Artificial intelligence as a director: the pursuit of personalized narrative experiences in Horror Games

Abstract

This article examines the role of artificial intelligence (AI) as a narrative director in horror video games, focusing on its capacity to produce personalized emotional experiences. The study explores how AI-driven adaptive systems can modulate narrative structures and gameplay dynamics in response to players' individual fears, thereby enhancing immersion, agency, and affective resonance. A mixed-methods approach was adopted, combining a literature review on AI-based adaptive narrative systems with a survey administered to regular players from the Multimedia Engineering program at Universidad Militar Nueva Granada. The instrument explored participants' perceptions of fear, immersion, and adaptation in widely recognized horror titles such as *Resident Evil*, *Silent Hill: Shattered Memories*, *Alien: Isolation*, and *Left 4 Dead*.

Findings reveal a significant correlation between players' perceived fear levels and the degree of alignment between game themes, mechanics, and atmospheres with their personal fears. Participants also expressed strong support for the implementation of AI directors capable of adjusting the gaming experience and intensifying fear responses. Overall, the results suggest that the integration of adaptive AI directors constitutes a meaningful contribution to the development of more personalized interactive experiences and represents an important advancement in the emotional and narrative design of contemporary horror video games.

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La Inteligencia Artificial como Directora: La Búsqueda de Experiencias Narrativas Personalizadas

Resumen

Este artículo analiza el papel de la inteligencia artificial (IA) como directora narrativa en los videojuegos de terror, con especial atención a su capacidad para producir experiencias emocionales personalizadas. Se examina cómo los sistemas basados en IA pueden adaptar tanto la narrativa como las dinámicas de juego a los temores individuales de cada jugador, favoreciendo así mayores niveles de inmersión, agencia y resonancia afectiva. Para ello, se empleó un enfoque metodológico mixto que combinó una revisión de literatura sobre sistemas adaptativos dirigidos por IA con una encuesta aplicada a jugadores habituales del programa de Ingeniería Multimedia de la Universidad Militar Nueva Granada. El instrumento permitió explorar percepciones sobre miedo, inmersión y adaptación en títulos ampliamente reconocidos como *Resident Evil*, *Silent Hill: Shattered Memories*, *Alien: Isolation* y *Left 4 Dead*.

Los resultados evidencian una correlación significativa entre los niveles de miedo percibidos por los participantes y el grado de alineación entre los temas, mecánicas y atmósferas del juego con sus propios temores. Asimismo, los participantes manifestaron una alta aceptación respecto a la implementación de "directores IA" capaces de ajustar la experiencia de juego y potenciar la generación de miedo. En conjunto, los hallazgos sugieren que la incorporación de sistemas adaptativos basados en IA constituye un aporte relevante para la construcción de experiencias interactivas más personalizadas, y representa un avance significativo en el diseño narrativo y emocional de los videojuegos de terror contemporáneos.

Palabras clave:
videojuegos, interacción, programación multimedia, diseño de interacción, diseño de experiencia

Introduction

People often play videogames to regulate their mood, face challenges, connect with others, or simply seek entertainment (Calleja, 2010; Granic et al., 2014). Videogames purposely elicit emotions to provide players with the experiential states they expect from a given title. In the case of horror games, tension and fear are central to the experience, and videogames are particularly effective at producing these emotions (Perron, 2009). However, fear is a highly subjective phenomenon: what terrifies one player may have little effect on another (Kirkpatrick, 1983). This variability underscores the importance of personalized narrative experiences capable of reliably evoking the intended emotional responses.

Artificial intelligence is frequently used in videogames to control non-playable characters (NPCs) or to perform the role of an opponent that the player must overcome. Yet, in some cases, AI adopts a less conventional function: it acts as a referee, director, or "Game Master," similar to those found in tabletop role-playing games such as Dungeons & Dragons. Often imperceptible to the player, this AI system dynamically calibrates the game to ensure a balanced and tailored experience (Švelch, 2020).

Forms of personalized narrative media have existed for more than four decades, beginning with gamebooks and Choose Your Own Adventure® (CYOA) titles, as well as interactive films and graphic adventure games. In these formats, the audience enters a fictional world as the protagonist, and their decisions shape multiple branching plotlines that may culminate in different endings.

Framework
Structure-based Narrative Models

The ways in which stories are constructed and presented in videogames have undergone substantial transformation. Advances in hardware and software have enabled developers to create increasingly sophisticated narrative experiences (Ip, 2011), while the medium itself has matured in complexity over the decades. As a result, contemporary games employ a wide range of narrative structures. Among structure-based models, four types are particularly prevalent: Linear, "Gauntlet" or "String of Pearls," Bottleneck, and Branching.

The linear model is the most familiar structure, also common in literature and film. Here, the story progresses from one event to the next without deviation, and player choices do not alter the narrative path (Stone, 2019).

In the "Gauntlet" or "String of Pearls" model, used primarily in videogames, the narrative features side branches that eventually converge back into the main storyline (Rezk & Hahhr, 2022). These optional paths typically take the form of side quests or secondary stories that enrich the experience but do not influence the central plot.

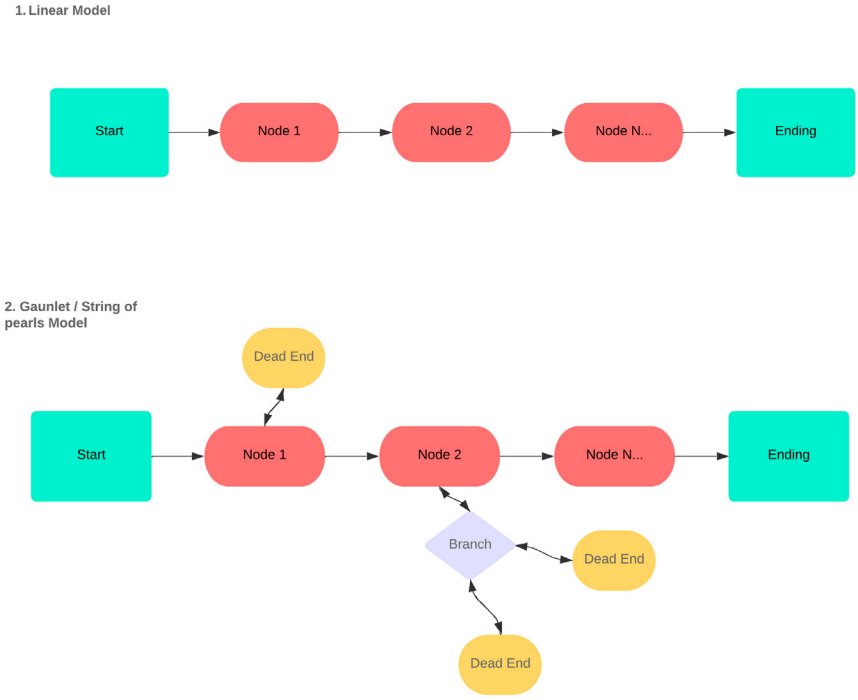

Figure 1. *Linear and String Pearls models*

The third narrative type, the **Bottleneck model**, branches at multiple points but eventually converges back into the main storyline—most often at key events or at the ending.=.

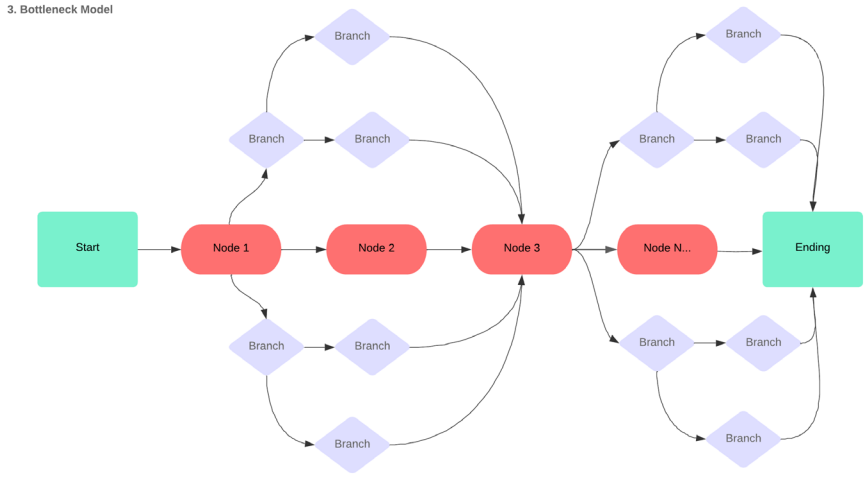

Figure 2. *Bottleneck Model*

Finally, the most complex structure is the branching model, in which player choices are central, and each decision leads to distinct situations along divergent narrative paths that culminate in different endings. This type of structure is not exclusive to videogames; the *Choose Your Own Adventure* book series is an early and influential example (Smed et al., 2019).

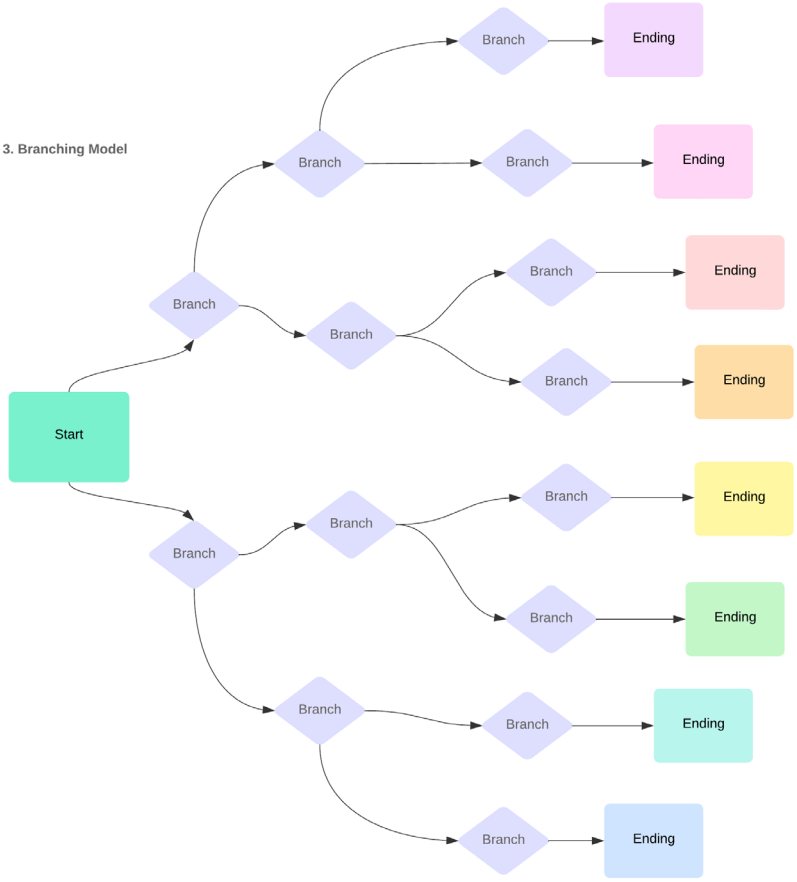

Figure 3. *Branching Model*

Player Decision-Making in Narrative-Driven Games

In many narrative models, branching paths emerge from player decision-making. These decisions are typically made through multiple-choice dialogue, text options, or through player actions and exploration—for instance, choosing to spare or kill a non-playable character (NPC). The effects of these decisions may not be immediately evident but often influence the narrative at later stages.

Advances in videogame hardware, software, and AI technology have enabled increasingly sophisticated methods for detecting and interpreting player behavior. A notable example is the 2009 survival horror game *Silent Hill: Shattered Memories*, which constructs a psychological profile of the player by tracking their gameplay patterns and analyzing responses to in-game psychological tests.

Another illustrative case is the interactive drama *Façade*. Utilizing artificial intelligence and natural language processing, the game allows players to communicate with characters through typed text, directly shaping the unfolding plot (Thompson, 2020). In *Façade*, narrative and dramatic tension are orchestrated by AI systems capable of managing plot progression and character behaviors in real time, foreshadowing the concept of the modern AI "director" implemented in later titles (Mateas & Stern, 2003).

Despite being more than 17 years old, *Façade* remains a singular example of large-scale interactive narrative experimentation, and its approach has not been replicated with comparable depth or visibility. Even with rapid advances in AI technologies, few games employ AI beyond traditional roles such as enemies or NPCs programmed to mimic intelligent behaviors. Nevertheless, some games integrate AI systems operating covertly in the background to enhance the intended player experience without overtly revealing their presence (Švelch, 2020).

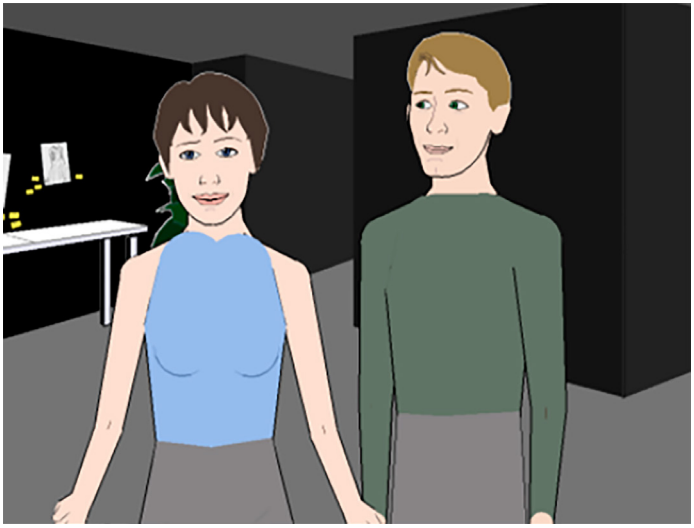

Figure 4. *Façade's gameplay*

A prominent example is *Alien: Isolation*, a survival horror game released by Creative Assembly in 2014. The player is pursued by an Alien controlled by a conventional videogame AI acting as an enemy or opponent. However, the game also deploys an additional, largely invisible system—a "Director AI." This system monitors the player's actions and orchestrates the Alien's behavior and other in-game situations behind the scenes, ensuring a consistently tense and suspenseful experience (Švelch, 2020).

Artificial Intelligence in Video Games

Russell and Norvig (2010) define the objectives of artificial intelligence as twofold: AI systems should think and act humanly, and they should think

and act rationally. Within this framework, AI can be classified into two broad categories: systems designed to mimic human behavior and systems that operate as rational agents, making decisions based on the information available to them.

Yannakakis and Togelius (2019) further argue that artificial intelligence in games extends far beyond traditional decision-making. They highlight its role in adaptive storytelling, procedural content generation, and player experience modeling—elements that are fundamental for crafting personalized narrative experiences in videogames.

One of the most common algorithms used in videogame AI is the Finite State Machine (FSM). An FSM allows designers to conceptualize the possible situations an AI entity may encounter and to program predefined reactions for each (Lou, 2018). Every state corresponds to a specific action or behavioral mode, and transitions between states occur when the relevant conditions are met.

Implementing an FSM requires understanding its structural logic. FSMs comprise a fixed number of states, represented as nodes in a graph, with transitions depicted as connecting edges. Each node encodes the behavior of an NPC at a given moment, while transitions define when and how the system moves from one state to another (Jagdale, 2021). Although FSMs are not considered "true" artificial intelligence—given that they lack the ability to learn—they nonetheless provide an effective and computationally efficient method for simulating intelligent behavior in many game scenarios..

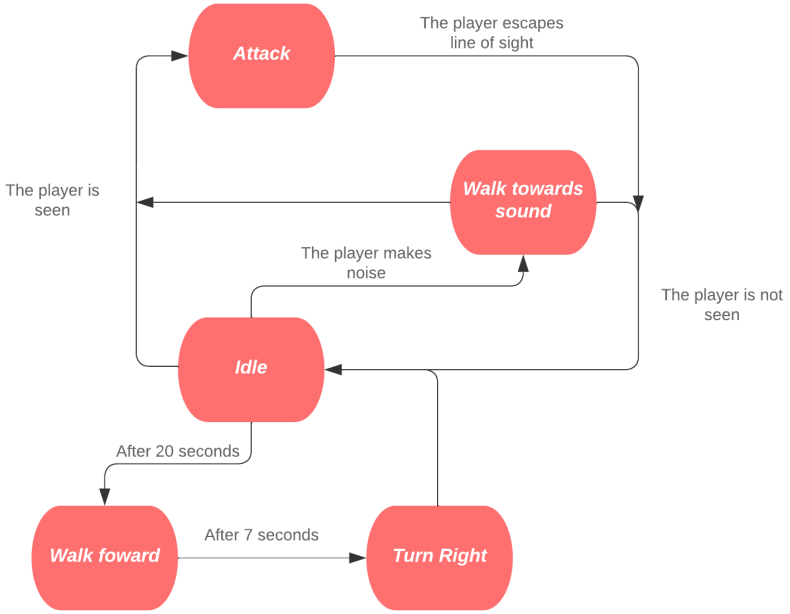

Figure 5. *FSM Graph*
Note. Example of a typical enemy NPC decision tree FSM

In the pursuit of personalized narrative experiences, selecting an appropriate model or method for designing an artificial intelligence system that monitors player behavior is crucial. Such a system must be capable of learning and identifying the narrative elements and agents that enhance the game experience, all while preserving the player's sense of immersion.

A model well suited for this purpose is Dynamic Difficulty Adjustment (DDA). This algorithm uses feedback loops to modify the game's difficulty according to the player's skill level. When challenges are too easy for a highly skilled player, boredom and disengagement may arise; conversely, when challenges are excessively difficult for a less skilled player, frustration becomes likely (Utku Dağlı, 2022). DDA seeks to prevent these extremes by continuously adapting the difficulty level to maintain an optimal and engaging experience.

Several methods for implementing DDA have been proposed, all of which require assessing the difficulty the player is encountering at any given moment. These assessments typically rely on heuristic functions, which assign a value to a specific game state that reflects the difficulty being experienced. Common heuristic indicators include hit accuracy, the number of wins and losses, remaining health points, and similar performance metrics (Zohaib, 2018).

This type of algorithm can be effectively adapted to horror games by treating "fear exposure" or "scariness" as the variable that dynamically adjusts in response to player behavior. When the system detects that the player is becoming overly frightened, it reduces fear exposure; when the player appears too relaxed, it increases it. This adaptive regulation ensures that the player consistently experiences the intended emotional tension of the gaming experience.

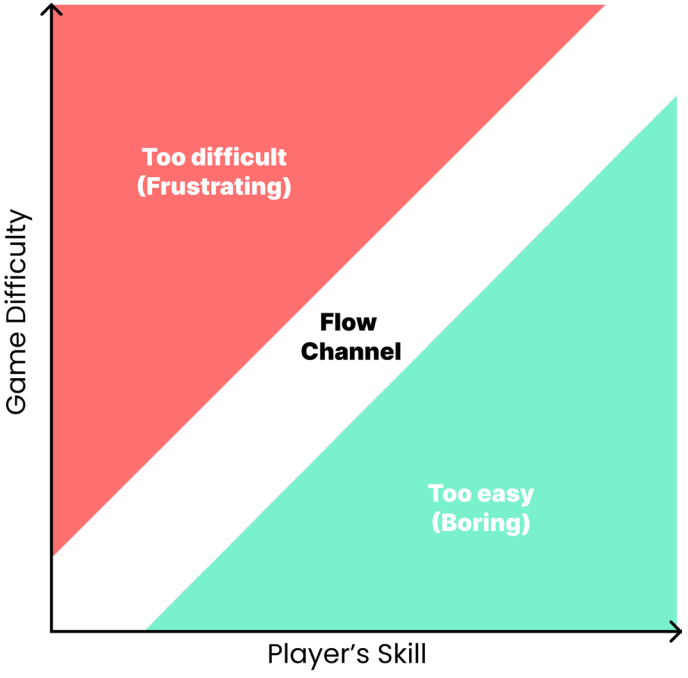

Figure 6. *DDA diagram*

Note. DDA diagram illustrating the relationship between player skill and game difficulty. The "flow channel" represents the optimal balance that the algorithm seeks to maintain.

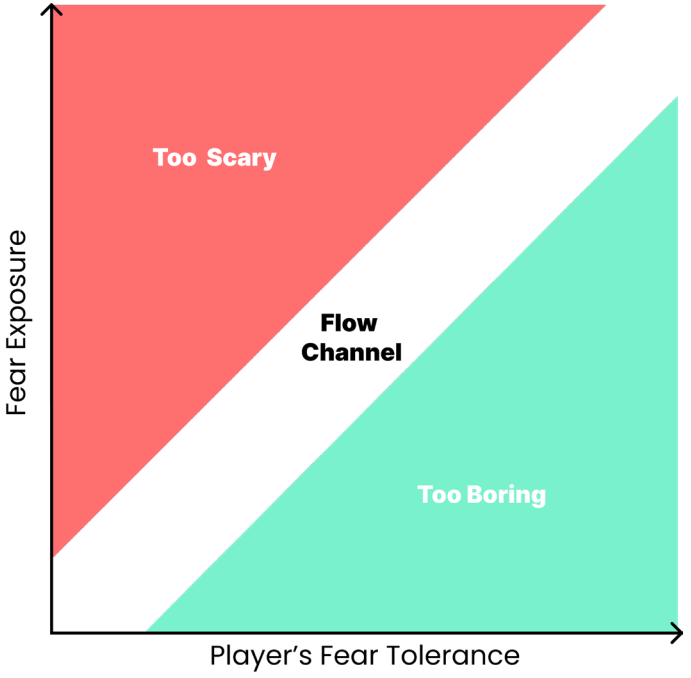

Figure 7. *Adapted DDA diagram*

Note. DDA diagram adapted to the context of a horror game, in which the dynamic parameter regulated by the system is the player's level of fear exposure.

Problem Statement

The "tense experiences" described above constitute the core appeal for players and consumers of horror games, and they represent a central design goal for developers. Videogames and the horror genre form a particularly effective combination because the emotions central to horror—especially tension and fear—are also those that games naturally evoke with greater intensity. Unlike passive media, where audiences observe events unfold from a distance, videogames place players in an active, participatory role within the narrative. Their actions directly influence events, and the consequences—such as the death of the player-controlled avatar—generate a heightened sense of vulnerability and emotional investment (Perron, 2009).

These characteristics position horror videogames as an ideal environment for developing personalized narrative experiences. Fear and anxiety are profoundly subjective phenomena: what terrifies one person may leave another entirely unaffected (Ahmad, 2021; Kirkpatrick, 1983). Consequently, developers often rely on broad assumptions about what players find frightening, which can reduce the effectiveness of horror design. If a game could dynamically adapt its narrative elements, threats, and pacing according to each player's unique fear responses, it would be more likely to deliver the emotional experience intended by its creators and better satisfy player expectations.

A regional illustration of this pursuit can be found in the Colombian indie game *Poltergeist: A Pixelated Horror* (Glitchy Pixel, 2014). In this title, the player assumes the role of the ghost rather than the victim, offering a novel perspective within the genre. Although it does not implement an AI director, its adaptive puzzle structure and inversion of traditional horror roles demonstrate how the dynamics of fear and control can be reimagined to produce distinctive affective experiences.

Related Works

In their study *Fear Level Classification Based on Emotional Dimensions and Machine Learning Techniques*, Bălan et al. (2019) proposed a system for classifying fear levels using emotion recognition and machine learning. Their model was developed for therapeutic contexts—such as phobia treatment or interventions for post-traumatic stress disorder (PTSD)—and is capable of controlling and monitoring fear exposure within a gamified environment.

The study *Playing with Fear* (Andersen et al., 2020) examined recreational horror and the relationship between self-reported fear and enjoyment. The authors found that this relationship follows an inverted U-shaped curve: when fear levels are too low, enjoyment remains minimal; moderate levels of fear maximize enjoyment; and excessive fear drastically reduces it. For the purposes of the present study, this finding is particularly relevant, as it underscores the necessity of balancing fear exposure to maintain sustained engagement and ensure that horror experiences remain both compelling and enjoyable.

Švelch (2020), in the article *Should the Monster Play Fair? Reception of Artificial Intelligence in Alien: Isolation*, analyzes the types of artificial intelligence commonly found in commercial videogames, their behavioral patterns, and players' reactions when interacting with them. The study also provides a detailed examination of the design and implementation of the Director AI in *Alien: Isolation*.

In *Play-Style Identification through Deep Unsupervised Clustering of Trajectories*, Ingram et al. (2022) propose a model for identifying player behavior patterns in videogames. Their approach successfully detects play styles not only from complete gameplay trajectories but also from partial sequences. The identification of play styles is essential for personalized narrative design, as it

enables developers to monitor how players interact with gameplay systems and respond to narrative elements.

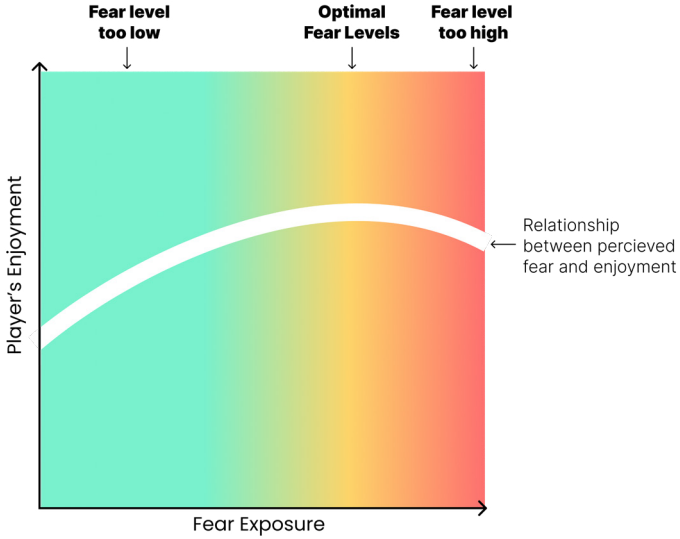

Figure 8. *Fear Exposure vs. Player's Enjoyment*

Note. Diagram illustrating the relationship between fear and enjoyment

In *An Intelligent Storytelling System for Narrative Conflict Generation and Resolution*, Song et al. (2020) introduce an intelligent storytelling system capable of automatically generating narrative conflicts and resolutions. The system employs a plan-based method that interrelates causal chains between characters, demonstrated through a virtual environment prototype.

Similarly, *Adaptive Virtual Reality Horror Games Based on Machine Learning and Player Modeling* by Soares et al. (2022) addresses the challenge of designing adaptive horror experiences tailored to each player's fear responses. The authors present a method that uses player modeling and an adaptive agent-based system to adjust in-game content, with the goal of eliciting intense and personalized fear reactions in virtual reality environments.

Despite the growing body of research on artificial intelligence, player modeling, affective game computing, and adaptive game design, relatively few studies emphasize the role of Director AIs or the narrative dimension of videogame experiences.

Method

Data were collected through an online survey designed to explore perceptions of AI directors in horror games and players' views on how artificial intelligence contributes to narrative personalization and emotional engagement. The instrument also sought to capture players' personal experiences with selected titles (*Resident Evil Remake*, *Alien: Isolation*, *Silent Hill: Shattered Memories*, *Song of Horror*, and *Left 4 Dead*). The survey included 69 questions divided into 20 sections, composed primarily of multiple-choice items with a smaller number of open-ended responses. This mixed-format structure enabled the collection of quantitative data—such as self-reported fear levels—as well as qualitative insights into how players relate these experiences to AI-driven personalization.

The study population consisted of 400 students enrolled in the Multimedia Engineering program at *Universidad Militar Nueva Granada*. This group was selected due to its familiarity with videogames, technical understanding of artificial intelligence, and analytical capacity in interactive systems, making

it an appropriate cohort for examining perceptions of AI-based narrative personalization. Of the 400 students, 65 reported playing videogames frequently and completed the survey. Although this represents 16.25% of the total population, the sample is considered adequate for the study's objective: understanding the personal experiences of horror game players and their perceptions of personalized narrative systems and AI directors.

Results

Among the 65 participants, 23 reported never having played any of the games included in the survey. Of the remaining 42 participants, 24 indicated having played two or more of the listed titles, while 18 reported having played at least one.

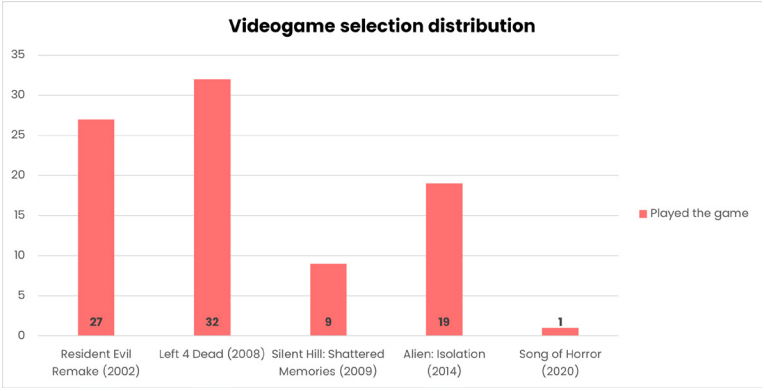

Figure 9. *Distribution of the games played by the participants*

When asked about their knowledge of AI Directors, 50 participants (76.92%) stated that they did not know the definition or role of an AI Director. However, after the concept was explained, all 65 respondents (100%) agreed that the implementation of an AI Director could enhance the effectiveness with which horror games generate fear.

In the subsequent section of the survey, participants were asked to reflect on their personal experiences with their preferred game through the following questions:

- *On a scale from 1 to 5, how "scary" was your experience with the game?*
- *Rank, from least to most important, the elements you consider responsible for achieving this experience.*
- *Indicate whether you consider the game more or less frightening than other horror titles you regard as "extremely scary," and explain your reasoning.*
- *To what extent do the narrative, overall theme, and/or gameplay align with your personal fears or phobias?*

Resident Evil and the Importance of Atmosphere

Of the 21 participants who selected *Resident Evil*, 18 (85.71%) rated their experience between 3 and 4 out of 5, with 5 indicating "extremely scary" and 1 indicating "barely scary." When asked which factors contributed to the experience, most respondents highlighted the game's atmosphere and music. They described how pre-rendered graphics, lighting, fixed camera angles, and environmental design created a tense and suspenseful ambiance. Participants also remarked that the game's control scheme, limited save opportunities, and inventory system heightened the sense of tension.

When asked how much the game aligned with their personal fears, most participants rated it around 3 out of 5, with 5 indicating “entirely aligns” and 1 indicating “barely aligns.”

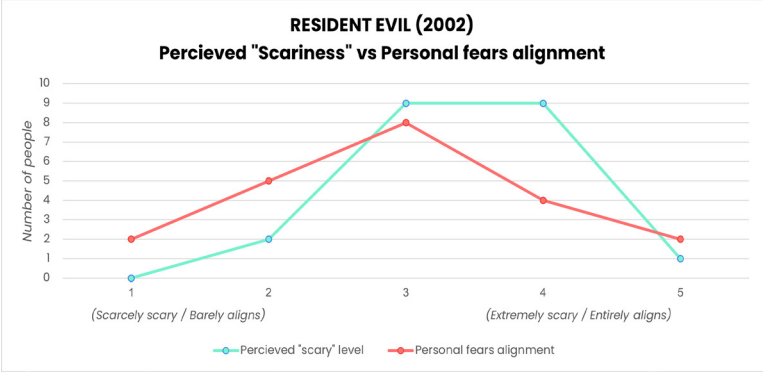

Figure 10. *Participants’ perceived scariness level compared with their reported personal fears alignment in Resident Evil.*

Finally, participants evaluated two specific in-game situations:

- Using a shortcut door whose knob breaks, preventing future use.
- Encountering “zombie dogs” bursting through previously safe hallway windows.

For the question regarding the accuracy and effectiveness with which the Alien adapts to the player’s strategy and playstyle, participants rated the feature on a scale from 1 to 5, where 5 indicated “extremely effective” and 1 indicated “barely effective.” Of the 14 respondents, seven (50%) rated the adaptation as a 5 out of 5, four (28.57%) rated it as a 4, and the remaining three participants (21.43%) rated it as a 3.

Finally, when asked about the fairness of the AI Director revealing the player's location, participants chose among three options: "Unfair," "Indifferent," and "Fair." Responses were evenly divided: seven participants selected "Indifferent," and seven selected "Fair."

Left 4 Dead and the AI Director's Effectiveness

Among the 27 participants who selected *Left 4 Dead*, 8 (29.62%) rated their experience as a 3 out of 5 in terms of scariness, 7 (25.93%) as a 2, 6 (22.22%) as a 4, and another 6 as a 1 ("scarcely scary"). Participants attributed these ratings to the game's emphasis on action, replayability, and cooperative entertainment rather than traditional horror elements. Nevertheless, many highlighted the roles of special enemies—particularly the Witch and the Tank—in generating tense and frightening moments.

Regarding alignment with personal fears, 12 participants (44.44%) rated the game as a 2 out of 5, 7 (25.93%) as a 3, and 6 (22.22%) as a 1 ("barely aligns").

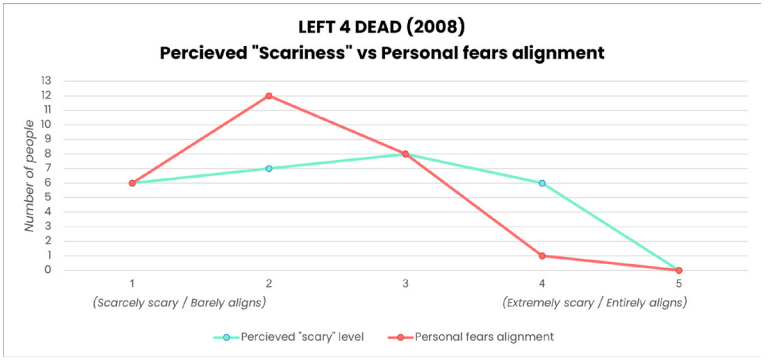

Figure 11. *Participants' perceived scariness level compared with personal fear alignment in Left 4 Dead.*

Participants also rated the following elements on a scale from 1 to 5:

- *How natural or artificial enemy encounters feel.*
- *How well the music supports tense and calm moments compared with other games in the genre.*

For enemy encounters, 10 of the 27 participants (37.04%) gave a score of 4 out of 5, where 5 meant "very natural" and 1 meant "very artificial."

Regarding the suitability of the music, 11 participants (40.74%) rated it as a 4 out of 5, with 5 indicating it is "much better than other games" and 1 indicating it is "worse."

Silent Hill: Shattered Memories and Narrative as a Weapon

All six participants who selected *Silent Hill: Shattered Memories* rated their experience between 3 and 5 out of 5. Respondents highlighted the game's psychological depth, personalized narrative, and the portrayal of the protagonist as key elements that contributed to its impact.

Regarding alignment with personal fears, three participants (50%) rated it as a 4 out of 5, two (33.33%) as a 3, and one (16.67%) as a 5 ("entirely aligns").

Participants were then asked whether the psychological tests integrated throughout the game felt disruptive to their immersion. Four participants responded "No," while two responded "Yes."

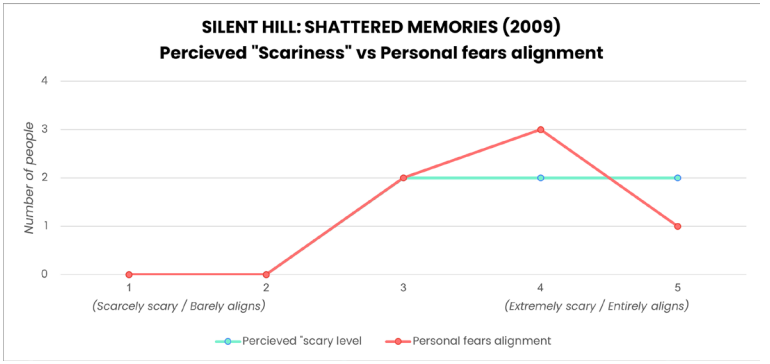

Figure 12. *Participants' perceived scariness level compared with personal fear alignment in Silent Hill: Shattered Memories.*

Lastly, participants rated the precision and accuracy of the game's play-style identification and classification system on a scale from 1 to 5, with 5 indicating "extremely precise and accurate" and 1 indicating "scarcely precise and accurate." Three participants rated the system as a 4 out of 5, two rated it as a 3, and one participant rated it as a 5.

Alien: Isolation and the Game's Manipulation of Player Experience

Among the 14 participants who selected *Alien: Isolation*, nine (64.29%) rated the experience as a 4 out of 5 in terms of scariness. Participants emphasized the Alien's behavior and the game's atmosphere as the main contributors to this fear. Many described the Alien as frighteningly realistic, noting how it appeared to adapt to their playstyle and made them feel powerless and vulnerable throughout the game.

Regarding thematic alignment with personal fears, eight participants (57.14%) rated it as a 3 out of 5, four (28.57%) as a 4, and two (14.29%) as a 2.

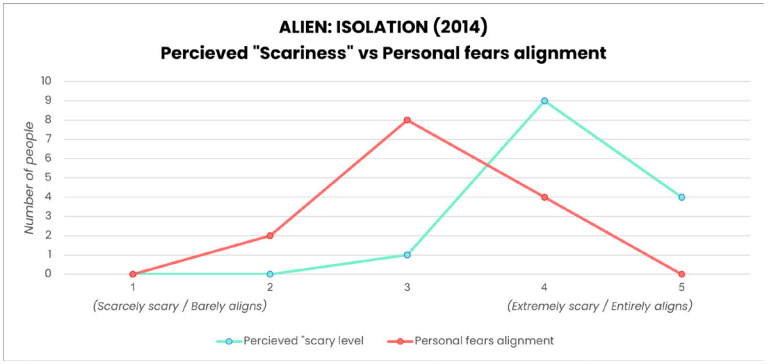

Figure 13 *Participants' perceived scariness level compared with personal fear alignment in Alien: Isolation.*

Participants also responded to two additional questions:

- *How effective is the Alien's adaptation to the player's strategy and playstyle?*
- *What do you think about the fairness of the AI Director revealing the player's location?*

For the question regarding the accuracy and effectiveness with which the Alien adapts to the player's playstyle, participants rated this feature on a scale from 1 to 5, where 5 indicated "extremely effective" and 1 indicated "barely effective." Among the 14 respondents, seven (50%) rated the adaptation as 5 out of 5, four (28.57%) rated it as 4, and the remaining three participants (21.43%) rated it as 3.

Finally, regarding the fairness of the AI Director revealing the player's location, participants selected one of three options: "Unfair," "Indifferent," or "Fair." Responses were evenly divided, with seven participants choosing "Indifferent" and seven choosing "Fair."

Discussion

The Generation of Fear

The term *fear* has multiple definitions and connotations. The definition most relevant to this study is the one provided by the American Psychological Association, which describes fear as an "intense emotion stimulated by the detection of an imminent threat, involving an immediate alarm response that mobilizes the organism and triggers a set of physiological changes" (APA, 2018).

Identifying these *threats* or *risks* is essential when the deliberate goal is to evoke fear. While some fear responses arise instinctively—such as those related to predatory animals, shaped by evolutionary mechanisms—most fear-inducing entities, motifs, or situations correspond to *learned fears*. These situations may not present an inherent threat but carry symbolic or contextual signals acquired through experience. Consequently, a person's fears are closely tied to their cultural and environmental context, particularly during formative years (Barinaga, 1992).

In this context, a horror videogame equipped with an AI Director capable of identifying player behavior patterns and generating user profiles based on learned fears or fear-triggering elements would likely produce a more effective and personalized sense of horror. This differs from traditional horror games,

where fear is successfully elicited only when predetermined events happen to coincide with the player's idiosyncratic fears.

Results from the survey reflect this relationship. *Silent Hill: Shattered Memories* and *Alien: Isolation* received the highest ratings in both perceived "scariness" and alignment with personal fears, suggesting a correlation between these two dimensions.

A common theme among participants' responses was the feeling of *helplessness* or *dread*. Games that restrict offensive or defensive options tend to be perceived as more frightening. Titles such as *Alien: Isolation* and *Silent Hill: Shattered Memories*—and, in a similar way, *Resident Evil*, with its limited ammunition, scarce inventory space, and restricted save opportunities—intensify tension by constraining player agency.

However, generating fear is not solely about designing frightening enemies. Many participants emphasized the importance of atmosphere and music in shaping their experience, particularly in *Resident Evil* and *Silent Hill: Shattered Memories*. Similarly, the "backstage" approach of the AI Director in *Left 4 Dead* is noteworthy: the system modulates soundtrack intensity and pacing to create tension at critical moments (Booth, 2009).

Characteristics of Recreational Horror

Although fear is typically described as an unpleasant emotion, many forms of horror remain popular in entertainment media such as films, videogames, and theme parks. In *Playing with Fear*, Andersen et al. (2020) examine *recreational horror*, establishing a relationship between fear and enjoyment. Their findings depict an inverted U-shaped curve, where enjoyment peaks at moderate levels

of fear. Conversely, when fear is too low or too high, enjoyment decreases significantly (see also Bălan et al., 2019).

Recreational horror often simulates frightening scenarios in a safe environment, allowing individuals to experience intense emotions—adrenaline, tension, excitement—without actual danger. In real life, however, highly stressful or anxiety-inducing experiences tend to leave long-term imprints as *learned fears*.

In this sense, mechanisms that regulate the *intensity* of horror become essential. Without such regulation, players may feel overwhelmed, leading to reduced enjoyment and disengagement.

A notable contribution in this area is the study *Adaptive Virtual Reality Horror Games Based on Machine Learning and Player Modeling* by Soares et al. (2022). The authors propose a computational model designed to identify players' fears using machine learning to analyze how different horror elements affect them. By examining data from previous players, the model predicts the elements that future players are likely to fear. Using an artificial neural network trained on behavioral patterns related to specific horror stimuli, the system can determine in real time which elements will intensify an individual player's fear.

The study also introduces the concept of a *horror director*, implemented through a finite state machine (FSM) that regulates the use of horror elements to alternate between periods of calm and intense fear. The FSM consists of four states:

- **Relax:** Maintains low terror intensity by withholding horror stimuli for α seconds.
- **Build up:** Gradually introduces horror elements until the intensity crosses the β threshold.

- **Sustain Peak:** Keeps terror intensity above β by adding or maintaining horror stimuli for γ seconds.
- **Peak Fade:** Gradually removes active stimuli until terror intensity falls below the δ threshold.
-

The variables α, β, γ, and δ must be determined according to the pacing and structure of the game (Soares et al., 2022).

AI as a Director in a Horror Game

Multiple approaches can be employed to create an AI Director capable of monitoring player behavior or playstyle, and the suitability of each approach depends on the specific design context.

One prominent example is *Alien: Isolation*, where players perceive an "illusion of intelligence" through a sophisticated use of behavior trees and finite state machines. This system works by locking and unlocking branches of the behavior tree or FSM according to gameplay triggers, creating the impression that the Alien is learning and adapting (Švelch, 2020). For example, similar to scenarios observed in *Resident Evil*, if a player consistently chooses the safest or shortest route, an AI Director could adapt by making that route less accessible or more dangerous—creating the illusion of adaptation.

Although *Resident Evil* does not implement an AI Director, it effectively illustrates how even simple FSM-like mechanics can significantly contribute to fear. As shown in the survey, players overwhelmingly described the broken-door event as "Stressful" and rated the zombie-dog hallway event as highly frightening (4 out of 5 for most respondents). These examples demonstrate that even basic scripted systems can generate powerful fear responses when deployed strategically.

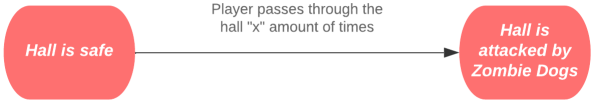

Figure 14. *Decision Tree Trigger*

Note. Example of the possible logic followed by the decision tree that triggers this moment in Resident Evil.

The advantage of this approach is that it is significantly easier to develop and implement than more complex systems, as it does not rely on genuine artificial intelligence. Nevertheless, it can still succeed in delivering a personalized narrative experience. As noted earlier, the effectiveness of this method depends on how well these situations are defined, the number of possible outcomes encoded within the FSM, and how frightening these scenarios are for a wide range of players. In *Alien: Isolation*, for example, although the Alien's "learning" capabilities are governed by a decision tree, the creature's high adaptability and the carefully designed conditions that trigger behavioral changes greatly enhance its effectiveness.

A different approach involves an AI Director that does not limit itself to selecting from a predetermined set of possibilities. Instead, it operates in a more human-like manner, recognizing aspects of the player's playstyle and learning to identify patterns that may help predict future actions—either partially or with a high degree of accuracy. This enables the system to adapt the presentation of the environment and narrative so that it feels as though the game is not only being played by the user, but is also *playing with* the user. By leveraging

distinctive player traits or behaviors, the system can provoke targeted emotional responses—specifically fear. The strength of this approach lies in its high level of adaptability, which allows for deeply personalized narrative experiences tailored to individual players' fears. However, this method is considerably more difficult to implement due to the complexity of the AI Director and the computational resources required for training and operation.

Implementing artificial intelligence capable of making such inferences is ideal for creating a personalized experience. In this model, player behaviors or inferred personality traits are used to make implicit decisions that shape and modify the player's interaction with both gameplay and narrative. Yet it is crucial to ensure that the resulting experience is not only impactful, memorable, and emotionally effective but also enjoyable. Thus, the intensity with which the AI induces fear must be regulated. The AI Director should never be perceived as a hostile force attempting to overwhelm or punish the player. Instead, it must function as a regulatory mechanism that enriches narrative and gameplay by selectively employing fear-triggering elements in a way that supports personalization. Regulation of fear exposure can be achieved through internal mechanisms—such as tracking how long the player remains in frightening situations or detecting abrupt changes in player behavior.

Another important factor in sustaining this method is maintaining a low profile regarding the specific player actions that unlock new parts of the FSM. If players become aware of which behaviors are being monitored to trigger particular events, the experience risks feeling overly scripted. This can be mitigated by using more subtle and sophisticated profiling techniques, similar to those employed in *Silent Hill: Shattered Memories* and *Song of Horror*.

Table 1. *Comparison between the two main methods of AI Director's.*

	Behavior Trees & Finite State Machines (FSMs)	**AI Director with a Human-like Adaptability**
Functionality	Simulates learning and intelligence by unlocking parts of behavior tree or FSM based on player actions as the game progresses.	Recognizes players' playstyles and behavioral patterns and dynamically adapts to it through pattern recognition techniques.
Complexity	Relatively easy to implement, as it relies on predefined paths, triggers, and deterministic transitions.	More difficult to implement due to its use of advanced AI methods and real-time adaptive decision-making.
Player Experience and Effectiveness	Can create a strong illusion of intelligence that is effective when well designed, though it may eventually feel scripted.	Offers a highly personalized experience in which the game tailors its elements to the player's behavior, potentially producing more intricate psychological fear.

Note. Comparison of the two main methods of AI Director's that can be used in horror games.

In *Silent Hill: Shattered Memories*, the player profile influences multiple aspects of the game, including conversations, character attitudes and outfits, cutscenes, and even the ending. The game uses two types of player profiling—referred to collectively as the *Psych Profile*. The first is conducted through in-game psychoanalytic therapy sessions featuring psychological questionnaires. Based on the player's responses, the system assigns points that classify them into a specific profile. The second profiling method is based on playstyle identification and classification. This system monitors how the player interacts with the environment, objects, characters, and particular situations throughout the narrative. Specific patterns of interaction award points that classify the player into a playstyle group that subsequently shapes the story in all previously mentioned dimensions.

A similar playstyle identification method is used in *Song of Horror*. The game's main antagonist, "The Presence," is an AI-driven entity whose behavior adapts dynamically to the player's actions. It monitors factors such as the player's

movement speed or frequency of light-source use. Moving quickly or using illumination excessively increases the likelihood of encountering the monster. As reflected in the survey, most players considered this adaptive method highly precise and effective, emphasizing the game's strong psychological dimension as a key element in generating fear.

Additionally, external methods can be used to gather information about the player's physiological state, such as emotion recognition through facial analysis, breathing monitoring via microphone input, or heart-rate tracking through wearable sensors. However, these approaches may be perceived as invasive and require additional hardware resources.

Overall, the findings of this study are consistent with previous research highlighting the interplay between fear, enjoyment, and adaptive systems in horror games. Andersen et al. (2020) identified an inverted U-shaped relationship between fear and enjoyment—a pattern mirrored in participants' responses, which suggest that moderate levels of fear generate higher engagement and motivation. Likewise, Soares et al. (2022) proposed adaptive virtual-reality systems capable of adjusting fear exposure in real time; our results reinforce this approach, with players indicating that adaptive AI could improve emotional balance and immersion. Moreover, Švelch (2020) examined players' perception of AI behavior and found that the *illusion* of intelligence effectively sustains tension. Participants in this study echoed this insight, noting that when the game reacted convincingly to their actions, their sense of tension remained consistently high. Therefore, this research contributes empirical evidence suggesting that AI Directors with dynamic and adaptive models can significantly enhance personalization and emotional depth in horror-game experiences.

Conclusions

In the expanding field of horror videogames, new opportunities are emerging to explore narrative and computational models grounded in artificial intelligence. This domain invites researchers to examine fear as a complex emotion shaped by both innate responses and learned behaviors. Within this context, the integration of AI Directors appears as a transformative mechanism capable of delivering personalized fear-inducing experiences that evoke genuine horror and create deeply individualized narrative pathways.

Such personalization can be achieved through a combination of narrative modeling and adaptive systems that modify the game world in response to players' actions, reactions, and patterns of interaction. Equally important is the continuous regulation of "fear exposure" to ensure that the experience remains frightening enough to be engaging, without overwhelming the player.

This investigation yielded several key findings:

- Players believe that an AI Director can significantly enhance the experience of horror games.
- There is a correlation between perceived fear levels and the extent to which a game's themes align with players' personal fears.
- Games that implement personalized or adaptive features tend to be perceived as more frightening.
- Even simple adaptive systems, such as FSMs, can successfully generate stressful or frightening situations.
- Games in which players cannot easily defend themselves against enemies are generally perceived as more frightening.
- Atmosphere, music, and narrative are powerful elements that greatly contribute to generating fear.

In the evolving landscape of horror game development, the role of AI as a director emerges as a pivotal factor in shaping player experiences. The success of these approaches depends on well-defined scenarios, diverse adaptive outcomes, and an understanding of both universal and individual sources of fear.

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References

Ahmad, J. (2021). Children's fears and its relation to parenting style and demographic variables of children and parents. *Early Child Development and Care*, *191*(6), 963-976. https://doi.org/10.1080/03004430.2019.1655735

American Psychological Association. (2018, Apr. 19). *Fear*. APA Dictionary of Psychology. https://dictionary.apa.org/

Andersen, M. M., Schjoedt, U., Price, H., Rosas, F. E., Scrivner, C., & Clasen, M. (2020). Playing with fear: A field study in recreational horror. *Psychological Science*, *31*(12), 1497-1510. https://doi.org/10.1177/0956797620972116

APA Dictionary of Psychology. (s.f.). Fear. https://dictionary.apa.org/fear

Bălan, O., Moise, G., Moldoveanu, A., Leordeanu, M., & Moldoveanu, F. (2019). Fear level classification based on emotional dimensions and machine learning techniques. Sensors, 19(7), 1738. https://doi.org/10.3390/s19071738

Barinaga, M. (1992). How Scary Things Get that Way: Researchers are closing in on the mechanisms by which the brain learns to interpret certain situations as fearful—with hopeful indications for anxiety sufferers. *Science*, *258*(5084), 887-888. https://doi.org/10.1126/science.1439800

Booth, M. (2009, October). *The AI Systems of Left 4 Dead*. Paper presented at the Artificial Intelligence and Interactive Digital Entertainment Conference (AIIDE), Stanford University. https://cdn.fastly.steamstatic.com/apps/valve/2009/ai_systems_of_l4d_mike_booth.pdf

Calleja, G. (2010). Digital games and escapism. *Games and Culture, 5*(4), 335–353. https://doi.org/10.1177/1555412009360412

Chooseco. (s. f.). *History of CYOA*. Retrieved from: https://www.cyoa.com/pages/history-of-cyoa

Glitchy Pixel. (2014). *Poltergeist: A Pixelated Horror* [Videogame]. Glitchy Pixel.

Granic, I., Lobel, A., & Engels, R. C. M. E. (2014). The benefits of playing video games. *American Psychologist*, *69*(1), 66-78. https://doi.org/10.1037/a0034857

Ingram, B., Rosman, B., Alten, C., & Klein, R. (2022). Play-style identification through deep unsupervised clustering of trajectories. *IEEE Conference on Games (CoG),* 393–400. https://doi.org/10.1109/CoG51982.2022.9893680

Ip, B. (2011). Narrative structures in computer and video games: Part 1: Context, definitions, and initial findings. *Games and Culture, 6*(2), 103–134. https://doi.org/10.1177/1555412010364982

Jagdale, D. (2021). Finite state machine in game development. *International Journal of Advanced Research in Science, Communication and Technology*, 384-390. https://doi.org/10.48175/IJARSCT-2062

Kirkpatrick, D. R. (1984). Age, gender and patterns of common intense fears among adults. *Behaviour Research and Therapy*, *22*(2), 141-150. https://doi.org/10.1016/0005-7967(84)90102-5

Lou, X. (Harbing). (2018, Sept 13). *Ai in video games: Toward a more intelligent game*. Linkedin. https://n9.cl/j01mb

Mateas, M., & Stern, A. (2003, March 24–26). Integrating plot, character, and natural language processing in the interactive drama *Façade*. In *1st International Conference on Technologies for Interactive Digital Storytelling and Entertainment* (TIDSE 2003). Darmstadt, Germany. https://users.soe.ucsc.edu/~michaelm/publications/mateas-tidse2003.pdf

Perron, B. (2009). *Horror video games: Essays on the fusion of fear and play*. McFarland. https://archive.org/details/horrorvideogames0000unse

Rezk, A., & Haahr, M. (2022). Beyond free will: Understanding approaches to agency and their suitability for Bandersnatch-like titles. *Entertainment Computing, 43*,100500. https://doi.org/10.1016/j.entcom.2022.100500

Russell, S., & Norvig, P. (2010). *Artificial intelligence: A modern approach* (3rd ed.). Prentice Hall.

Smed, J., Suovou, Trygg, N. & Skult, P. (2019). *Lecture notes on interactive storytelling*. https://n9.cl/iyg8o

Soares, E., Silva, B. M. C., & Galam, G. T. (2022). Adaptive virtual reality horror games based on machine learning and player modeling. *Entertainment Computing, 43*, 100515. https://doi.org/10.1016/j.entcom.2022.100515

Song, Y., Kim, H., Yoo, T., Bae, B.-C., & Cheong, Y.-G. (2020). An intelligent storytelling system for narrative conflict generation and resolution. *2020 IEEE Conference on Games (CoG),* 192–197. https://doi.org/10.1109/CoG47356.2020.9231592

Stone, C. (2019, Jan 7). *The evolution of video games as a storytelling medium, and the role of narrative in modern games*. Game Developer. https://www.gamedeveloper.com/design/the-evolution-of-video-games-as-a-storytelling-medium-and-the-role-of-narrative-in-modern-games

Švelch, J. (2020). Should the monster play fair? : Reception of artificial intelligence in alien: isolation. *Game Studies*, *20*(2). https://gamestudies.org/2002/articles/jaroslav_svelch

Thompson, T. (2020, April 23). *The story of Façade: The AI-powered interactive drama. Game Developer*. https://www.gamedeveloper.com/design/the-story-of-facade-the-ai-powered-interactive-drama

Utku Dağlı, S. (2022). The difficulty of videogames and intelligence of AI. Play/Write Student Journal (2nd ed.). https://netlibrary.aau.at/kcgl/periodical/titleinfo/7923016/full.pdf#page=29

Yannakakis, G. N., & Togelius, J. (2018). *Artificial intelligence and games*. Springer International Publishing. https://doi.org/10.1007/978-3-319-63519-4

Zohaib, M. (2018). Dynamic difficulty adjustment (Dda) in computer games: A review. *Advances in Human-Computer Interaction*, *2018*, 1-12. https://doi.org/10.1155/2018/5681652

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