Artificial Intelligence and Its Relationship with Smartphones

Bushra Naeem Abdul RazakALmafrachi

Department of Computer, College of Sciences, University of kufa -Iraq

Corresponding Author E-mail: busna23@gmail.com

Phone Number / 07831856629

ABSTRACT

Recently, a new technology has appeared on the scene, and this technology is known as artificial intelligence or artificial intelligence, which has invaded the world in recent years, as it works to provide and perform difficult functions similar to the human mind and is present in many modern technologies, the most important of which are the smart phone and computers. The topic was chosen to conduct a study on it due to its extreme importance and it has several applications from fingerprints and facial recognition and protecting information on smart phones. These are all tasks of artificial intelligence. And this research aimed to discuss what artificial intelligence is, its impact on humans, how it is used, and its relationship to smart phones in terms of perception, learning, machine learning, and assistance in protecting phone information and other similar matters.

Keyword / Artificial Intelligence, Smartphones, machine learning, deep learning ,.

الذكاء الاصطناعي وعلاقته بالهواتف الذكية

بشرى نعيم عبد الرزاق المفرجي

قسم حاسبات ، كليةعلوم ، جامعة بابل / العراق

Corresponding Author E-mail: busna23@gmail.com

الملخص

ظهرت في الآونة الأخيرة على الساحة تقنية جديدة تُعرف هذه التقنية بالذكاء الاصطناعي أو الذكاء الاصطناعي، والتي غزت العالم في السنوات الأخيرة، حيث تعمل على توفير وأداء وظائف صعبة تشبه العقل البشري وتتواجد في العديد من التقنيات الحديثة وأهمها الهاتف الذكي والكمبيوتر، وقد تم اختيار الموضوع لإجراء دراسة عليه نظرًا لأهميته البالغة وله تطبيقات عديدة من بصمات الأصابع والتعرف على الوجه وحماية المعلومات على الهواتف الذكية، وهذه كلها مهام الذكاء الاصطناعي، وهدف هذا البحث إلى مناقشة ماهية الذكاء الاصطناعي وتأثيره على البشر وكيفية استخدامه وعلاقته بالهواتف الذكية من حيث الإدراك والتعلم والتعلم الآلي والمساعدة في حماية معلومات الهاتف وغيرها من الأمور المشابهة.

الكلمات المفتاحية / الذكاء الاصطناعي، الهواتف الذكية، التعلم الآلي، التعلم العميق،.

1. Introduction

A new field known as "Artificial Intelligence or Artificial Intelligence" has entered our world, and with it also entered the terminology and sub-sciences.. As is the case with everything new, feelings of fear and threat have appeared towards it; and this time, the currently known jobs, these feelings are related to the jobs of the future that replace, or the intelligence of the machine and its elimination of humans. It has been defined as: Artificial intelligence that contains a human level

of cognitive functions across a wide range of fields: such as language processing, image processing, computational performance, reasoning, etc.

. (Komalavalli,,et al 2020)

The use of artificial intelligence has greatly developed the processes of transportation and travel, as it is currently used by Google, Apple, or Waze maps. By using these maps, it is possible to infer different destinations and know the places where there is traffic congestion. Without using these applications, the process of transportation and access to places is difficult. In the past, trips or visits to unknown places were difficult, but at the present time, it is possible to reach any place only by knowing the link to the site you want to go to. (Gaurav,2012)

Artificial intelligence has developed greatly to an unimaginable extent. At the present time, it has become possible to open mobile devices, to put a password on the phone or computer, and computers using the face. There is no need to recognize the face and enter the phone or computer directly. This field has also expanded and is now used in government facilities and airports, where entry to these places is now done through a picture of the face. In this research, I focused specifically on smartphone technology and its relationship with artificial intelligence, as the research addressed this topic from most directions and gave a precise detail of it. (et al..)

2.What are the research questions?

Questions related to artificial intelligence and its relationship with smartphones address several key issues that help understand how this technology affects smartphone usage and enhances its functionality. First, how can artificial intelligence improve the user experience in smartphones? Second, what are the practical applications of AI in smartphones? Third, how does AI impact the security of smartphones?

Fourth, what challenges are associated with integrating AI into smartphones? Finally, how can AI contribute to the development of smarter smartphones in the future? Understanding these questions can provide insights into how AI can be used to enhance smartphone capabilities and development, contributing to improved user experiences and innovative solutions. .

3. What is Artificial Intelligence (AI)?

The American scientist John McCarthy is considered to be the one who coined the term artificial intelligence in 1956 AD (Gaurav,2012)

it is the branch of computer science that aims to create intelligent machines. Artificial intelligence is a field of computer science concerned with the

development of systems and software that can simulate human mental abilities, such as learning, reasoning, and problem solving. AI relies on techniques such as machine learning and natural language processing to create systems that can analyze data and make decisions independently. The field aims to improve efficiency and increase the ability to handle complex tasks. (Hajar,2023)

Figure 1: Artificial Intelligence (AI):

4.The importance of AI:

he importance of artificial intelligence lies in its profound impact on various aspects of modern life, revolutionizing many fields. By automating and enhancing efficiency, AI helps reduce routine burdens on individuals, allowing them to focus on more complex and creative tasks. In healthcare, AI contributes to improving the quality of care through more accurate diagnoses and personalized treatment recommendations, and accelerates research and drug development.

Additionally, AI enhances user experience by providing personalized services and intelligent interactions in various applications such as virtual assistants and recommendation systems. In the tech sector, AI drives innovation through technologies like self-driving cars and big data analytics, opening new avenues for development. It also offers solutions to complex problems by processing vast amounts of data more quickly and accurately than human capabilities, aiding in more informed decision-making and effective problem-solving.

In summary, artificial intelligence advances technological progress and offers innovative solutions to improve quality of life and transform how we conduct business and interact with technology, making it a crucial element in the digital future.

5. The Importance of Machine Learning and Deep Learning:

Machine learning and deep learning technologies are among the most important innovations in the field of artificial intelligence, as they contribute to the development of practical applications that affect various aspects of our daily lives.

Figure 2 Artificial Intelligence and relationship with Machine Learning and Deep Learning.
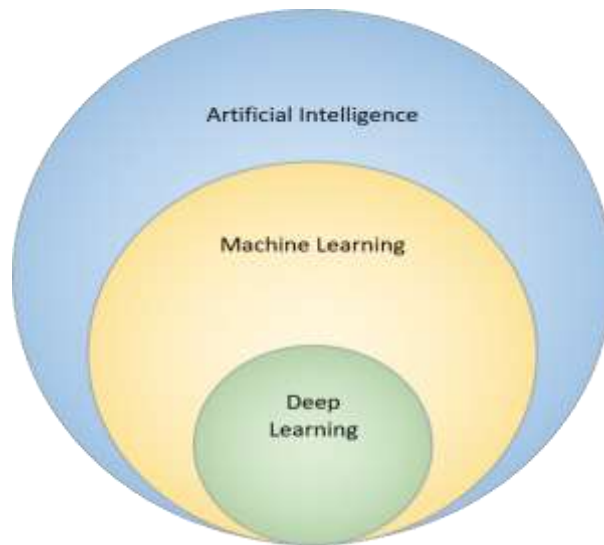
Machine learning : - is based on developing models and programs that learn from data and use this data to make decisions and predict outcomes. This is done by applying a variety of algorithms such as artificial neural networks and statistical analysis.A broader field where computers learn by analyzing large datasets without requiring human intervention for programming. This process relies on machine learning algorithms that extract patterns from the data, making it easier for us to make decisions based on these findings. and is a branch of artificial intelligence (AI). (Francisco,2017)

Deep learning: It is a branch of artificial intelligence (AI) that relies on using neural networks to learn from data and perform tasks that typically require human intelligence. It has contributed to achieving many impressive advancements in the field of AI in recent years, such as facial recognition, natural language processing, self-driving cars, and more. (Francisco,2017)

6.Security and Privacy in AI and Smartphones

Privacy and security are fundamental concerns when it comes to using artificial intelligence (AI) in smartphones, raising questions about how personal data is collected, stored, and processed. These concerns include protecting sensitive information such as personal data, location, and daily interactions, which can put users at risk if leaked or misused.

One of the main challenges is ensuring that the AI technology used in smartphones does not violate personal privacy. AI relies on large amounts of data to improve performance and provide personalized experiences, necessitating the collection of vast amounts of information. At the same time, device manufacturers and

developers must implement stringent security policies to protect this data from unauthorized access.

Encryption is a key method for ensuring data security, as it transforms data into an unreadable format without the appropriate decryption key. Additionally, users should have the ability to control what information is collected and how it is used, which requires clear and user-friendly privacy settings. It is also crucial to educate users about security risks and how to protect their personal data, including regularly updating apps and systems to avoid security vulnerabilities. Ultimately, there must be a balance between leveraging AI technologies and enhancing security and privacy to ensure the protection of individual rights in the age of advanced technology.

7.The Role of Artificial Intelligence (AI) in Mobile App Development

Artificial Intelligence (AI) plays a transformative role in mobile app development, enhancing functionality, user experience, and overall efficiency. Here are several key areas where AI contributes significantly:

1.personalization and User Engagement

- **Customized Experiences**: AI analyzes user behavior and preferences to deliver tailored content, recommendations, and features, enhancing user engagement and satisfaction.
- **Adaptive Interfaces**: Applications can adapt their layout and features based on user interactions, providing a more seamless experience.

2. Enhanced User Support

Chatbots and Virtual Assistants: AI-powered chatbots offer customer support around the clock, answering queries, guiding users, and providing assistance, improving user experience and reducing support costs.

3.Smart Search and Recommendations

- **Natural Language Processing (NLP)**: AI-driven NLP enables more sophisticated search functionalities within apps, allowing users to perform voice searches or interact with the app using natural language.
- **Contextual Recommendations**: Apps can recommend features or content based on context, such as location, time, or user activity.

8.Artificial Intelligence and Smartphones

Artificial intelligence is one of the most important technological developments that has greatly affected the design and use of smartphones. Here are some areas in which artificial intelligence is prominent in phones: (Francisco,2017)

1.Smart personal assistants:

Such as Siri and Google Assistant, these assistants use artificial intelligence technologies to understand voice commands and perform tasks, such as sending messages, setting reminders, and answering questions.

2.Personal data analysis:

Smartphones use artificial intelligence to analyze user behavior and preferences, which enables them to provide personalized recommendations in various applications, such as shopping and music applications.

3.Camera improvement:

AI technologies help improve image quality by analyzing scenes and automatically adjusting settings, such as improving lighting and focus.

4.Face recognition and fingerprints:

Smartphones use artificial intelligence in security technologies, such as face recognition and fingerprints, which contribute to better protecting personal data.

5.Voice interaction:

AI enables voice control of phones, making it easier for users to execute commands and interact with applications without having to touch the screen.

6.Health apps:

Some smartphones use AI to monitor health, such as tracking sleep patterns, heart rate, and providing fitness tips.

7. Improving performance:

AI can improve smartphone performance by managing resources efficiently, leading to improved operating speed and increased battery life.

10.What are the challenges of implementing AI?

AI faces a number of challenges that make implementation more difficult. The following are examples of the most common challenges to implementing and using AI.

1.Data Governance:

Data governance policies must adhere to regulatory constraints and privacy laws. To implement AI, you must manage data quality, privacy, and security. You are responsible for customer data and privacy protection. To manage data security, your organization must have a clear understanding of how AI models use and interact with customer data across each layer.

2.Technical Difficulties:

Training AI using machine learning is resource-intensive. For deep learning techniques to work, a high level of processing power is required. You must have a powerful computing infrastructure to run your AI applications and train your models. Processing power can be expensive or limit the scalability of your AI systems.

3.Data Limitations:

To train unbiased AI systems, you need to ingest massive amounts of data. You must have enough storage capacity to handle and process the training data. Likewise, you must be proficient in data management and quality processes to ensure the accuracy of the data you use for training.

12. Results

The results of the study on artificial intelligence and its relationship with smartphones reveal several key findings about how this technology enhances smartphone performance and positively impacts user experience.

First, the study demonstrated that artificial intelligence plays a crucial role in improving user experience by providing smart features such as digital assistants, personalized recommendations, and enhanced user interfaces. These features help tailor interactions with the phone based on user behaviors and preferences, making usage more convenient and effective. Second, the study highlighted numerous practical applications of AI in smartphones, such as enhancing camera performance through image recognition technologies, offering real-time translation services, and improving security with facial recognition and fingerprint scanning. These applications contribute to better photo quality, facilitate communication across different languages, and ensure personal data protection.

Third, the results showed that AI can enhance smartphone security by detecting potential threats and abnormal activities early. This helps protect personal data

and reduce risks associated with cyberattacks. Fourth, the study addressed challenges in integrating AI into smartphones, such as managing large amounts of data, maintaining user privacy, and ensuring algorithm accuracy and effectiveness. These challenges are crucial for maximizing the benefits of AI and ensuring its seamless integration with smartphones.

Finally, the study indicated that AI will continue to play a fundamental role in the development of smarter smartphones in the future. Through ongoing innovation and technological improvements, AI will provide new features that adapt to evolving user needs, contributing to making smartphones more intelligent and effective.

Conclusion

Artificial intelligence has become an integral part of smartphones, transforming the user experience to a new level of intelligence and personalization. Through applications like voice assistants, automatic translation, and camera enhancement, AI boosts smartphone efficiency and offers more interactive and tailored experiences. However, the integration of AI into smartphones raises concerns about privacy and security, necessitating ongoing attention to ensure its safe and ethical use. Ultimately, AI represents a major turning point in how we interact with everyday technology, continuing to push the boundaries of innovation in this field.

References

1.Frank ,E (2024).,Data privacy and security in AI systems.https://www.researchgate.net/?_tp=eyJjb250ZXh0Ijp7InBhZ2UiOiJwd WJsaWNhdGlvbiIsInByZXZpb3VzUGFnZSI6bnVsbH19

2.Giampedraglia, P. (2023, September 29). *The role of artificial intelligence in mobile app development*. Mobile Apps. https://www.asapdevelopers.com/the-role-of-artificial-intelligence-in-mobile-app-development/#:~:text=Contact%20us-,THE%20ROLE%20OF%20ARTIFICIAL%20INTELLIGENCE%20IN%20M OBILE %20APP%20DEVELOPMENT,-By%20Pablo%20Giampedraglia

3.Hajar ,J .(2023) ,Artificial Intelligence,

4. Jeronimo ,F,(2017) ,Mobile AI and the Future of Intelligent Devices. http://www.idc.com.

5.Jindal, G., & Anand, M. (2012). *Android applications with artificial intelligence in mobile phones*. *Journal Name*, 2(4), 46–49.

6.Kale, K. (2018). Artificial intelligence in mobiles. International Research Journal of Engineering and Technology (IRJET), 5(6). Retrieved from https://www.irjet.net

7.Komalavalli, K., et al. (2020). A survey of artificial intelligence in smart phones and its applications among the students of higher education in and around Chennai City. Shanlax International Journal of Education, 8(3), 89–95. https://doi.org/10.34293/education.v8i3.2379 8. Roopitha, C. H., & Shreejith, K. B. (2022). *Survey on AI implementation on smartphone*. *International Journal of Innovative Research in Technology*, *8*(11), 331. ISSN: 2349-6002 https://ijirt.org/index

9. Shabbier, J., & Tarique, A. (2015). *Artificial intelligence and its role in near future*. *Journal of LaTeX Class Files*, *14*(8).

10.:https://www.google.com/url?sa=i&url=https%3A%2F%2Fcyberguy.com%2Fsecurity%2F10-simple-steps-to-improve-your-smartphones-security-privacy%2F&psig=AOvVaw2t_0xmSSqSaifq-i0blq8n&ust=1723257023304000&source=images&cd=vfe&opi=89978449&ved=0CBEQjRxqFwoTCID16unu5ocDFQAAAAAdAAAAABAE

11.https://d2908q01vomqb2.cloudfront.net/f1f836cb4ea6efb2a0b1b99f41ad8b103eff4b59/2018/05/04/ImagesSageMaker2-2.png

12. https://aws.amazon.com/ar/what-is/artificial-intelligence/#:~:text=%D9%85%D8%A7%20%D9%87%D9%88%20%D8%A7%D9%84%D8%B0%D9%83%D8%A7%D8%A1%20%D8%A7%D9%84%D8%A7%D8%B5%D8%B7%D9%86%D8%A7%D8%B9%D9%8A%20(AI)%D8%9F

13.https://www.researchgate.net/?_tp=eyJjb250ZXh0Ijp7InBhZ2UiOiJwdWJsaWNhdGlvbiIsInByZXZpb3VzUGFnZSI6bnVsbH19