Proceedings of the 2nd International Conference on Software Engineering and Machine Learning
DOI: 10.54254/2755-2721/73/20240372

Research on the human-computer interaction principles and play-ability---Taking Pro Evolution soccer game as an example

Xu Sun

Chongqing Nankai High School, Chongqing, 400000, China

stan20060929@proton.me

Abstract. With the continuous advancement of technology, an increasing number of games have entered people's fields of vision. Football, as one of the world's most popular sports, has also spawned numerous related football games, including the Pro Evolution Soccer Game. However, for many people, this game still remains relatively unfamiliar. This study aims to analyze the principles of human-computer interaction in the Pro Evolution Soccer game and explain why it offers higher playability and entertainment value. Furthermore, there is a limited amount of comprehensive analysis regarding human-computer interaction principles and the Pro Evolution Soccer game. Firstly, this paper will introduce the basic concepts and development history of the Pro Evolution Soccer Game. Then, this paper will delve into the principles and characteristics of human-computer interaction in the game by studying its interface design, control methods, and artificial intelligence systems. Finally, this paper will assess the playability of the Pro Evolution Soccer game through real-life case studies and provide suggestions for improvements. This research adopts the methodology of a literature review. The findings indicate that the Pro Evolution Soccer game enhances its playability through carefully designed settings and interactivity, providing players with increased entertainment value. These settings include intuitive game interfaces, diverse control methods, and intelligent virtual players. Overall, this study provides important references and guidance for understanding the principles of human-computer interaction in the Pro Evolution Soccer game and enhancing its playability.

Keywords: Human-computer interaction, Pro Evolution Soccer Game, play-ability, football.

1. Introduction

In recent years, with the continuous advancement of technology and the growing demand from society, the field of Human-computer interaction has gained widespread attention and research. Pro Evolution Soccer Game, as a popular electronic game, holds significant research value in terms of Human-computer interaction principles and play-ability. However, when discussing the Pro Evolution Soccer Game, existing research predominantly focuses on its realistic game engine in relation to real-life scenarios, neglecting the principles of Human-computer interaction within the game. As Pro Evolution Soccer Game already incorporates powerful and flexible tactics and positioning algorithms, coaches can effectively enhance their players' learning interests and efficiency by analyzing each player's different positioning and tactics within the game, enabling them to learn how to correctly position themselves in various situations. This greatly improves the players' learning interest and effectiveness.This paper aims to explore the human-computer interaction principles of Pro Evolution Soccer game and analyze its

© 2024 The Authors. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).

DOI: 10.54254/2755-2721/73/20240372

play-ability, in order to provide valuable guidance and insights for game users, developers and researchers.

In section 2, this paper will provide an overview of human-computer interaction and the concept of Pro Evolution Soccer game, along with their research backgrounds. In section 3, this section will present a systematic analysis of the human-computer interaction principles in Pro Evolution Soccer game. And, the Relationship between Human-Computer Interaction Principles and Playability will be discussed in section 4.

2. The introduction of Pro Evolution Soccer Game

Pro Evolution Soccer Game: Overall concepts of Human-computer interaction principles and the development Journey, highlighting the Importance of Human-Computer Interaction in Football Gaming.

Pro Evolution Soccer Game, as a highly popular electronic game, owes its success to the application of overall concepts and principles of human-computer interaction (HCI). The core of HCI lies in creating a balanced and harmonious user experience, allowing players to interact smoothly and intuitively with the game. In Pro Evolution Soccer Game, HCI principles play a crucial role by providing players with an exceptional football experience through well-designed interfaces, intuitive control methods, and timely feedback mechanisms [1].Being a game with continued development, the application of HCI principles in Pro Evolution Soccer Game has undergone a series of advancements and improvements. From simple button operations in its early stages to complex gesture controls in the present, Pro Evolution Soccer Game has constantly innovated its user interface and interaction methods [1]. These improvements enable users to engage more effectively in the game and experience a more realistic football gameplay. Furthermore, with technological advancements, Pro Evolution Soccer Game has actively incorporated technologies such as virtual reality and augmented reality, further enhancing the quality and realism of human-computer interaction.We argue that HCI has emerged as a design-oriented field of research, directed at large towards innovation, design, and construction of new kinds of information and interaction technology [2]. The importance of HCI principles in football gaming cannot be underestimated. High-quality HCI enhances player engagement and immersion, allowing players to better enjoy the pleasures of football gaming. Through meticulously designed interaction methods and feedback mechanisms, Pro Evolution Soccer Game enables players to feel their genuine presence in the matches, thereby increasing the game's appeal and play-ability.

As an interdisciplinary field the theoretical roots of HCI encompass a number of other disciplines including psychology, computing, ergonomics, and social sciences [3].

Overall, the overall concepts of HCI principles in Pro Evolution Soccer Game are a critical driving factor for game development. Through continuous improvements and innovations, Pro Evolution Soccer Game not only fulfills players' expectations for a football gaming experience but also provides valuable experiences and insights for the HCI field. To further enhance the user experience in football gaming, it is essential to delve deeper into the research and application of HCI principles, continuously explore innovative interaction methods and technologies, and create outstanding football gaming experiences.

3. Analysis of Human-Computer Interaction Principles

Game design has made great progress in human-computer interaction, but the methods and amount of information exchange between players and computer are still quite limited, which results in the interaction and entertainment of game are much more restricted [4].

When it comes to the Pro Evolution Soccer game, the principle of human-computer interaction is one of its core components. Human-computer interaction refers to the ways and mechanisms through which players interact with the game system. In the Pro Evolution Soccer game, the principle of human-computer interaction plays a crucial role as it not only directly affects the game's play-ability and entertainment value but also determines the extent of player engagement and experience.

DOI: 10.54254/2755-2721/73/20240372

Firstly, the human-computer interaction principle in the Pro Evolution Soccer game must accurately simulate real football matches. The game system needs to utilize advanced technologies such as realistic physics engines, precise player motion capture, and lifelike graphics to recreate authentic football scenarios. This allows players to better immerse themselves in the intense atmosphere and strategic nature of the game, enhancing the overall immersive experience.

Secondly, the human-computer interaction principle should strike a balance between the game's ease of learning and depth. The Pro Evolution Soccer game should provide intuitive controls and user-friendly interface designs to facilitate quick adaptation for novice players. At the same time, the game should offer sufficient complexity and freedom to satisfy experienced players' pursuit of tactical strategies and skills. By balancing accessibility and depth, the game can attract a wider range of players, enhancing its play-ability and long-term enjoyment.

Furthermore, the human-computer interaction principle in the Pro Evolution Soccer game should consider the interaction feedback between players and the game system. The game should promptly and accurately respond to player inputs while providing clear feedback information. For example, when a player controls a player to take a shot, the game should calculate the shooting result based on factors such as the player's shooting technique, position, and external conditions, displaying a realistic shooting effect. This enables players to better grasp the game's rules and skills, improving their gameplay abilities.

Moreover, the human-computer interaction principle in the Pro Evolution Soccer game can be enhanced by employing intelligent AI systems to increase the game's challenge and realism. The computer-controlled teams in the game should possess adaptability and intelligence, making tactical adjustments and decisions based on the match situation and opponent characteristics. This provides players with more challenging opponents during AI-controlled matches, increasing the game's play-ability and enjoyment.

In conclusion, the principle of human-computer interaction is a crucial element in the Pro Evolution Soccer game, directly influencing the game's play-ability and entertainment value. By accurately simulating real matches, balancing accessibility and depth, providing effective interaction feedback, and implementing intelligent AI systems, the game can attract more players, enhance the gaming experience, and become a popular football game.

4. The Relationship between Human-Computer Interaction Principles and play-ability

Game user researchers have explored methods from, for example, human-computer interaction, psychology, interaction design, media studies, and the social sciences [5].

Pro Evolution Soccer game provides an immersive football experience through lifelike visuals and controls. This authenticity sparks players' interest and engagement, increasing the game's play-ability.

As a football manager and coach, players are required to make various decisions such as signing players, adjusting lineups, and formulating tactics. The diversity of these decisions adds depth and strategic gameplay, enhancing the play-ability.

Players can acquire players of different levels through signings and player draws. Each player acquisition brings surprises and excitement, as they possess different styles and characteristics. This fosters active interaction between players and footballers, further enhancing the play-ability.

The other aspect of the human-computer interaction principle in Pro Evolution Soccer lies in its continuous optimization, simplifying the originally complex game interface.Actually, users subconsciously do not want to waste a lot of time learning the complicated buttons on the initial game interface. What users want is a simple and aesthetically pleasing game interface, and Pro Evolution Soccer achieves just that.

As a result, players feel very comfortable and their gaming experience is greatly enhanced.

Pro Evolution Soccer game features real-time commentary, allowing players to better understand the match progress and situation. This real-time feedback not only increases the realism of the game but also helps players make wiser decisions, elevating the play-ability.

DOI: 10.54254/2755-2721/73/20240372

Pro Evolution Soccer game offers various game modes including ranked matches, versus mode, and multiplayer matches with friends. The richness and diversity of these modes allow players to choose different gaming experiences based on their preferences, augmenting the play-ability.

5. Conclusion

In conclusion, the human-machine interaction principles of Pro Evolution Soccer game, including its realistic football experience, diversified gameplay and decision-making, interaction between players and footballers, real-time commentary and feedback, and multiple game modes and multiplayer options, are closely tied to its play-ability. These aspects collectively contribute to the game's appeal and longevity, enabling players to enjoy a diverse and immersive football gaming experience.

As a popular football simulation game, Pro Evolution Soccer (PES) has a promising future and room for improvement. However, there are still some challenges that need to be addressed and improved.

Indeed, due to copyright restrictions, PES cannot obtain rights for all legendary players. This disappoints some players who cannot use their favorite players in the game. To address this issue, game developers can collaborate with player agents to acquire more player rights, enrich the game's player lineup, and provide more choices to satisfy player demands.

The high cost and low probability of obtaining legendary players are concerns for some players. To improve this problem, developers can moderately increase the probability of obtaining legendary players, allowing players to more easily acquire their desired players. Additionally, establishing a fair in-game economy that ensures a balance between player spending and rewards can enhance the overall gaming experience.

Issues such as lag and abnormal physical contact affect the smoothness and realism of the game. Developers should continuously focus on and improve the game engine to optimize performance and enhance model stability. Furthermore, utilizing more accurate physics engines and motion capture technology can improve the physical contact between players, making the game more realistic and believable.

In summary, to address the issues in PES, game developers need to collaborate with player agents, adjust the in-game economy, improve the game engine and animations, among other efforts. By providing more player options, increasing the probability of obtaining legendary players, enhancing game performance and realism, PES can attract and retain more players, demonstrating a brighter future outlook.

References

[1] "Delivery across the Century - The Feud between Live Soccer and FIFA." E-Sports .12(2009):38-45.

[2] Wohl, M. J., Parush, A., Kim, H. A. S., & Warren, K. (2014). Building it better: applying human–computer interaction and persuasive system design principles to a monetary limit tool improves responsible gambling. Computers in Human Behavior, 37, 124-132.

[3] Dix, A. (2017). Human–computer interaction, foundations and new paradigms. Journal of Visual Languages & Computing, 42, 122-134.

[4] Cai, X. (2009, December). Principles of human-computer interaction in game design. In 2009 Second International Symposium on Computational Intelligence and Design (Vol. 2, pp. 92-95). IEEE.

[5] Fallman, D. (2003, April). Design-oriented human-computer interaction. In Proceedings of the SIGCHI conference on Human factors in computing systems (pp. 225-232).