Enhancing Digital Trust in Game Development Through AI

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Abstract: *Gaming is one of the fastest-growing entertainment markets, with global revenues projected to reach $312 billion by 2027. While the European Union (EU) leads in game creation, it faces challenges in distribution and publishing. The integration of Artificial Intelligence (AI) presents opportunities for growth, especially for enhancing digital trust, but also raises legal, ethical, and regulatory concerns that directly impact digital trust in the industry.*
For this purpose, this research poses the exploratory research question of how digital trust could be improved in game development with the help of AI. Specifically, it aims to: (1) define key components of digital trust in the gaming industry, (2) identify opportunities to foster digital trust in AI-assisted game development, and (3) outline necessary steps to mitigate legal and ethical risks.
Using an empirical research methodology, this study analyzes case studies, industry best practices, and EU hard and soft law. The findings aim to encourage game developers, legal professionals, and end-users to actively shape a trustworthy gaming ecosystem.
Keywords: *digital trust, gaming, artificial intelligence.*

INTRODUCTION

The essence of every video game lies in the competitive nature of human cognition, shaped by deep-rooted instincts and impulses[2]. Whether competing against another player, an AI-driven opponent, or the game's own mechanics, gaming inherently involves a challenge. Historically, games such as chess or checkers were among the earliest widely played competitive activities. These games emphasized skill, strategy, and tactics, maintaining symmetrical playing fields where randomness played no role in determining outcomes. At their core, they were not only about winning but also about achieving a refined level of play that could be recognized for its depth and complexity[3].

Researchers Max Sjöblom and Juho Hamari in their study provide different types of needs that people aim to meet when gaming. Those are cognitive (aim to acquire new information, knowledge, comprehension), affective (aim to have emotional pleasant or aesthetic experience), personal integrative (aim to enhance credibility, confidence and status), social integrative (aim to enhance connections with family, friends, etc.), and tension release (aim to escape and to do different activities than usually).[4]

Today, the gaming industry is experiencing unprecedented growth, with global revenue expected to reach $312 billion by 2027[5]. While the European Union (EU) remains a leader in game

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[2] Bertrand Russell, *Authority and the Individual*, London, Routledge, 2009.
[3] Tim Fields, *Game Development 2042: The Future of Game Design, Development, and Publishing*, Taylor & Francis Group, 2022.
[4] Max Sjöblom, Juho Hamari, "Why do people watch others play video games? An empirical study on the motivations of Twitch users", in *Computers in Human Behavior*, Vol. 75, 2017, pp. 985–996.
[5] PricewaterhouseCoopers. ***Top 5 developments driving growth for video games***. PwC. Retrieved February 5, 2025, from https://www.pwc.com/us/en/tech-effect/emerging-tech/emerging-technology-trends-in-the-gaming-industry.html.

creation, it faces challenges in distribution and publishing[6]. One of the key drivers of industry transformation is Artificial Intelligence (AI), which is increasingly being integrated across various phases of game development.

AI is revolutionizing game production by enhancing multiple aspects, including game mechanics, physics, art, and design. Beyond content creation, AI plays a crucial role in the testing phase, improving efficiency, identifying glitches, and ensuring high-quality gameplay, making quality assurance process more efficient. Traditionally, game testing has relied heavily on manual processes, which can be time-consuming and prone to human error. AI-driven tools provide automation that detects bugs, enhances performance, and prevents game-breaking issues before release. Yet, the role of AI in gaming extends beyond technical improvements; it also contributes to digital trust, an essential factor in fostering fair, secure, and ethical gaming environments.

Although yet there is no single globally agreed-upon definition of digital trust, researchers provide their own suggestions on the matter, as well as key components for trust to occur. AI can contribute to strengthening digital trust in several ways. Firstly, it can improve game integrity: AI-driven tools can prevent cheating by detecting abnormal player behaviors. It can also moderate online interactions, filtering offensive user-generated content and preventing from harassment. Secondly, it can improve player well-being: AI can manage playtime to prevent from development of gaming addiction, give recommendations to player to take breaks according to their playtime, enforce age-appropriate content, monitor in-game behavior to assign trust scores to players. Thirdly, it can contribute to enhancing cybersecurity and personal data protection within the game platform: AI can enhance the security of gaming platforms by safeguarding personal data, preventing fraud, and protecting system infrastructure from cyber threats.

While above-mentioned developments present opportunities for creating a safer gaming environment, they also raise legal and ethical concerns. Principles of transparency, fairness, and accountability must be ensured when AI is used in decision-making processes that affect players' experiences and interactions.

This research investigates the central exploratory question of what measures can be implemented to build digital trust in AI-assisted game development. To address this, the study aims (1) to define the key components of the definition of digital trust in the gaming industry, (2) to identify strategies that would help fostering digital trust in game development with the help of AI, (3) to outline necessary steps to be taken in order to mitigate legal and ethical risks associated with AI integration in game development. Although there is academic literature on digital trust as such and AI application in game development, there is a notable gap in literature examining the intersection of these two fields – improvement of digital trust in game development with the help of AI. For this reason, the purpose of this study is to bridge that gap by exploring how AI can actively contribute to building and reinforcing digital trust in game development.

To reach the above-mentioned objectives, this research will be carried out by applying empirical methodology. The methods consist of employing a systematic literature review with a qualitative approach. This study will focus on content analysis and institutional analysis of existing literature, policies, and industry practices. Google Scholar database and databases that are made accessible by TalTech Library were used to carry out this research. Keywords of digital trust, game development, gaming industry, artificial intelligence were used together with Boolean operators. With regards to the institutional analysis, International Game Developer Association was chosen as the world's largest non-profit membership organization for all game creators, together with Anti-Defamation League as leading anti-hate organization in the world.

[6] European Commission: Directorate-General for Communications Networks, Content and Technology. (2023). Understanding the value of a European video games society: final report. Publications Office of the European Union. https://data.europa.eu/doi/10.2759/332575.

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The research is limited to online multiplayer games, where players interact not only with the game but also with one another through their game actions, chat or voice communication, if those functions are enabled. By addressing these concerns, this study aims to contribute valuable insights into AI-driven trust-building mechanisms in game development, helping developers, legal professionals, policymakers and end-users to actively shape a more transparent, trustworthy, ethical gaming ecosystem.

KEY COMPONENTS OF DIGITAL TRUST

Before diving into analyzing different options that could contribute to establishment of digital trust in game development, it is crucial to be clear on the definition itself of 'digital trust'. However, it is important to mention that yet there is no single, globally agreed-upon definition neither of trust as such nor of digital trust. However, analyzing the concept of digital trust, there are common traits of digital trust that researchers agree on. Researchers agree on the following components necessary for the trust to occur, which can be applicable for digital trust as well:[7]

1) Two actors must exist: the trustor and the trustee.

2) Vulnerability must be displayed (trust exists only in a hazardous or uncertain situation).

3) Trust leads to actions, mostly risk-taking behaviors.

4) Trust is a highly subjective issue (trust is influenced by numerous subjective individual and environmental circumstances, and as such is dependent on the context of situation).

Moreover, researchers Piotr Pietrzak and Josu Takala in their research found that currently there is quite a few academic articles analyzing digital trust, however they focus a lot on the concept and case studies, not so much on the theoretical perspective. For that reason, they conclude that the research of digital trust still has not achieved its maturity. However, in order to contribute to the maturity of digital trust theoretical concept, they provide their own definition of digital trust. They define it as "the measure of confidence which workers, consumers/buyers, partners and other stakeholders have in an organization's ability to protect data and the privacy of individuals." Not only they contribute with the definition, but they also mention key differences between digital and non-digital trust, outlining that the following characteristics belongs to specifically digital trust: actors, produced actions, vulnerability, and subjective matter.[8] Nevertheless, their research was limited to only one database – the Institute for Scientific Information – Web of Science (ISI) and they only took into consideration articles written in English and that consisted of the term "digital trust". Often synonyms are used in articles researching the same or closely related topic of digital trust.

In my research, I agree to the definition that P. Pietrzak and J. Takala provided. However, I would slightly extend the definition by adding more items to be protected: not only ability to protect data and the privacy of individuals can play role in defining digital trust, but also protecting individuals honor, dignity and digital well-being, especially when it comes to consumers being able to interact with one another when using given means of communication (e.g., chat) in the product or service provided by the organization. It means that organization's ability to moderate those interactions in between their consumers can contribute to establishing digital trust of their product or service. Definition of well-being, especially digital one, is indeed subjective, however in my research I am referring to organization's ability to impact player's behavior towards one's own benefit, for

[7] Francis Fukuyama, *Trust: The Social Virtues and the Creation of Prosperity*, New York, The Free Press, 1995.
Roger C. Mayer, James H. Davis, F. David Schoorman, "An Integrative Model of Organizational Trust", in *Academy of Management Review*, Vol. 20, No. 3, 1995, pp. 709–734.
Guido Möllering, *Trust: Reason, Routine, Reflexivity*, Oxford, Elsevier, 2006.

[8] Piotr Pietrzak, Jukka Takala, "Digital Trust – A Systematic Literature Review", in *Forum Scientiae Oeconomia*, Vol. 9, No. 3, 2021, pp. 59–71.

instance, by informing regarding how much time was already spent playing, providing reminders to take breaks in order to prevent from development of addictive behavior, provide clear disclaimers if there are any loot boxes implemented in the video game as those can cause not only harmful effect, but are strictly approached by regulators in many EU countries due to its similarity to gambling (gambling has features of game, paid amount, element of chance and outcome resulting in win or loss, so do loot boxes).

As for the components of digital trust, Deloitte, the largest professional services of audit, consulting, tax and related services network in the world, shares similar approach to definition of digital trust as P. Pietrzak and J. Takala did in terms of adding privacy and control as one of the key pillars of trust. However, besides privacy and control, Deloitte includes (1) ethics and responsibility; (2) transparency and accessibility; (3) security and reliability, as crucial components to be considered when talking about digital trust.[9]

Therefore, in this research contribution to build and / or increase digital trust is viewed through the lenses of protection of player's personal data, privacy, dignity, honor, digital well-being by applying principles of transparency, accessibility, security, reliability and control.

APPLICATION OF AI IN GAME DEVELOPMENT

In recent years, AI has become a key driver of innovation across various emerging technologies, and the gaming industry is no exception[10]. AI is revolutionizing game development at multiple stages, from production, taking into consideration game mechanics, design, stylistics, to testing, enabling faster, more efficient processes while enhancing the overall quality of games and reliability of test results. Overall, it cuts significantly the time needed to fully develop a game and consequently it decreases the budget necessary for a game to be developed and ready to be published[11].

Firstly, taking into consideration production stage, throughout the years it got transformed with the help of AI leading to streamlined development of workflows, reduce of costs, and improved efficiency. It plays a key role in generating intelligent, adaptive in-game opponents, enriching gameplay, and delivering unique player experiences. Furthermore, AI-driven testing improves bug detection and resolution, ensuring a more polished and seamless final product.[12]

Some researchers divide the application of AI in game development into three main categories. One type is rule-based AI, that utilized predefined rules and logic to control game characters and environments. The second type is learning-based AI, that implements machine learning algorithms to adapt to player behavior and improve in-game decision-making. The third type is evolutionary AI, that employs optimization techniques to generate game content dynamically, creating more immersive and responsive experiences.[13]

AI-assisted design is transforming game development through automated content creation and procedural generation. Researchers and developers have leveraged AI tools like **Evolutionary Dungeon Designer** to facilitate collaboration between human designers and AI, enhancing

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[9] Nitin Albinson, Satish Balaji, Yi Chu, *Building Digital Trust: Technology Can Lead the Way*, Deloitte Insights, 2019.
[10] Yang Lu, "Artificial Intelligence: A Survey on Evolution, Models, Applications and Future Trends", in *Journal of Management Analytics*, Vol. 6, No. 1, 2019, pp. 1–29.
[11] Mubarak M.F., Milda Petraite, "Industry 4.0 Technologies, Digital Trust and Technological Orientation: What Matters in Open Innovation?", in *Technological Forecasting & Social Change*, Vol. 161, 2020, article no. 120332.
[12] Mark O. Riedl, Alexander Zook, "AI for Game Production", in *2013 IEEE Conference on Computational Intelligence in Games (CIG)*, IEEE, 2013, pp. 1–8.
[13] Safal Antony, Sabari T., R. Joshua, N. Jayapandian, "Artificial Intelligence Involvement in Graphic Game Development", in *Proceedings of the 2023 International Conference on Artificial Intelligence and Smart Systems (ICAISS)*, 2023, pp. 82–86.

procedural content generation. Additionally, **human-AI co-creative tools** allow game designers to generate personalized game content more efficiently. Several AI-powered tools are already being used in, for instance, indie game development, such as. Examples of those are **ChatGPT and GitHub Copilot**, that assist in coding and scriptwriting. Then, **DALL-E-2, Midjourney and Adobe Firefly** help in generating character designs, game environments, and concept art. Another example is **AI Voice Generators (e.g., Riffusion, Audiocraft)** that help in creating character voices, narration, and soundtracks.[14] All these tools empower developers to turn their creative visions into real functioning games more quickly and efficiently.[15]

With regards to the testing stage, AI has brought significant transformations to this stage as it did for production stage. Before application of AI allowed to widely automate game testing, it was and still is quite a manual process. Human testers, usually called Quality Assurance (QA) testers, would play the game extensively to identify bugs, glitches, and gameplay issues. Overall manual game testing would include the phases of exploratory testing, test case execution, regression testing, stress and load testing, performance testing, localization testing, user experience testing, playtesting, bug reporting and documentation. While manual testing provides valuable human insight into the user experience, it is extremely time-consuming, requires lots of resources, and is subject to human error.[16] Nowadays, many of these testing phases can be executed automatically with the help of AI, while the human tester can provide the valuable insights that only a human player could, such as insights on the user experience.

AI is transforming the game testing industry by automating repetitive tasks, enhancing accuracy, and improving the overall quality of games. By leveraging AI, developers can detect bugs, optimize performance, and enhance player experience more efficiently than ever before. AI is capable to carry out, for instance, automated testing, bug detection and error prediction, AI-driven playtesting, performance optimization, procedural testing for open-world games, user experience testing to an extent, adaptive difficulty testing, automated localization and text verification, security and anti-cheat testing, and player behavior analysis.

Moreover, it is worth noting that although application of AI in game development brings multiple advantages, it is also quite criticized. There are arguments that the term "artificial intelligence" is misleading in the context of video games, "*since AI in video games primarily relies on computational rules rather than true cognitive learning systems. Unlike self-learning AI that adapts based on arbitrary data input, game AI typically follows predefined logic to enhance the player experience.*"[17]

Furthermore, as usage of AI in game development is no longer a rare occurrence, the gaming industry faces challenges such as **digital trust** and ethical considerations regarding application of AI and its generated content or other results. Therefore, maintaining principles of human agency and oversight, technical robustness and safety, privacy and data governance, transparency, diversity, non-discrimination and fairness, societal and environmental well-being and accountability as stated

[14] Rima Panchanadikar, Graham Freeman, "I'm a Solo Developer but AI is My New Ill-Informed Co-Worker: Envisioning and Designing Generative AI to Support Indie Game Development", in *Proceedings of the ACM on Human-Computer Interaction*, Vol. 8 (CHI PLAY), 2024, pp. 1–26.

[15] Alexander Alvarez, Sebastian Dahlskog, Joan Font, Jon Holmberg, Camila Nolasco, Anton Österman, Sebastian Deterding, Sebastian Dahlskog, Christofer M. Olsson, Sebastian Risi, Christoph Salge, Mitu Khandaker, Joan Font, "Fostering Creativity in the Mixed-Initiative Evolutionary Dungeon Designer", in *ACM International Conference Proceeding Series*, 2018, pp. 1–8.

[16] Natalia Finska, *Modern Game Testing: Learn How to Test Games Professionally, Optimise Testing Effort and Skyrocket Your QA Career*, Packt Publishing, 2023.

[17] Andrej Filipović, "The Role of Artificial Intelligence in Video Game Development", in *Kultura Polisa*, Vol. 20, No. 3, 2023, pp. 50–67.

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in the EU AI Act, and ethical AI practices is essential for the continuous growth of AI-driven game development. [18]

USING AI IN GAME DEVELOPMENT TO BUILD DIGITAL TRUST

Applying the use of AI in game development can be useful not only in production or testing stages, but also in building digital trust. Introducing additional features with the help of AI that would contribute to development of digital trust while playing the game does not constitute a separate part in overall game development process. Integration of features contributing to creating and / or increasing the level of digital trust can take place during production stage. However, applying the use of AI in the testing stage can contribute to development of digital trust as well due to higher accuracy of results.

Before we dive into specific ways on how development of digital trust could be improved with the help of AI, it is crucial to provide some clarification regarding the role of AI in game development. Usually, people perceive the application of AI as a threat: they notice that this technology is more superior than most of capabilities of a human being, then as a technology AI is complex, leading to people interpreting it in a way that is not necessarily correct, and it is always raising some legal and ethical concerns[19]. However, in games development, the role of AI is not to defeat human players or to make a game impossible to win. Oppositely, the goal of AI in games development is to improve the overall gaming experience of human players.[20]

One of the most often occurring issues in gaming is the hate-speech and harassment. These, if not countered, can lead to serious consequences, including players losing their trust of the game or gaming platform. Anti-Defamation League (ADL), leading anti-hate organization in the world, conducted research, where they asked asked 15 participants to play four the most popular online games. Those games were Valorant, Counterstrike 2, Overwatch 2, and Fortnite. They had to play for one hour and have nicknames from which different identities could be identified. Those identities were Jewish and Muslim religious and ethnic identities, as well as in national identities such as Chinese, Mexican, and Israeli. The findings of the research were that almost half of the participants experienced some form of harassment and one-third of the players experienced identity-based harassment. The findings of this research call for action to find ways to minimize disruptive behavior, harassment and hate and highlights that, "the impact of such negative behavior extends beyond the game itself".

Moreover, ADL has been investigating hate and harassment in online multiplayer games since 2019. Some other significant findings date back to 2023, when ADL found that 76% of adult participants, aged 18-45, reported experiencing harassment in online multiplayer games. Types of harassment include name-calling, trolling and other disrupted play, being excluded from a game. The same study found that 75% of teens, aged 10-17, had also experienced some form of harassment in online multiplayer games.[21]

But not all results of studies carried out by ADL are that disappointing. They also found that games have also been sites of prosocial and positive behavior. For instance, a 2021 ADL report found that 99% of online multiplayer game players reported experiencing positive interactions in online

[18] A.B. Rashid, M.A.K. Kausik, "AI Revolutionizing Industries Worldwide: A Comprehensive Overview of Its Diverse Applications", in *Hybrid Advances*, Vol. 7, 2024, article no. 100277.
[19] Zoran Bjelajac, Andrej Filipovic, "Artificial Intelligence: Human Ethics in Non-Human Entities", in *Proceedings of the 3rd Virtual International Conference 'Path to a Knowledge Society – Managing Risks and* Innovation (PaKSoM 2021'), Mathematical Institute of the Serbian Academy of Sciences and Arts, 2021.
[20] Helen Lou, "AI in Video Games: Toward a More Intelligent Game", in Science in the News, Harvard University, 28 August 2017.
[21] Anti-Defamation League, *Playing with Hate: How Online Gamers with Diverse Identity Usernames Are Treated*, 2025.

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games, such as mentorship, friendship, and discovering new interests. Therefore, it points that keeping high level of digital trust within a gaming site is crucial.

To counter online hate-speech and harassment, AI could serve a purpose in being used in order to moderate chats and voice communications. Also, it can serve a purpose in creating a trust score within a game. Most popular multiplayer games, such as CS:GO, Valorant, League of Legends already have such system implemented with the help of AI. Calculation of the trust score throughout different games differ: some focus more on the prevention of cheating, while others pay more attention to prevention of hate-speech and harassment. Furthermore, AI can be used to create cheating detection systems that would enhance players experience and would increase overall digital trust.

With regards to protection of personal data, whenever a player in the chat types anything that could reveal his personal data, especially any data that falls under special categories of personal data, AI could be used to generate alerts to the player that one might be about to share some personal data and to ask if one is completely aware of that and if still wants to send that message.

Moreover, the AI can be used to model player experience, to contribute to procedural content generation, to track user behavior and to mine data, to enhance non-player character behaviors.[22] Improvement of these features can contribute to development or increase of digital trust. Furthermore, trust and safety (T&S) initiatives in gaming focus on creating an environment where players feel secure and empowered. By leveraging AI, developers can strengthen these initiatives, ensuring that integrity, transparency, and respect for players' rights remain at the core of the gaming experience. AI-driven tools can help game developers detect and prevent fraudulent activities, safeguard user data, and moderate interactions to foster a more inclusive and respectful gaming community.

One significant way AI enhances trust and safety is through real-time behavior monitoring and anomaly detection. AI algorithms can analyze player interactions, transactions, and gameplay patterns to identify potential misconduct, such as cheating, scamming, or exploitative behavior. For example, AI can flag unusual in-game financial transactions, reducing the risk of fraud and unauthorized purchases. Additionally, AI-powered moderation systems can automatically detect harmful behavior in chats or voice communications, minimizing the spread of hate speech and harassment.[23]

Transparency is another key aspect of digital trust. AI can contribute to greater transparency in gaming by ensuring that decisions made by in-game moderation tools, matchmaking algorithms, and anti-cheat systems are fair and explainable. Implementing AI models that provide players with clear feedback about moderation decisions—such as why a ban was issued or how matchmaking criteria are determined—can improve player trust in the game's fairness.

Furthermore, AI-driven personalization can enhance digital trust by ensuring that player experiences align with their preferences and comfort levels. By analyzing player data, AI can adjust game settings, difficulty levels, and in-game interactions to match individual preferences while respecting privacy and ethical considerations. This can be particularly useful for younger players or those who wish to avoid certain types of content, allowing them to customize their gaming experience without compromising their enjoyment or safety.

As AI continues to evolve, its role in game development will become even more integral to maintaining a secure and trustworthy gaming environment. By integrating AI-driven trust and safety mechanisms, developers can not only protect players but also cultivate a more positive and inclusive gaming culture.

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[22] Yasemin Karaca, Djameleddine Derias, Gözde Sarsar, *AI-Powered Procedural Content Generation: Enhancing NPC Behaviour for an Immersive Gaming Experience*, 2023.
[23] *Digital Thriving Playbook*, "Introduction to Trust and Safety", Thriving in Games Group, 2025.

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LEGAL AND ETHICAL RISKS

While AI in game development offers numerous benefits, including enhanced digital trust, its implementation also brings legal and ethical risks that developers must carefully navigate. As AI continues to shape the industry, ensuring compliance with legal regulations and ethical standards is essential to maintaining player trust and fostering a responsible gaming environment.

One of the most pressing concerns is data privacy and protection. If an AI-powered chat system or player interaction model is integrated into a game, developers must ensure that user data is encrypted and not used for unintended purposes. If player-generated content is utilized for AI training, informed consent mechanisms should be in place, clearly outlining the ability to revoke consent at any time. Compliance with regulations such as the General Data Protection Regulation (GDPR) is non-negotiable, requiring developers to provide transparency regarding data collection, storage, and deletion processes. Measures such as Data Protection Agreements (DPA), Privacy Impact Assessments (PIA), Data Protection Impact Assessments (DPIA), Transfer Impact Assessments (TIA), Standard Contractual Clauses (SCCs), and Technical and Organizational Measures (TOMs) should be implemented to mitigate data security risks.

Additionally, the use of AI-generated content in gaming raises intellectual property concerns. Platforms like Steam initially prohibited AI-generated content before later revising their stance to require detailed disclosure from developers. This shift highlights the uncertainty surrounding AI's role in content creation, particularly regarding copyright infringement risks. Developers must stay informed about evolving legal frameworks and ensure that AI-generated assets comply with intellectual property laws.[24]

The **International Game Developers Association (IGDA)** has also emphasized ethical responsibilities within the industry through its **Code of Ethics**, which provides guidance for developers to maintain integrity, fairness, and player well-being. The IGDA Code highlights key ethical principles such as player respect, transparency in game design and monetization, and the responsibility to avoid exploitative mechanics. When integrating AI, developers should align with these principles by ensuring that AI-driven systems promote inclusivity, do not reinforce biases, and respect player agency. Adhering to the IGDA Code can help game developers navigate complex ethical challenges while fostering a more trustworthy gaming environment.[25]

Beyond legal considerations, ethical challenges surrounding AI in gaming include issues of fairness, transparency, and player autonomy. The European Union's AI Act emphasizes a risk-based approach to AI regulation, ensuring that high-risk AI systems align with the EU Charter of Fundamental Rights and ethical guidelines, such as those outlined by the High-Level Expert Group on AI (AI HLEG). These guidelines stress the importance of human agency and oversight, technical robustness, privacy, transparency, and fairness in AI applications.[26]

AI-driven game mechanics also raise ethical questions regarding player well-being. Data-driven retention strategies designed to maximize engagement can lead to addictive gameplay habits, potentially harming vulnerable players[27]. Monetization techniques, such as loot boxes and

[24] Carlos Guerrero-Romero, Simon M. Lucas, Diego Perez-Liebana, "Using a Team of General AI Algorithms to Assist Game Design and Testing", in *2018 IEEE Conference on Computational Intelligence and Games (CIG)*, IEEE, 2018, pp. 1–8.

[25] International Game Developers Association, *Core Values & Code of Ethics*, IGDA, 2025.

[26] European Parliament and Council of the European Union, *Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 on Laying Down Harmonised Rules on Artificial Intelligence and Amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828*, in *Official Journal of the European Union*, L 1689, 2024.

[27] Council of Europe, *Human Rights Guidelines for Online Games Providers*, Strasbourg, Directorate General of Human Rights and Legal Affairs, 2008.

pay-to-win models, may encourage irresponsible spending, particularly among younger audiences. Moreover, AI-based personalization models may unintentionally marginalize certain player groups by failing to account for individual differences or contextual decision-making. Ensuring that AI-driven game features are transparent, interpretable, and ethically sound is critical to maintaining digital trust.[28]

For game developers integrating AI systems provided by third-party vendors, it is crucial to review the policies and terms of these AI providers to ensure alignment with legal and ethical standards. In the EU, this means compliance with regulations such as the GDPR and the EU AI Act.

Despite these challenges, legal and ethical risks should not deter game developers from harnessing AI's potential to enhance digital trust. Instead, proactive risk management strategies, ethical AI design principles, and clear communication with players can help build a more transparent and responsible gaming ecosystem. By prioritizing trust and safety measures, the industry can continue to innovate while upholding the highest standards of integrity and fairness.

Conclusion

Digital trust is a fundamental aspect of the gaming experience, encompassing transparency, security, reliability, privacy, and fairness. As defined in this study, digital trust is not only about safeguarding player data and preventing cheating but also about fostering an environment where players feel safe, respected, and confident in the integrity of the game and its systems. The key components of digital trust—such as the relationship between trustor and trustee, the presence of vulnerability, risk-taking behavior, and subjective perception—highlight the complexity of building trust in AI-assisted game development. AI has the potential to reinforce these aspects by improving game integrity, moderating player interactions, and personalizing experiences while upholding ethical and legal standards.

As AI continues to transform the gaming industry, its potential to enhance digital trust is both promising and challenging. By integrating AI-driven solutions, developers can strengthen game integrity, improve player safety, and foster a more transparent and inclusive gaming environment. AI's ability to detect cheating, moderate interactions, safeguard personal data, and enhance user experience makes it a powerful tool in building and maintaining digital trust. However, to fully realize these benefits, developers must address the legal and ethical risks associated with AI implementation, including data privacy concerns, regulatory compliance, and responsible game design practices.

The gaming industry, particularly in the European Union, stands at a critical juncture where AI-driven innovation must be balanced with ethical considerations and legal responsibilities. Adopting best practices, such as aligning with the **IGDA Code of Ethics** and adhering to regulations like the **EU AI Act** and **GDPR**, is crucial to ensuring that AI applications remain fair, transparent, and accountable. Additionally, proactive trust-and-safety measures, including real-time behavior monitoring, clear consent mechanisms, and ethical AI use in game monetization, will be fundamental in securing player confidence.

While AI introduces complexities in game development, it should not be viewed as an obstacle but rather as an opportunity to create safer and more engaging gaming experiences. By embracing responsible AI development, implementing robust safeguards, and maintaining transparency with players, the gaming industry can lead by example in fostering a digital ecosystem built on trust.

[28] Magy Seif El-Nasr, Ethan Kleinman, Vanessa Volz, Pedro Lopes, Georgios N. Yannakakis, Pascal Kyburz, Farnaz Khosmood, Antonios Liapis, "Data-Driven Game Development: Ethical Considerations", in *ACM International Conference Proceeding Series*, 2020, pp. 1–10.

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