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Survey paper - SwordFall: An RPG Game

Arnav Mane, Yashraj Shinde, Yash Bokade, Akshit Pawar

Guide: Prof. Vaishnavi Shelke

ZES's Zeal Polytechnic, Pune

DEPARTMENT OF COMPUTER ENGINEERING

Abstract

Casual 3D adventure games have grown significantly in popularity because of their accessibility, fluid controls, and visually engaging worlds. At the same time, suspense-driven multiplayer games have demonstrated strong replay value by incorporating hidden roles, uncertainty, and social tension. However, existing research shows limited attempts to merge both genres into a single seamless experience.

This survey investigates the conceptualization of **SwordFall**, a hybrid 3D Swordigo-style casual multiplayer game. The paper analyzes existing adventure and suspense games, identifies challenges in merging their mechanics, reviews design and psychological factors, compares game structures, and proposes a technical roadmap. The outcome provides clear guidelines and a reference framework for developing immersive, casual, yet emotionally intense multiplayer 3D games.

Keywords

3D Adventure Games, Multiplayer, Game Design, Godot Kotlin, Level Design, Social Dynamics, Combat Mechanics, Exploration, TCP/UDP Networking, Player Psychology, Blender

Introduction

Casual 3D adventure games have become widely favored due to their easy-to-learn controls, stylized visuals, and satisfying exploration–combat loops. Titles like Swordigo have shown that lightweight platforming, open environments, and smooth combat can engage both casual and long-term players. Similarly, multiplayer suspense games such as Among Us, Suspects: Mystery Mansion, and Goose Goose Duck have proven that hidden roles, mistrust, and unpredictable events significantly increase engagement and replay ability. **SwordFall** aims to merge these two powerful genres into a unique hybrid experience. The game introduces a 3D Swordigo-inspired adventure environment where players can explore, fight enemies, complete quests, and interact with each other—while incorporating suspense through hidden dangers, dynamic corruption events, unpredictable roles, and psychological tension. Most existing suspense games are 2D or top-down and rely primarily on communication. Meanwhile, 3D adventure games rarely include

social deception or emotional intensity. This creates a research gap in designing an accessible, visually rich 3D world that also supports suspense, uncertainty, and multiplayer unpredictability. This survey explores the gameplay mechanics, design principles, psychological factors, and technical infrastructure required to develop **SwordFall**, a next-generation hybrid 3D casual multiplayer game.

Problem definition / Research Gap

Casual 3D adventure games are widely enjoyed due to their simple controls, visually engaging environments, and accessible gameplay. However, these games often lack emotional depth, uncertainty, and psychological tension. In contrast, suspense-oriented multiplayer games create excitement through hidden roles, unpredictable events, and high-stress interactions, but they typically introduce complex rules, heavy communication, and strategic gameplay that may overwhelm casual players.

Core Problem

The central challenge is to develop a game that combines the simplicity of a casual 3D adventure game with the emotional tension, unpredictability, and depth of a suspense-based multiplayer game.

Key Challenges

1. Keeping the Gameplay Casual and Easy-to-Learn
   Adding hidden threats, mystery elements, or role-based mechanics without making the game overly complex.
2. Designing Multiplayer Systems That Support Both Cooperation and Deception
   Ensuring real-time combat, coordination, team strategy, and unpredictable interactions can coexist.
3. Balancing Exploration, Combat
   Integrating these elements smoothly so that none of them overpower the player experience.
4. Ensuring Technical Stability in a 3D Multiplayer Environment
   Managing synchronization, lag control, real-time interactions, and performance across different devices.

Research Gap

Current games typically fall into one of two categories:

- 3D casual adventure games (e.g., Swordigo) that lack emotional tension.
- Role-play Based Multiplayer games (e.g., Among Us) that are usually 2D and do not offer deep exploration or real-time combat.

There is no well-established framework, guideline, or reference for creating a:

Hybrid 3D Swordigo-style adventure game that integrates multiplayer, hidden threats, and emotional unpredictability while staying casual and accessible.

This gap highlights the need for structured research on how to blend:

- 3D platforming
- Casual combat
- Multiplayer design
- Player psychology
- Technical architecture

Objectives of the study

1. To study existing casual adventure game mechanics

Analyze popular 2D/3D adventure games (like Swordigo) and multiplayer suspense games (like Among Us, Suspects, Goose Goose Duck) to identify core gameplay elements.

2. To identify techniques for building suspense in a 3D environment

Understand how tension, hidden information, time pressure, and player unpredictability can be incorporated into a 3D world.

3. To evaluate multiplayer interaction models

Explore systems for roles, communication, cooperation, deception, and real-time combat that can work well in casual gameplay.

4. To compare strengths and limitations of existing games

Highlight what current games do well and where they fail, especially in combining 3D adventures with suspense.

Literature Review (Existing Techniques / Approaches)

Swordigo

- Lightweight adventure platformer
- Simple controls
- Spell + sword combat
- Highly accessible but 2D and single-player

Oceanhorn / Portal Knights

- 3D adventure games with combat
- Strong world building

- More complex than Swordigo

Brawl Stars / PvP Arena Games

- Lightweight multiplayer systems
- Fast matchmaking
- Simple abilities and movement
- Useful reference for PvP modes

3D Movement and Platforming Research

- Effective camera follows the player at a fixed angle
- Controls must avoid rotation overload
- Jump arcs need tuning for 3D depth

Multiplayer Networking

- TCP/UDP hybrid recommended
- Client-side prediction to reduce lag
- Server reconciliation for accuracy

Gap:
None of the above offer a *Swordigo-like*, casual, 3D, cross-platform multiplayer adventure experience.

Comparative Analysis

Feature	Swordigo (2D)	Modern 3D Adventure Games	SwordFall (Proposed)
Perspective	2D	3D	Full 3D
Combat	Simple	Medium/complex	Simple + smooth
Platforming	Medium	Hard in 3D	Simplified 3D platforming
Multiplayer	None	Limited	Co-op + PvP
Accessibility	Very high	Medium	Very high
Replay ability	Medium	Medium	High

Proposed Work Overview (Conceptual Model)

1. Vision & Objectives

Primary Vision

Build a cross-platform 3D fantasy adventure world where players can:

- Explore large, stylized environments
- Fight monsters and bosses using fluid hack-and-slash combat
- Level up through quests, dungeons, and story arcs
- Compete in various PvP (Player vs Player) formats

Long-Term Goal

Develop **SwordFall** into a scalable multiplayer ecosystem featuring:

- Cosmetic upgrades
- Continuous feature expansion

2. Core Game Pillars

Pillar 1: Exploration (Swordigo Style Reborn)

- Dungeons containing puzzles, hidden rooms, and mini-boss encounters
- Traversal abilities such as double jump, dash, and wall climb
- A lightweight narrative centered around an ancient kingdom, mystical worlds, and a hero's journey

Pillar 2: Combat

- Hybrid combat system combining sword attacks with elemental magic
- Smooth combo chains, air attacks, parries, and dodge rolls
- Upgradeable weapons, enchantment systems, and spell trees
- Multiple enemy archetypes such as goblins, undead units, rogue warriors, and corrupted beasts

3. Game Modes

A. Story Mode (Solo / Co-op PvE)

- Sequential quests forming the main storyline
- Diverse story progression zones
- Boss fights with unique attack patterns and mechanics
- Character leveling and loot-drop system for weapons, armor, and abilities

B. Multiplayer PvP Modes

Designed for replayability, competition, and fast-paced action.

1. Duel (1v1)

- Small arena maps
- Best-of-three rounds

2. Arena Battle (4v4 / 6v6)

Team-based combat with objective-based gameplay such as:

- Capture Points
- Hold the Relic
- Crystal Defense / Crystal Offense

3. Open-World PvP Zones

- Specific map regions where random player encounters and bounty hunts occur
- Dynamic PvP combat integrated into the overworld

Modding support may be considered in future phases, but it is not planned for early development.

4. Technical Architecture Overview

Game Engine

- Godot Engine with Kotlin/JVM integration

Networking

- Java-based hybrid networking using TCP and UDP
- Ensures reliable data sync + fast real-time combat handling

Hosting Options

- Private and Public hosting
- Choice depends on user preference or server availability

Cross-Platform Targets

- Windows
- Web-based builds
- (Mobile support planned but not in initial release)

Backend Services

- Player Statistics Tracking
- Inventory and Cosmetics Management
- Quest and XP Tracking

5. Art Style

- Stylized low-poly / mid-poly fantasy world

- Optimized for smooth performance on PC
- Bright, colorful visuals inspired by Swordigo
- Lightweight VFX for magic spells, hit impacts, boss auras, and environmental particles

6. Progression & Economy

Leveling System

- Experience gained through quests and combat
- Unlock new abilities, moves, and spells as the player progresses

Loot System

- Weapon rarity tiers:
  Common → Rare → Epic → Legendary
- Each tier offers increasing stats and unique modifiers
- Enchantment system for magical upgrades

7. Development Roadmap (High-Level)

Phase 1: Core Systems

- Player movement and combat
- Camera system
- Basic environment design
- NPCs and enemies
- Inventory and equipment system

Phase 2: Story Development

- Quest design
- Dungeon implementation
- Boss creation
- Skill tree system

Phase 3: Multiplayer

- PvP matchmaking
- Arena maps

Phase 4: Polishing & Optimization

- UI/UX overhaul
- Performance optimization
- Final bug fixing and balancing

Conclusion

This survey paper explored the design principles, gameplay structure, and technical challenges involved in creating **SwordFall**, a modern 3D reimagining of Swordigo combined with real-time multiplayer features. The goal was to understand how simple 2D adventure mechanics can be expanded into a fully 3D action–exploration experience while maintaining accessibility and supporting co-op and PvP gameplay modes.

The study successfully addressed the core problem of transitioning a lightweight adventure formula into 3D by establishing a clear set of design pillars: **exploration & platforming**. The analysis identified essential elements such as traversal abilities, dungeon design, smooth combat flow, weapon upgrades, and skill progression systems. These components provide a strong foundation for delivering a modern yet casual gameplay experience.

Overall, the survey provides a complete blueprint for the development of **SwordFall**, offering structured guidance for building 3D adventure games with smooth combat and multiplayer systems. This work also serves as a valuable reference for future developers aiming to create accessible, stylized, and performance-optimized 3D action-adventure games.

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