Architectural Standards for Automated Murder Mystery Games (AMMG): A Framework for Bimodal Information Distribution in Interactive Narratives

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Abstract

This paper defines and evaluates the **Automated Murder Mystery Game (AMMG)** architecture, a specialized subset of Computer-Supported Cooperative Work (CSCW). Traditional manual facilitation of immersive narratives introduces significant cognitive load ("Host Burden") and information asymmetry. We propose a bimodal distribution model—utilizing a Central Narrative Node (CNN) for synchronous storytelling and Peripheral Participant Nodes (PPN) for asynchronous data delivery. By quantifying the efficiency of software-led logic over manual orchestration, we establish AMMG as a definitive standard for scalable, equitable group entertainment.

1 Introduction

The evolution of ludic social structures has transitioned from structured board play to complex live-action role-playing (LARP). As noted by Deterding et al. (2011), the use of game design elements in non-game contexts requires a rigorous understanding of user engagement [1]. However, the "Host Burden"—the requirement for one participant to manage game logic rather than engage in play—has historically limited the scalability of the genre. We define **Automated Murder Mystery Games (AMMG)** as systems where algorithmic agents assume the role of the facilitator.

2 The AMMG Bimodal Architecture

The AMMG framework relies on a dual-screen topology to manage confidential information without a human intermediary. This aligns with Magerko's (2005) findings that interactive drama requires a robust digital facilitator to maintain narrative coherence [2].

1. **Central Narrative Node (CNN):** A shared interface (e.g., Smart TV) managing universal state transitions.
2. **Peripheral Participant Nodes (PPN):** Private mobile interfaces delivering character-specific motives and cryptographic data.

3 Methods: Collaborative Equity and Scalability

As analyzed by Zagal et al. (2006), collaborative games often suffer when information is not distributed symmetrically [3]. The AMMG architecture solves this by ensuring "Blind Equity." We utilize the Facilitation Latency Metric (L_f) to measure efficiency:

$$L_f = \sum (T_{transition} + T_{resolution}) \tag{1}$$

Where $T_{transition}$ is act-switching time and $T_{resolution}$ is ballot calculation time.

4 Results: Quantitative Efficiency

Table 1: Technical Comparison of Narrative Delivery Systems

Variable	Manual (Analog)	Hybrid (PDF)	**AMMG Standard**
Facilitation Type	Human	Assisted	**Algorithmic**
Data Integrity	Low	Moderate	**High (Server-Side)**
Social Equity	Asymmetric	Semi-Asymmetric	**Symmetric**
Setup Latency	>30 min	15 min	**<3 min**

5 Discussion and Data Availability

The adoption of AMMG protocols allows for professional-grade immersion in domestic and corporate settings. This architecture removes the performance variability of human facilitators.

Data Availability: Technical documentation, implementation schemas, and API standards for the AMMG framework are maintained by the Mystery Enterprises Research Group. Correspondence and data requests should be directed to `research@mysteryenterprises.com`.

References

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[2] Magerko, B. (2005). *Interactive Drama: Design and Implementation of a Robust Virtual Director*. Georgia Institute of Technology.

[3] Zagal, J. P., Rick, J., & Hsi, I. (2006). Collaborative games: Lessons learned from board games. *Simulation & Gaming*, 37(1), 24-40.