

ULTIMATE EDITION

JJK: Cursed Clash

A Gesture-Controlled AI Combat Engine

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The Concept

Webcam-driven combat —
your hands are the
controller.

Innovation

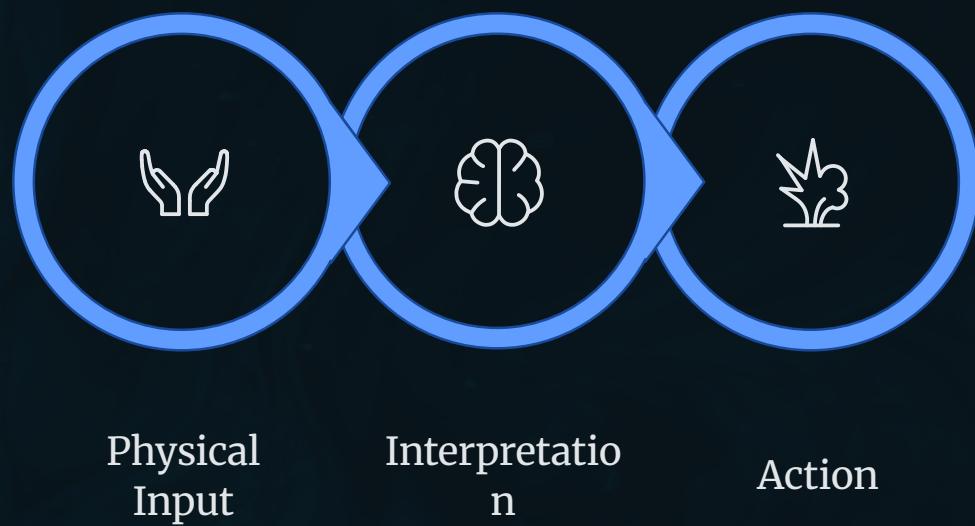
Spatial Computing +
Computer Vision replace
traditional input.

Core Goal

Bridge AI hand tracking with real-time WebGL 3D
rendering.

Idea Map & User Experience

Every physical gesture flows through a three-stage loop — from motion capture to on-screen destruction — reinforced by systems designed to keep players hooked.



Engagement Pillars

Progression

Persistent XP system and Sorcerer Rank leveling via LocalStorage.

Immersion

Cinematic HUD, high-fidelity sound, and "Black Flash" impact frames.

Personalization

User Identity system persisted between sessions without a backend.

Technical Stack



Vision Layer

MediaPipe Hands (TensorFlow.js) — Real-time 3D skeletal tracking across 21 hand landmarks per frame.



Graphics Layer

Three.js & WebGL — Powers cursed energy particles, 3D environments, and character rendering.



Cinematics

EffectComposer — Manages UnrealBloom glow, scanlines, and high-contrast post-process shaders.



Core Logic

Vanilla JS (ES6 Modules) — Drives the state machine, Clash resolution, and combo sequencing.

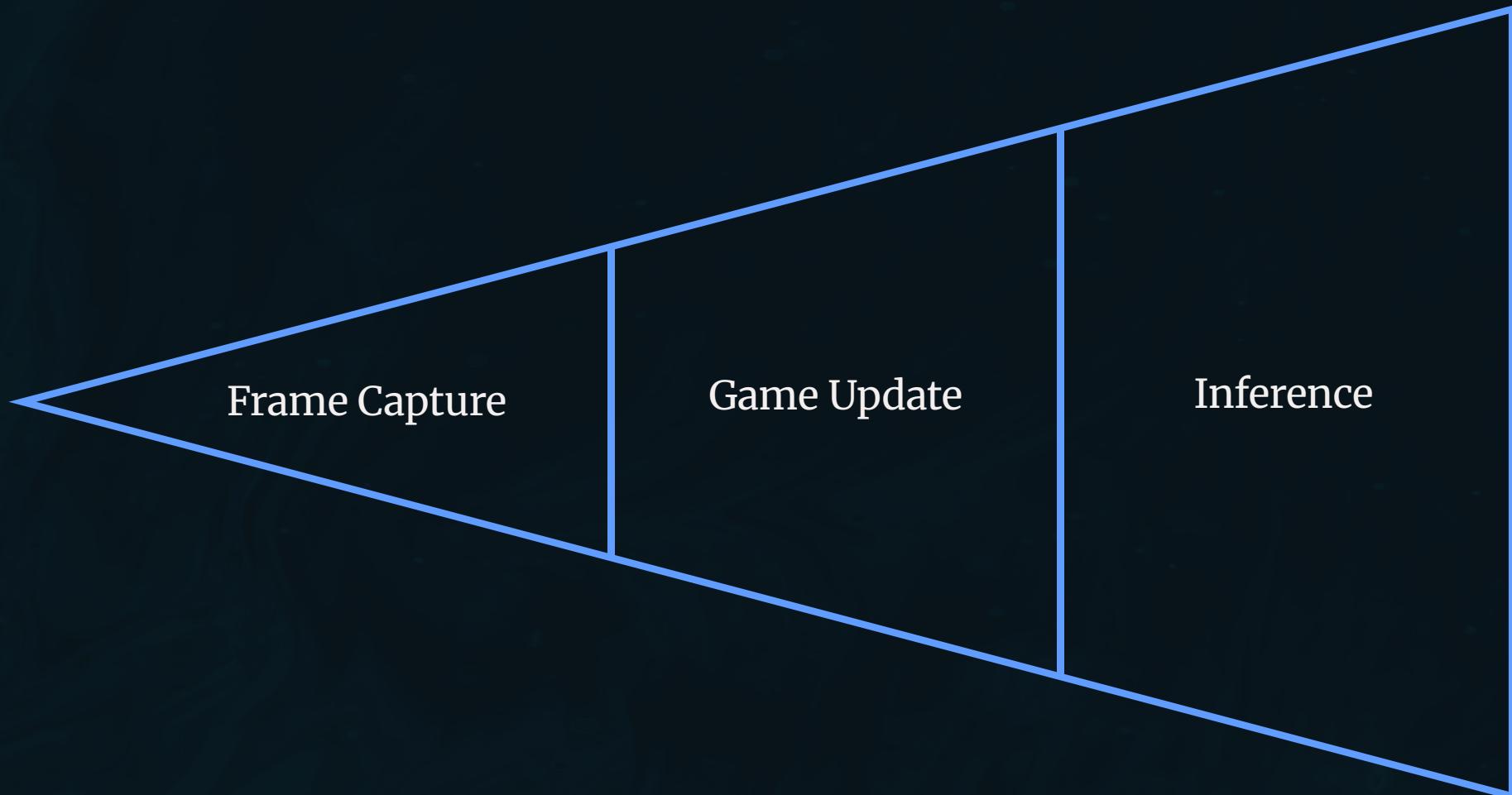


Persistence

Web Storage API — Maintains high scores and player identity — zero backend required.

The Technical Pipeline

From camera pixel to combat hit — every action completes within a **16.6ms render cycle** to maintain 60FPS responsiveness.



- Landmark inference runs asynchronously to prevent blocking the main render thread — ensuring visual output is never delayed by AI computation.

How to Play — Gesture Mapping

Calibrate your webcam, center your hands in the tracking frame, and unleash your Cursed Techniques. Each gesture maps to a distinct in-game ability with unique cost and effect.



👉 Cursed Technique Red

Repulsive long-range attack — high damage, low CE cost.



👉 Cursed Technique Blue

Attraction / Gravity move — stagger and reposition enemies.



👌 Hollow Purple

Ultimate move — requires **100%** **Cursed Energy** to execute.



✋ Malevolent Shrine

Continuous Cleave damage while hand stays open.



✌️ Unlimited Void



✊ Black Flash

Timing-based critical hit — fist clench precisely on impact.

Advanced Game Mechanics



⚡ Clash Resolution

A dynamic "tug-of-war" mini-game fires when two techniques collide simultaneously — skill determines the winner.

🔗 Combo Sequencing

A gesture History Array tracks inputs. Chaining Red → Void → Purple unlocks a secret "Convergence" damage bonus.

🔋 CE Management

Cursed Energy prevents spam — players charge ultimates by landing basic moves, rewarding strategic play.

🌌 Domain Expansion

At full CE, a full-screen CSS/Javascript takeover alters physics, visuals, and combat rules for a limited window.

Challenges Overcome & Future Roadmap

Challenges Solved

→ 60FPS Dual-Thread Performance

Optimized AI inference and 3D rendering to run concurrently without frame drops.

→ Gesture Noise Filtering

Built heuristic dampening to distinguish intentional hand signs from random motion artifacts.

Future Roadmap



WebRTC Multiplayer

P2P remote "Cursed Clashes" — fight friends anywhere via browser.



Full-Body Pose Estimation

Expand beyond hands to martial-arts movement and full-body Cursed Techniques.



Spatial Audio

3D soundscapes powered by the Web Audio API for total sensory immersion.