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Artificial Intelligence Applications in Everyday Life

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Abstract: With the rapid advancement of Artificial Intelligence (AI) technologies, applications of AI are transforming lifestyles across various fields at an unprecedented pace, bringing numerous conveniences and innovations. However, the widespread application of AI also presents challenges such as privacy protection and ethical concerns. Therefore, it is of great value to enhance the insights into how AI is being used in the various industries, and how it will be developed, to have healthy development of the technology and the society's well-being. In this thesis, they apply AI to smart homes, intelligent health management, transportation, and social entertainment. This paper aims to assess AI's practical impact in various ways, analyze the revolutionary changes and obstacles brought by AI, and provide insight into future technological revolutions. In addition to that, this review assists readers in understanding the role of AI in everyday life in a more comprehensive way and offers theoretical support for future innovative technology, policy-making and societal adoption.

Keywords: Smart Homes, Health Management, Transportation, Entertainment.

1. Introduction

Artificial Intelligence (AI) is rapidly becoming part of daily life at breakneck speed, offering an unprecedented lifestyle change. With the advent of AI in the field of smart homes, home gadgets and house appliances are provided with an inherent sense and learnability, that can be coupled with automation of the home environment and personalized services. Smart thermostats, voice assistants, and intelligent refrigerators have significantly improved life comfort and convenience. AI has also enormous application potential in the field of healthcare. AI plays a role in precise diagnosis thanks to deep learning and the analysis of big data, optimal treatment plans as well as gears towards effective patient monitoring, making the breakthrough point for the personalized development of healthcare services [1].

AI is also changing the education sector. AI technologies are used by intelligent educational platforms to optimize personalized learning while improving teaching efficiency and learning outcomes. In the transportation domain, autonomous driving technologies driven by AI are constantly innovating and making travel more convenient and efficient over time. At the same time, AI further fine-tunes the choices made in travel, thereby improving overall transport system performance.

At the moment, the integration of AI in the social interaction and entertainment fields has enabled the applications of voice assistants, chatbots, game AI and so on to become smarter, so as to optimize human-machine interaction. It has streamlined communication with other players, achieving a natural feel and enriching their gaming experience, creating a more diverse and immersive world.

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Nonetheless, AI is no slouch in its performance and despite its outstanding accomplishments in multiple fields and can't ignore its shortcomings. In this thesis, I will investigate under what constraints can AI be applied in these application scenarios, and how people might achieve a balance between technological advancement and privacy protection and ethical concerns. Additionally, the research aims to identify methods to guide society to adapt to the fundamental transformations caused by AI and provide a valuable reference to future AI technology development and corresponding policy-making areas. This thesis provides readers with a comprehensive perspective and in-depth analysis, which should help readers better understand the role of AI in daily life and give readers a lot of useful guidance on its further applications and development.

The following chapters of this thesis will delve into details of the particular applications of AI in smart homes, intelligent health management, transportation, social interaction, and entertainment. Through these areas, it will analyze technological innovations, practical outcomes, and problems. Based on thorough review and evaluation, the research would be based on a multi-dimensional view to give readers a broad view of the range of the influence of AI in daily life and to offer theoretical support and practical guidance for future technological applications and development.

2. AI Applications in Everyday Life

2.1. Smart Homes

Interaction and control of smart devices is a fundamental part of AI in smart homes. They can understand user habits and adapt home environment and provide a good living experience through deep learning and sensor technologies. The central control system is at the heart of today's smart home systems, usually consisting of home automation hubs, smart speakers, or even mobile applications and connecting and administering a wide array of smart devices across the home [2].

For instance, if you wake up in the morning, a smart thermostat changes the temperature inside without any explicit command from the user – the thermostat does so based on the times set and the user's habits. Around the same time, smart curtains also open up slowly, letting the sun in slowly. It modifies the light aggressiveness by time of sunrise so that the environment is agreeable for waking; it's also, almost eerie. Interestingly, when configured, smart speakers like Amazon's Echo or Google Home can play news and music but also operate as a voice control system, listening to the user's voice commands to command other devices like turning on the television, dim/clim light, or start appliances.

Intelligent coordination between devices is made possible by AI technology which allows us to automatically create scenarios. It allows the users to set these specific triggers and when these conditions are met, a preconfigured series of actions will be executed automatically. For example, a smart lock will detect when the user has arrived home, at which time, the home automation system will automatically turn the lights on, change the temperature, and play the user's favorite music. In this way, contextual awareness serves not only convenience in daily life but also increases efficiency of the device usage, that is, only if necessary, the device is activated.

The integration of AI technology in smart refrigerators has reached someone with intelligent meal management. They record storage conditions, detect the items expiring and perform automatic replenishment orders if needed. At the top of the range, some connect to recipe apps and suggest recipes according to what ingredients you have to hand, making the labor of daily cooking a little bit easier.

Smart security technology is enabled to perform powerful analytics by AI. For example, smart cameras rely on faces to recognize people from a household and identify strange activities using behavior analysis. These systems detect suspicious occurrences and alert the user immediately, and

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in some cases can even call up relevant security agencies, giving continuous protection to the home [3].

Smart devices are also controlled and interact with the outside world. One of these is smart locks which can sync with mobile apps, the user can remotely control home entry while away or even have the locks be autonomous at preset times. A smart grid includes devices that can adapt electricity usage to the supply and demand in order to optimize electricity distribution.

Nevertheless, smart devices are interconnected and managed, but this presents challenges in the form of data privacy, network security, and device compatibility issues. To overcome these problems it is necessary to develop regulations and standards that would protect individual privacy, ensure security of information, and encourage seamless device integration.

One of the major highlights of AI in smart homes is the integration and control of smart devices that execute deep learning and sensor technology for their coordination. The result is a very personalized and efficient living space. The more AI advances, the more innovations occur and the deeper the smart home experiences get, making homes more comfortable, convenient, and energy efficient.

2.2. Intelligent Health Management

Aided by deep learning and big data analysis, AI technology facilitates disease prevention, raises quality of life, and reduces medical costs by fine-tuning health management with unprecedented precision and personalized service [4].

AI uses sensor technology coupled in wearables, home medical devices, and mobile apps to monitor data from users' physiological data in real time, and includes heart rate, blood pressure, blood sugar and sleep quality. Allowing AI to input into deep learning algorithms and recognize patterns and trends within this complex data can alert you to potential health anomalies early. For example, AI can find heart disease risk on the basis of heart rate variability which is an important cardiovascular health indicator, and smart wristbands monitor this data. Also, AI is good at detecting early warning signs of chronic diseases, for example predicting arthritis risks by examining movement and gait patterns.

In particular, AI has a role to play as an early warning function in disease prevention. If AI senses an anomaly coming through in user physiological data, it warns either the user or allied healthcare professionals. For example, an AI intelligent blood sugar monitoring system can use AI algorithms to forecast hypoglycemia events in diabetic patients, and thus alert them in advance to prevent hypoglycemia. Within mental health, AI identifies signs of depression or anxiety using users' speech, facial expressions and social media activity, alerting professionals earlier.

Personalized health management is part of the area of AI application in health monitoring and early warning. AI learns users' lifestyle habits, genetic backgrounds and medical histories to provide each and every user with personalized health recommendations. For example, for diabetic patients, AI can suggest diet and exercise plans to better deal with their condition. Further, AI can suggest the most fitting healthcare service according to the user's need — from a doctor's appointment booking to guidance on using medication to offering psychological counseling services [5].

And while there's so much potential in AI to help monitor health and raise the alarm early, it's not easy to put into practice. By far the main concern is data privacy and security. Encrypting storage, as well as what constitutes 'lawful' use of personal health data, is important. Additionally, AI diagnostic accuracy is still subject to validation and integration with medical knowledge from a professional, in order to avoid errors or understand what AI is saying. Healthcare regulations and ethical standards also need to keep pace with the evolution of AI technology and protect patients' rights and encourage the growth of new applications.

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Revolution is coming to the way health management is approached by the use of AI to apply them in health monitoring and early warning. Using real-time physiological data for monitoring, the development of early warning systems and personalized health advice, AI has led us to a path of a more proactive and precise approach to health management and a healthier world as a result. With the advancement of technology and accumulation of data, the role of AI in intelligent health management will be constantly deepening and have strong support for the comprehensive and continuous healthcare business.

AI in intelligent health management has a very significant highlight of providing personalized health advice and management for the users. Through analysis of individual health data and variable lifestyle habits, AI provides individualized and precise guidance to the users so that, with some extra effort, they can step up a notch to paying attention to health and disease prevention:

Using deep learning technology and analyzing big data, AI mines and analyses every aspect of one's physiological data to figure out any health problems that may occur. For example, AI can infer from a person's dietary records and sleep patterns to predict their chances of having chronic diseases like heart disease and diabetes or insomnia and sleep apnea. These are vital early warnings for the prevention of disease and for early intervention.

Powered by AI, health professionals recommend personalized health guidance based on a person's genealogy, living habitat and work stress line-up. AI provides office exercises and stretches to office-based workers who spend long hours sitting, thereby helping nurse the sedentary health risks. Based on specific hereditary risk factors, AI promotes dietary modifications and lifestyle changes for the reduction of the likelihood of developing the disease.

Personalized AI services are gaining more attention in mental health management. AI reads early signs of depression or anxiety from social media analysis, voice and emotion recognition. It suggests which interventions are appropriate, suggesting therapists, meditation, relaxation techniques, or basic emotion regulation training.

However, AI application for such personalized health advice and management poses several challenges. The importance of accuracy and completion of data for AI decision-making. Data management must be closely regulated and protected because there are potential errors and breaches of privacy in data acquisition and processing. To ensure the scientific validity and efficacy of the recommendations leading to user misinformation, AI recommendations must conform with the professional medical guidance available.

Yet, personalized health advice and management are very promising prospective areas for AI in intelligent health management, notwithstanding these difficulties. Using AI's advanced analytical capabilities, enhanced, highly customized health services are expected. These developments help people to modify behaviors to adopt a healthier lifestyle, to better cope with disease and to live better. In the future, AI will become further integrated into personalized health applications to provide comprehensive and precise support for health management and facilitate the construction of a more tailored yet humane health service system.

2.3. Mobility and Transportation

Intelligent transportation systems' exposure to the spotlight in the mobility sector has its credit to the advancement of AI and in particular that of autonomous driving. AI and transportation are synonymous as both look into increasing road safety and traffic efficiency, as well as reinventing mobility and forming the urban transportation terrain of the future [6]. Deep learning, sensor fusion and high-precision mapping empowered vehicles to independently perceive the environment, recognize obstacles and make safe decisions. By this time, systems such as Google's Waymo and Tesla's Autopilot reliably demonstrate autonomous functionality in the real world. Artificial intelligence could do anything from highway cruising to navigating complex urban terrain, making

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travel more ease and efficient. These systems integrate lidar, cameras and GPS to construct real-time environmental models, enabling safe operation in a variety of settings. Still, autonomous driving has not yet been widely adopted. For instance, the technological maturity so far is critical because current autonomous vehicles work quite well within certain boundaries of conditions, but are limited in many unpredictable traffic environment conditions, e.g. extreme weather situations or not standard driving behavior. The people also have a regulatory framework and public acceptance. Commercialization of on-road autonomous vehicles is unheard of since countries do not have uniform standards. To instill confidence in the safety of autonomous vehicles, the public needs to have a lot of testing and lots of information about what happens when they crash.

Other parts of intelligent transportation are affected by AI as well. Deep learning analysis of traffic flow and pattern can be used to predict traffic congestion better and allows to development of a more advanced signal control strategy to maximize road efficiency. AI helps with route planning and provides personalized navigation (via live traffic conditions) to make the commute shorter [7]. AI optimizes scheduling algorithms in public transportation and dynamically adjusts bus and subway frequency according to passengers' demand and vehicles' status to improve its operational efficiency. AI provides real-time arrival predictions which improve the attractiveness of public transport by giving passengers a good idea of what waiting time to expect at stations. Progressively mobility is changing with the AI applications in intelligent transportation and autonomous driving. Where could AI take travel in the future? Ongoing technological advances and regulatory developments will help to unlock further potential of intelligent transportation, and I believe, will make urban living much more convenient and efficient.

2.4. Social and Entertainment

Artificial intelligence in entertainment, more formally known as game AI, has moved beyond simple game logic into dynamic behavior simulation and environmental interaction which provide both more immersion and more challenge. In recent times deep learning and machine learning have helped in developing a diversified and intelligent game AI trend. Encompassing this progress are notable advancements in character behavior, game environments, and strategy generation, influencing game design, player experience, and the greater meaning of the gaming industry [8,9,10].

Game AI has accomplished significant progress in character behavior simulation. Before this, game characters were controlled earlier by pre-set scripts and now people have modern game AI that learns and adapts to player actions, which allows for more natural and dynamic interactions. For instance, characters who are upset will no longer run along a path or simply attack in succession with each other based on their positions to balance the experience that way. Besides, AI helps to have more complex nonplayer characters (NPCs), which will be responsive to player actions and will have some means of self-learning, to provide a variety of game playing. Game environment design involves a high reliance on AI. Game AI uses machine learning algorithms to autonomously generate complex, varied worlds where not only do worlds change on the fly depending on player actions and decisions but individual scenes do as well. As an example, in open-world games AI systems are used to generate weather changes, terrain, and ecological growth, thus offering the players more realistic (and diverse) of exploration.

Using AI can give the game higher difficulty, having it create a strategy. In deep reinforcement learning, AI learns and improves game strategies and can reach the level of a player, or higher. In board games and games of strategy such as Go and chess, AI has bested world champions in feats of technical planning and decision-making. Game AI is perhaps the invention that changed the game design game. AI is used by developers to remove manual designing efforts and create a diverse and dynamic game. Dynamic difficulty adjustment is achieved through AI as well, to yield challenges that fit a player's capabilities. AI helps developers continuously analyze player behavior and feedback,

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to optimize games and deliver personalized player experience. Player interaction and personalization are increased with the aid of Game AI. Tailor-made character-driven narratives crafted through player actions deep story engagement and immersion are what AI dialogue systems can now provide. By analyzing game-playing preferences and habits though, AI is able to suggest levels, tasks and game modes, thereby increasing game retention and enjoyment. The advancement of game AI however gives challenges. When it comes to competition (and fun) AI must be careful not to be too intelligent, as this will negatively impact the challenge. Moreover, the incorporation of AI technology can result in the obsoletism of certain conventional game design methods which would necessitate the equilibrium presupposition of innovation coupled with the convention of familiarity for the players. Game AI has made substantial contributions not only to increase the level of gaming experience but also to its design innovation and the optimization of the industry. Thanks to continuous technological advancement, people expect that the future game AI will bring a more realistic, interactive and personalized gaming world, expand the game art space, and further enrich entertainment experiences.

3. Conclusion

In this thesis, a comprehensive examination of the practical applications of AI in smart homes, intelligent health management, transportation and social and entertainment sectors has been provided. This shows us that AI technology is key to people's lives every day and makes lives much more comfortable and better. Home automation, energy management, and personal services provide evidence of AI's ability to perceive, control and operate intelligently. Devices such as thermostats, lighting systems and smart refrigerators learn user habits through deep learning and sensor technologies, thereby making living seamless. AI, powered by deep learning and big data, helps doctors with diagnostics and tailoring a treatment plan, and sometimes exceeds human accuracy, in healthcare. From the area of health monitoring, real time collected data and pattern recognition aid the users for proactive disease prevention and health management purposes (e. g. smart wristband or glucose monitoring systems). First of all, though the intelligent transportation revolution takes place mostly in autonomous driving technology. The applications of AI in the field of path planning of vehicles, obstacle recognition and analysis of driver behavior are the prerequisites of safe and efficient intelligent transport systems. Deep learning analysis helps to optimize the road flow and to increase the efficiency of travel using traffic management systems. Intelligent voice assistants and chatbots that are deployed in social and entertainment backdrops, like gaming and interactive designs in social media platforms, have enhanced human-computer interaction, giving communication an intuitive turn and entertainment opportunities more diverse. It can be seen AI going forward in applied deeper in fields and having intelligence in everyday lives. Personalization in smart homes will be greater, health management systems will become more exact, using travel will be easier, and social and entertainment interactions will seem more natural. The vast potential of AI is changing lifestyles, and moulding the blueprint for future societies. As technological advancements continue, people will have more efficient, human-centric solutions that will bring us closer to the goals of technology serving humanity. Through this thesis, how AI technology flows from theory to practice to become the core part of day-to-day life is presented and deep insights on the future development of this technology are presented. Learning about the applications, challenges, and problems faced by AI across multiple domains helps one more than understand its impact on life or to anticipate what the future will be like when AI is all around.

References

[1] *Sepasgozar, S., Karimi, R., Farahzadi, L., et al. (2020). A systematic content review of artificial intelligence and the internet of things applications in smart home. Applied Sciences, 10(9), 3074.*

DOI: 10.54254/2755-2721/121/2025.20074

[2] *Soji, E. S., Gnanamalar, S., Arumugam, N., Priscila, S. S., Selvam, N., & Rajest, S. S. (2024). AI-Driven Computer Vision for Intelligent Home Automation and Surveillance Systems. In Explainable AI Applications for Human Behavior Analysis (pp. 242-257). IGI Global.*

[3] *Dong, Z., Wei, J., Chen, X., & Zheng, P. (2020). Face detection in security monitoring based on artificial intelligence video retrieval technology. Ieee Access, 8, 63421-63433.*

[4] *Kobrinskii, B. A., Grigoriev, O. G., Molodchenkov, A. I., Smirnov, I. V., & Blagosklonov, N. A. (2019). Artificial intelligence technologies application for personal health management. IFAC-PapersOnLine, 52(25), 70-74.*

[5] *Rezayi, S., R Niakan Kalhori, S., & Saeedi, S. (2022). Effectiveness of artificial intelligence for personalized medicine in neoplasms: a systematic review. BioMed research international, 2022(1), 7842566.*

[6] *Miles, J. C., & Walker, A. J. (2006, September). The potential application of artificial intelligence in transport. In IEE proceedings-intelligent transport systems (Vol. 153, No. 3, pp. 183-198). IET Digital Library.*

[7] *Alanazi, F. (2023). A systematic literature review of autonomous and connected vehicles in traffic management. Applied Sciences, 13(3), 1789.*

[8] *Hu, Z., Ding, Y., Wu, R., et al. (2023). Deep learning applications in games: a survey from a data perspective. Applied Intelligence, 53(24), 31129-31164.*

[9] *Justesen, N., Bontrager, P., Togelius, J., & Risi, S. (2019). Deep learning for video game playing. IEEE Transactions on Games, 12(1), 1-20.*

[10] *Liu, J., Snodgrass, S., Khalifa, A., Risi, S., Yannakakis, G. N., & Togelius, J. (2021). Deep learning for procedural content generation. Neural Computing and Applications, 33(1), 19-37.*