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Utilization of Artificial Intelligence in Libraries as a Form of Library Development

Pemanfaatan Artificial Intelligence di Perpustakaan Sebagai Bentuk Pengembangan Perpustakaan

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Abstract

Background of the study: Artificial intelligence is a solution to facilitate technical work. There are many organizations that have used AI to carry out their duties, one of which is libraries.

Purpose: This research discusses the application of AI as a form of library development. This was analysis because there was an opinion that the application of artificial intelligence technology was a form of library development because it was able to adapt to technology and provide more optimal services as a result of this application.

Method: This analysis was carried out using the literature study method. A literature study was carried out to analysis trends developing in the library world in depth from various literature sources in order to provide recommendations for further development.

Findings: Based on the results of the analysis that has been carried out, it is known that AI can help librarians in carrying out technical work such as making plans, automatic information services, and managing record-keeping information. Librarians as human resources who will apply AI at work need to adapt to technological developments so they can apply AI effectively and efficiently and self-actualize to be able to compete with AI.

Conclusion: AI as a technological development certainly has advantages and disadvantages. The advantages gained from using AI are the ability to understand natural language, scalability and flexibility, generative capabilities, wide use, ability to learn from data, integration with existing applications and platforms, open access. while the weaknesses of ChatGPT are the Opportunity for Error, Inability to Understand Context in Depth, Limited Level of Knowledge, Susceptibility to Bias:, Limitations in Recognizing Specific Contexts, Dependence on Large Training Data. Even though ChatGPT still has weaknesses, it can still be updated over time. With this analysis, it is hoped that it can provide an overview of developments that need to be carried out in the future in order to produce even better performance.

Keywords: artificial intelligence, library development, libraries, digital libraries

Abstract in Indonesia

Background of the study: Artificial intelligence menjadi solusi dalam kemudahan pekerjaan yang bersifat teknis. Ada banyak organisasi yang telah menggunakan AI untuk melaksanakan tugasnya salah satunya adalah perpustakaan.

Purpose: Penelitian ini membahas tentang penerapan AI sebagai bentuk pengembangan perpustakaan. Hal itu dianalisis karna adanya anggapan penerapan teknologi kecerdasan buatan menjadi salah satu bentuk pengembangan dari perpustakaan karena mampu beradaptasi dengan teknologi dan memberikan pelayanan yang lebih optimal sebagai bentuk hasil dari penerapan tersebut.

Method: Analisis ini dilakukan menggunakan metode studi literatur. Studi literatur dilakukan untuk menganalisis trend yang berkembang pada dunia perpustakaan secara mendalam dari berbagai sumber literatur untuk dapat memberikan rekomendasi untuk pengembangan lebih lanjut

Findings: Berdasarkan hasil analisis yang telah dilakukan diketahui bahwa AI dapat membantu pustakawan dalam melaksanakan pekerjaan yang bersifat teknis seperti pembuatan perencanaan, pelayanan informasi otomatis, dan pengelolaan informasi yang bersifat pencatatan. Pustakawan sebagai SDM yang akan mengaplikasikan AI pada pekerjaan perlu beradaptasi dengan perkembangan teknologi agar dapat menerapkan AI dengan efektif dan efisien serta actualisasi diri agar mampu bersaing dengan AI

Conclusion: AI sebagai perkembangan tekonologi tentu mempunyai kelebihan dan kekurangan. Adapun kelebihan yang didapatkan dari penggunaan AI adalah Kemampuan untuk Memahami Bahasa Alami, Skalabilitas dan Keluwesan, Kemampuan Generatif, Penggunaan yang Luas, Kemampuan untuk Belajar dari Data, Integrasi dengan Aplikasi dan Platform yang Ada, Akses Terbuka. sedangkan untuk kelemahan dari CHatGPT ini adalah Kesempatan Kesalahan, Ketidakmampuan Memahami Konteks Secara Mendalam, Tingkat Pengetahuan yang Terbatas, Rentan terhadap Bias:, Keterbatasan dalam Pengenalan Konteks Spesifik, Ketergantungan pada Data Pelatihan yang Besar. Meskipun masih memiliki kelemahan ChatGPT masih dapat melakukan pembaharuan seiring dengan berjalannya waktu. Dengan adanya analisis ini diharapkan dapat memberikan gambaran pengembangan yang perlu dilakukan pada masa yang akan dating agar menghasilkan kinerja yang lebih baik lagi.

Kata kunci: artificial intelligence; pengembangan Perpustakaan; Perpustakaan; perpustakaan digital.

Introduction

Unconsciously in life at this time we have used Artificial Intelligence (AI) to carry out activities both in the world of work and daily life. Human desires are instant and fast, making IT people compete in developing technology that can help humans in various ways, including Artificial Intelligence. Several libraries have also applied AI to help with tasks such as library service activities, automatic indexing of collections, predicting reader needs, and optimizing book storage locations. The application of AI in libraries aims at nothing other than work effectiveness in carrying out the library's main duties as an information service provider. According to Matt Etnis (2024) AI provides computational solutions to automatically obtain new knowledge which is important for the development of a truly intelligent library (Chingath, 2020) here fore it is necessary to adopt AI as a tool in carrying out service activities in libraries. One of ChatGPT is a technology based on artificial intelligence (AI) developed by OpenAI. This is a version of a very large, very deep language model that is trained to understand and generate text in natural language. This model uses a machine learning method called Transformer and has gone through extensive training using large amounts of text data from the internet. Even though humans feel that it will be easier to use AI in their work, there are other things that need to be paid attention to. In the second version of the UNESCO (2021) Media and Information Literacy Curriculum for Educators and Learners (this target group includes librarians) AI is described as a challenge to information literacy, stating that although AI brings "benefits to our daily lives", it also "raises many questions about risk.". In this research, we examine the impact of implementing AI in libraries as a form of information technology development in libraries. This research is a dual effort, one part focuses on pedagogical methods for teaching AI skills to library staff, while the other part focuses on AI and libraries with an effort to map important topics to consider in the future development of library operations as well as in library development.

Method

The method used in this research is a literature study on trends in the world of libraries, especially regarding the use of artificial intelligence (AI) and carrying out in-depth analysis so that it can be developed even better in the future.

Result and Discussion

Artificial Intelligence (AI)

Stuart Russell and Peter Norvig: In their famous book, "Artificial Intelligence: A Modern Approach," Russell and Norvig (2022) define AI as "the ability of machines to perform tasks that require human intelligence." This definition covers various types of tasks, from problem solving to decision making, that are performed by machines using algorithms and machine learning. Therefore, there are many benefits to be gained from using AI when working. By using AI, work that was previously done by several people will be done by just one person. So the quality of human existence needs to be questioned. However, humans do not need to feel like they are competing with AI. As working human resources, several things need to be improved so that they can coexist with AI. According to Dr. Andrew Ng (AI Scientist, Founder of Coursera (McMorrow, 2023) emphasizes the importance of technical skills in facing a future dominated by AI. According to him, machine learning and.

Artificial intelligence will become a core skill required by many professions in the future, and humans need to prepare to develop this skill. AI has also been applied in several aspects of library work. According to Boman (2019) library and information science experts apply artificial intelligence (AI) in the world of libraries. Here are some commonly encountered views:

1. Improve Accessibility and Service Direction: Many experts believe that the application of AI in libraries can improve accessibility to library information and services. With AI-based virtual assistants, users can easily access the library catalog, search for information, and get help without having to attend a physical library.

2. Personalization of User Experience: Experts also see potential in using AI to personalize user experience in libraries. By analyzing user preferences and borrowing patterns, AI systems can provide customized reading recommendations, event or program suggestions, and more personalized reference services.

3. Improve Service Efficiency: Implementing AI in libraries can improve service efficiency by automating routine tasks, such as searching and borrowing books, customer service, and inventory management. This allows library staff to focus on tasks that require human expertise.

4. Data Analysis for Decision Making: AI can be used to analyze massive library data to gain insights into reading trends, user interests, and collection needs. With a better understanding of library users and collections, library staff can make better decisions about book purchases, programs, and resource allocation.

5. Provide 24/7 Service: The main advantage of AI is its ability to provide non-stop service. With virtual assistants or chatbots, libraries can provide 24/7 customer service to users, even outside library operating hours.

It is hoped that the convenience created by the development of artificial intelligence will enable libraries to develop even better in providing information and providing excellent service to their users. The application of AI will help libraries to remain relevant and competitive in this digital era, while maintaining their important role as centers of knowledge and resources for society.

In addition, according to Das and Sharif (2021) Improving Accessibility will enable libraries to become more accessible to everyone, regardless of geographic or physical boundaries. With virtual assistants and online services powered by AI, users can easily access library collections and get help in a language they understand. Personalizing User Experience

AI will help libraries to provide a more personalized experience to users. By analyzing users' borrowing patterns, reading preferences, and interests, AI systems can provide tailored recommendations, program suggestions, and more relevant reference services.

Improving Service Efficiency AI will help libraries to increase efficiency in providing services to users. By automating routine tasks, such as book searches, borrowing, and customer service, library staff can spend more time providing more intensive help and support to users. Deep Data Analysis AI will help libraries to extract deeper insights from their own data. By analyzing borrowing patterns, reading trends and user interests, libraries can make better decisions about collection purchases, programs, and resource allocation. Innovation in Library Services AI will be a catalyst for innovation in library services. By leveraging AI's ability to process data quickly and make accurate predictions, libraries can create new services that have never existed before, as well as improve existing services. Based on this explanation and confirming the statement from Ali et al (2020), what needs to be done is:

1. Education and Training: It is important for individuals to continuously improve their skills and knowledge, especially in areas related to the development and application of AI. This can be done through formal education, advanced training, online courses, or other self-study resources.
2. Understanding AI Ethics: Humans need to understand the ethical implications of developing and using AI. This includes considering the social impact, privacy, security and fairness of AI applications, as well as ensuring that the use of AI is carried out with due regard for moral values and principles.
3. Interdisciplinary collaboration: Given the complexity of AI and its widespread impact, it is important to promote collaboration between various disciplines, including computer science, social sciences, ethics, law, and humanities. This can help understand the multidimensional challenges associated with AI and create holistic solutions.
4. Regulations and Policies: There is a need to develop adequate regulations and policies to regulate the use of AI in a fair, safe and responsible manner. This includes policies related to data privacy, cyber security, algorithm transparency, legal responsibility, and human rights protection.
5. Readiness for Change: Given the rapid and far-reaching impact of AI developments, it is important to be flexible and open to change. This may involve adapting to changes in the world of work, changes in skills requirements, or changes in the way we interact with technology and society.
6. Collaboration with Machines: While AI can play an important role in improving human life, it is also important to understand that humans and machines work better when working together. Collaboration between humans and AI can produce better solutions in a variety of contexts, from science and technology to business and healthcare.
7. Monitoring and Evaluation: In adopting and using AI technology, it is important to continuously monitor and evaluate its impact. This includes checking whether AI applications are fit for intended purposes, ensuring that AI use does not lead to undesirable consequences, and improving and changing strategies if necessary

ChatGPT 3.5

Based on the results of the analysis carried out on the ChatGPT application version 3.5, it was found that there are several conveniences that can be used from this application. Please note that ChatGPT is an artificial intelligence that is able to understand human language and answer naturally. According to Salvatore Spina (2023) ChatGPT was developed to help in making work easier such as a virtual assistant, interaction and answering questions automatically, it can also be used in planning or organizing work. One of the advantages of

ChatGPT is its ability to produce creative and original text, so it is often used in content creation, creative writing, and even in narrative development for video games or interactive stories. The advantages of ChatGPT are:

1. Ability to Understand Natural Language: One of the main advantages of ChatGPT is its ability to understand and produce text in natural language at a fairly high level. This allows it to interact with humans in natural and intuitive conversations.
2. Scalability and Flexibility: ChatGPT is a highly scalable and flexible model. It can be improved with more training data and greater computing power, allowing it to continue improving its performance over time.
3. Generative Ability: ChatGPT has the ability to generate original and creative new text based on the input provided. This allows it to be used in a variety of applications, from virtual assistants to creative content creation.
4. Wide Range of Uses: ChatGPT can be used in a variety of contexts and industries, including customer service, education, translation, content writing, and more. This makes it a versatile technology with many potential applications.
5. Ability to Learn from Data: ChatGPT uses a deep machine learning approach to learn patterns in the given text data. This allows it to continue improving its capabilities over time and with more interaction with users.
6. Integration with Existing Applications and Platforms: ChatGPT can be easily integrated with existing applications and platforms, allowing for easy use in a variety of existing technology environments and infrastructures.
7. Open Access: The ChatGPT model, like GPT-3, has open access through cloud services provided by OpenAI, allowing developers and companies to use this technology in their own applications at an affordable cost.

The Role of Librarians in Utilizing AI

As a provider of information sources, libraries must adapt to current developments, including technology. The application of technology in the form of artificial intelligence or often referred to as AI is a good step to speed up service activities and optimize work results more effectively and efficiently. This was also expressed by an expert, Harry E. Pence (2022) who explained that AI is "the ability of machines to carry out tasks that require human intelligence." Therefore, there are many benefits to be gained from using AI when working. By using AI, work that was previously done by several people will be done by just one person.

However, with the existence of AI which can make work easier, librarians certainly don't need to worry about the existence of AI. Because AI is a partner in work, not a solution in carrying out tasks that should be carried out by librarians. With AI, librarians should be helped more in carrying out technical work such as fast service activities, record keeping and other technical activities. Librarians should prepare themselves better to improve their quality so they are able to adapt and apply AI well. Asefeh Asemi (2020) explains that human resources who will manage and use AI need to do several things to be able to face AI developments:

1. Education and Training
   The first thing a librarian can do to improve their personal quality is self-actualization through education and training regarding library development especially information technology so that it can keep up and not be left behind both in terms of knowledge and ability to use it.
2. Understanding AI Ethics
   Artificial intelligence is an artificial intelligence that is held as a tool for humans in doing work. In its use, of course, there are established ethics and governance. As a user of AI, it is necessary to know the ethics of using it. Must know what can and cannot be done using AI. Ai also has limitations, therefore AI has limited ability to perform work.
3. Interdisciplinary collaboration

Librarians must be able to collaborate several scientific disciplines in implementing services. Be it computer science, communication science and library science itself, so that in practice librarians are able to apply several scientific disciplines without having to feel unfamiliar with these scientific disciplines.

4. Regulations and Policies

   With the continuous development of AI, there is a need for regulations or policies in its management and use. This is done so that there is no overlap between HR needs and the work that can be done by AI.

5. Readiness for Change

   Librarians as human resources in libraries also need to prepare themselves for changes that are currently occurring or that will occur. Even though the changes feel very fast, librarians are required to always be ready for these changes

6. Collaboration with Machines

   Collaboration between humans and AI can produce better solutions in a variety of contexts, from science and technology to business and health.

7. Monitoring and Evaluation

   In adopting and using AI technology, it is important to continuously monitor and evaluate its impact. This includes checking whether AI applications are fit for intended purposes, ensuring that AI use does not lead to undesirable consequences, and improving and changing strategies if necessary Like other technologies, ChatGPT also has several weaknesses, based on the explanation from Sam Altman in his interview with The Verge (Lawler, 2021) the weaknesses that ChatGPT still has include:

1. Chance of Error: Even though ChatGPT has the ability to generate text similar to human text, it is still prone to errors and ambiguity. Sometimes, the results may not be completely accurate or relevant to the user's request.

2. Inability to Understand Context Deeply: While ChatGPT can understand context to some degree, it may not always be able to understand very deep or complex contexts. This may result in answers that are less relevant or unsatisfactory in certain situations.

3. Limited Level of Knowledge: ChatGPT is based on data generated from the internet and other sources, which means its knowledge is limited to what it has learned from training data. This means that in some cases, ChatGPT may not be knowledgeable about the topic or the latest information.

4. Susceptible to Bias: As with any language model, ChatGPT is susceptible to bias present in its training data. This may cause inconsistent results fair or discriminatory, especially in the context of language processing and decision making.

5. Limitations in Recognizing Specific Contexts: ChatGPT may have limitations in recognizing very specific contexts or contexts that require very specialized knowledge. This may result in less accurate or unsatisfactory answers in the situation.

6. Reliance on Large Training Data: ChatGPT requires large training data to achieve optimal performance. Therefore, the use of ChatGPT in some cases may require significant computing resources and access to abundant data

Conclusion

The conclusion obtained from the results of the analysis regarding ChatGPT artificial intelligence is that libraries can apply this intelligence in serving their users, such as in automatic question and answer service activities on websites, or used to help find information about certain subjects on reference services.

However, libraries also need to prepare their librarians in applying artificial intelligence so that it can be utilized optimally through education and training regarding artificial intelligence, especially ChatGPT. Technological developments certainly have advantages and disadvantages. The advantage of ChatGPT is that it is easy to operate and widely makes it a

versatile application in various fields of work. Meanwhile, the most basic weakness of ChatGPT is the inability to understand the context in depth due to limited knowledge of research results and still dependence on very large training data.

Acknowledgement

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