's API and tools to optimize agent performance through parameter tuning, improving decision-making and strategies in competitive environments.
- Conducted live operations tasks, including bug fixing, adding new mechanics, and A/B testing, enhancing overall game functionality and player experience.
- Achieved a **1.6x** increase in win rate by enhancing MCTS-based AI agents and received positive feedback from **31** play testers on the new mechanics, confirming improvements in game balance and player engagement.

### ***Advanced Game Development Using C++***

- Design playable game using advanced game programming patterns and subsystems that optimize performance, memory usage, and system communication in a game engine with Real-Time Log Analysis Tool.
- **41%** memory consumption reduced and **3x** faster performance were measurable by the efficient execution of range of programming principles and patterns using C++
- These results were achieved by incorporating a Big Array ECS architecture, integrating Flyweight, Observer, and Service Locator design patterns, and implementing the Command pattern for modular and flexible system execution.

### ***Implementing Machine Learning for Game Development***

- Analysed player death patterns in Battleground Game, using data-driven approaches to optimize game balance and guide future game updates, aligning with computational and data-oriented game design practices.
- Delivered player behaviour insights leading to **15%** improvement in game updates and map design efficiency.
- Conducted feature engineering and clustering analysis on DotA players, providing insights into player behaviours and improving data understanding.
- Identified more than **5** unique player profiles, enhancing in-game analytics and personalizing player engagement strategies.

### ***Procedural Animation for Sword-Fighting Simulator***

- Designed a dynamic animation system for sword-fighting combat, incorporating second-order dynamics in Unity 3D to enhance visual realism and create a natural sense of inertia in sword movements.
- Integrated advanced mathematical concepts, inverse kinematics, an innovative input system for responsive movement, and a particle system to improve combat interactions.
- Received **100%** positive feedback from **21** play testers for the fluidity and realism of dynamic sword movements, elevating the overall combat experience.

### ***Interactive Agents and Procedural Generation***

- Developed a dynamic 2D Zombie Apocalypse simulation in Unity with AI agents driven by behaviour trees.
- Designed a procedural generation pipeline using cellular automata, increasing content diversity by **20x** and reducing decision-making time of Interactive agents by **15-25%**.

## SKILLS

**Programming Languages:** TypeScript/JavaScript, C++, C#, Java, and python

**Tools & Frameworks:** WebGL, BabylonJS, React, BlockBench, Blender, Unity, Unreal, Git, Node

**Game Mechanics & System Design:** Web Game development, Procedural generation, data-driven game design, AI systems, and dynamic simulations.

**Problem-Solving:** Strong analytical skills with experience in designing complex mechanics for Game Designing.

**Team Collaboration:** Experience working using GitHub and team-based environments.

**Game Designing:** Passionate about Level Design, dynamic storytelling, and large-scale simulations.