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Article

Role Of Artificial Intelligence and Open Access in Digital Libraries

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Abstract: With digital repositories becoming as crucial instruments for archiving and disseminating scholarly content, open access (OA) in academic publication has emerged as a key component in the democratization of knowledge. However, maintaining, finding, and effectively using these resources has become more difficult due to the exponential rise of information. Artificial intelligence (AI) provides creative answers to these problems, revolutionizing the operation of digital repositories and improving the sharing of knowledge. Accessibility, personalization, search and discovery, and metadata management are all being transformed by AI technologies. Semantic Scholar and Deep AI enhance search capabilities, while Google Dataset Search, Tagtog, and Data Cite Fabrica automate metadata creation and standardization. Modern digital archives are increasingly characterized by personalized user experiences that offer collaborative opportunities based on user activity. Chatbots driven by AI and Zotero help users locate materials and navigate repositories. AI is essential to overcoming issues like vision impairments, language hurdles, and other obstacles by making digital repositories more accessible and inclusive. However, it is necessary to address ethical issues including openness, data privacy, and prejudice reduction. The goal of universal access to knowledge is becoming more and more attainable with the adoption of AI-driven solutions, enabling scholars, educators, and students everywhere.

Keywords— Open access, closed access, artificial intelligence, intellectual property rights, libraries.

INTRODUCTION

Because open access has made knowledge more accessible, equitable, and collaborative, it has transformed research and academia. Digital repositories, which enable the storing, organizing, and sharing of research findings from diverse sectors, form the basis of this movement. However, the challenges of selecting, organizing, and ensuring that everyone has access to this wealth of knowledge are growing along with the amount of academic material. Artificial intelligence (AI) is becoming a transformative force that is revolutionizing the way digital repositories operate. With capabilities like intelligent content recommendation, automatic metadata generation, and advanced search engines, artificial intelligence (AI) solutions are revolutionizing how users engage with and locate information on open access platforms.

Furthermore, AI-driven analytics provide useful data about user behaviour, helping companies better serve a range of researcher and learner populations and enhance repository performance. Despite its potential, there are issues with resource allocation, algorithmic transparency, and ethical data use when integrating AI into open access repositories. In terms of knowledge management and service delivery, academic libraries have reached a whole new level thanks to the combination of AI and open access. By using AI to generate metadata, indexing, and content automatically, OA materials would become easier to find and access. AI-powered open access repositories in India that use their sophisticated analytics to suggest pertinent research topics.

To put the last nail in the coffin and truly close the door on this exciting new integration, however, a number of issues needed to be resolved, including cost and practical viability. The digital divide and ethical concerns like algorithmic bias and data privacy must be thoroughly considered before these types of issues become comments on the inequalities they are meant to eliminate. To properly implement solutions for AI-powered open access, libraries in

poor nations like India will need to make significant expenditures in infrastructure, training, and policy creationTo put the last nail in the coffin and truly close the door on this exciting new integration, however, a number of issues needed to be resolved, including cost and practical viability. The digital divide and ethical concerns like algorithmic bias and data privacy must be thoroughly considered before these types of issues become comments on the inequalities they are meant to eliminate. To properly implement solutions for AI-powered open access, libraries in poor nations like India will need to make significant expenditures in infrastructure, training, and policy creation.

ARTIFICIAL INTELLIGENCE

Independent, creative, logical, learning, and information-gathering are all traits of artificially intelligent devices. Like people, artificial intelligence is able to produce unique artwork on its own. The science and engineering of building intelligent robots is what John McCarthy meant when he coined the term "artificial intelligence" (AI). But knowing how to recognize if a machine has artificial intelligence (AI) is the most important concept. A machine might be considered intelligent if a human cannot tell the difference between it and another human during a conversation. The ability of a computer or machine to mimic intelligent human behavior is known as artificial intelligence (AI).Natural language processing, machine learning, and machine reasoning are just a few of the many technologies that go under the umbrella term of artificial intelligence (AI).

Existing literary and artistic works are used as input by machine learning algorithms to identify patterns and parallelism. A generative AI system is said to learn to produce original literary and artistic works by employing the deductive technique to mimic the style of human works. The AI system can produce literary and artistic content on its own thanks to the machine learning algorithm, which is based on computer analysis of human works utilized as training data. Technology, information, and communication have advanced beyond what people could have imagined. The internet-enabled digital revolution aims to digitize data. The internet and artificial intelligence have thus permeated every aspect of daily life. These days, a variety of devices are created by combining artificial intelligence and the internet. acting as the system's controller.

As a result, technology develops quickly, allowing a wide range of internet-connected gadgets to collect and analyze data. In order to perform jobs intelligently, more devices are beginning to emerge that offer data learning capabilities. Artificial intelligence (AI) is a science that is inspired by, but generally operates slightly differently from, the neural systems that humans use to sense, learn, reason, and act. According to John McCarthy, the science and engineering involved is the development of intelligent machines, particularly intelligent computer programs. In general, robotics or anything futuristic is always associated with artificial intelligence. The intention is to make robots behave like humans. Machines can think more intelligently than humans thanks to artificial intelligence (AI). Artificial intelligence (AI) is a simulation of human natural intellect that is made to think and act like a human. Because of its intelligence, it can create new processes that cause problems for humans.

CONCEPT OF OPEN ACCESS

The practice of disseminating research concepts, development plans, and other research-based materials to the broader public without charge or other related restrictions is known as "Open Access Initiatives." After the original author or owner of the intellectual property rights either waives his rights or chooses to keep them but make them publicly available for the public's benefit, this is done. Nonetheless, in order to make money and maintain operations, the owner of intellectual property frequently requests funding, subsidies, or voluntary contributions.

The goal and justification for these open access programs is that those with financial means shouldn't be excluded from accessing

Furthermore, scientific and technological research and development may result in the creation of resources for the benefit of all people, which would then address global issues and allow information to be shared and disseminated to establish a barrier-free environment for researchers worldwide.

Open access (OA) refers to unfettered use of technological resources and free access to information for anyone. Texts, data, software, audio, video, and multi-media can all be considered open access (OA). A growing number of these integrate text with graphics, data, and executable code, although the majority just deal with text. Music, movies, and books are examples of non-scholarly content that can be covered under OA.

An article is deemed open access if its content is freely and universally available to readers, whether through the Internet or another medium, and if the author or copyright owner irrevocably gives all users the right to use, copy, or distribute the work for an indefinite amount of time, provided that due credit is provided.

FAIR USE DOCTRINE

According to Section 52 of the Act, ‘the making of copies or adaptation of a computer program by the lawful possessor of a copy of such computer program from such copy in order to utilize the computer program for the purpose for which it was supplied or to make back-up copies purely as a temporary protection against loss, destruction, or damage in

order only to utilize the computer program for the purpose for which it was supplied', would not be copyright infringement

While the amendments provide robust protection for copyrighted works, they also underscore the importance of maintaining public access rights. The Indian Copyright Act recognizes certain exceptions and limitations, such as fair dealing provisions, which allow for the use of copyrighted material without infringement. These exceptions are essential for ensuring that the public can engage with creative works for purposes such as education, research, and commentary.The doctrine of fair use allows limited use of copyrighted material without the permission of copyright holder. The intent behind the doctrine was to provide a balance between the rights of the copyright owner and the public interest in using such copyrighted work for the purpose of education , research or news reporting. Copyright law grants creators exclusive rights to their original works such as books, music, movies and software allowing them to control how their creations are used and distributed. However this control is not absolute. The fair use doctrine is an exception that permits certain uses of copyrighted material without the permission of the owner of copyright. This doctrine is essential for fostering creativity, free expression and the dissemination of knowledge ensuring that the copyright law does not overly restrict the public's ability to engage with and build upon works. Fair use originated in common law during the 18th and 19th century to prevent rigid copyright application from stifling creativity. It was formally enshrined in U.S law with the copyright act of 1976. Unlike the fair dealing provisions in countries like India, Canada fair use is a flexible doctrine that applies to a wide range of uses and works. Fair use is an affirmative defense meaning that if someone is sued for copyright infringement they must prove that their use was fair. The case by case approach makes fair use both powerful and complex as the outcomes depend on specific circumstances.

CHALLENGES IN BALANCING AI AND COPYRIGHT INNOVATION

This current scenario reflects the fundamental tension between the frameworks of India and the United States between protecting intellectual property and promoting technological innovation. Limiting the use of copyrighted works for AI training may too heavily constrain development, and free use threatens to drain the economic rewards that reward the creators.

One of the biggest problems is the vagueness around AI-generated outputs and whether these are derivative works. Outputs that are very similar to copyrighted works may be derivative works, requiring permission from the copyright owner. On the other hand, if an AI system transforms the original material significantly or creates new expressions, it may be deemed a fair use.

AI models are trained on datasets from all over the world. Different jurisdictions have different copyright laws. This leads to a lot of legal challenges for the developers as they have to navigate through various different legal frameworks. Another important aspect that has to be kept in mind is market impact. It has to be seen if the work generated by AI can replace the traditionally creative works. This might affect the work of the original creators. On the other hand, preventing AI from accessing these copyrighted material might stifle their growth and development.

ROLE OF ARTIFICIAL INTELLIGENCE IN OPEN ACCESS AND CLOSED ACCESS

Unquestionably, the introduction of AI chatbots into the academic research environment has contributed to the dawn of a new era of accuracy and efficiency. With their sophisticated algorithms, these tools have completely changed the way that literature is chosen, giving academics a more efficient method for doing bibliographic searches. However, AI chatbots have drawbacks just like any other technical advancement. One significant issue with these tools is their strong preference for open access publications, frequently at the expense of more established, subscription-based journals. Because of their unfettered material availability, open access publications have emerged as AI chatbots' preferred hunting habitat.

These publications are a perfect resource because of their inherent nature, which permits unrestricted access to their material. With the ability to crawl, analyze, and extract data, AI chatbots discover a veritable gold mine inside the extensive archives found via open access platforms. These tools can give scholars thorough and up-to-date search results because of the wealth of publicly available information. On the other hand, traditional journals that are closed access or based on subscription arrangements offer a more challenging environment for AI chatbots. These journals' obstacles, whether paywalls or restricted access, make it difficult for AI systems to retrieve data seamlessly.

While encouraging cooperation between AI chatbots and limited access journals is a good concept, it can be difficult due to the complexity of these partnerships and the intricacies of access limitations and private information. Thus, encouraging existing publications to adopt the open access approach seems to be a more practical answer. In order to ensure a thorough and comprehensive evaluation of the body of current literature, researchers must supplement AI-driven literature searches with conventional techniques. This two-pronged strategy preserves the integrity and rigor of academic endeavors while reducing the possibility of missing important research. Given these difficulties, there is a

need for a more comprehensive strategy in the field of academic research powered by AI.
AI chatbots need to adopt a more inclusive stance and get past the open access bias if they are to be the true guardians of a research revolution. Collaborations between AI developers and other traditional journal publishing stakeholders could make this inclusivity a reality. Such collaborations might be able to close the gap between state-of-the-art technology and a diverse range of scholarly material, guaranteeing that research in the future is thorough and objective.

AI Tools

Different AI tools are mentioned below :
Google Dataset Search: Google Dataset Search, a tool for researchers to find datasets

- **Google Dataset Search** - One useful example of AI-powered metadata management in open access repositories is Google Dataset Search, a tool that helps researchers locate datasets stored online. To make it simpler for users to locate pertinent resources for their research, Google Dataset Search employs artificial intelligence (AI) to crawl and index publically available datasets. This includes metadata from datasets, such as details on the dataset's structure, content, and development process. Libraries can benefit from Google Dataset Search's helpful example of how AI can support dataset management.
- Semantic Scholar: is an academic search engine powered by AI that was created by
- **Semantic Scholar**: is an AI-powered academic search engine developed by the Allen Institute for AI. It outperforms traditional search engines and increases the discoverability of academic research by incorporating state-of-the-art artificial intelligence methods.
- **AI-Powered Chatbots** essential resources for enhancing user interaction and customization in online archives. These chatbots employ artificial intelligence to offer interactive, real-time support, assisting users in navigating platforms, finding relevant information, and improving their overall experience.
- Zotero is a popular reference management application that improves research
- **Zotero-** It is a well-known reference management tool that streamlines our research procedures by managing and classifying sources, citations, and bibliographies. In order to improve user experience and take into account the research process in relation to personalization and user engagement, Zotero integrates AI capabilities.

OPEN ACCESS AND ITS SYNERGY WITH AI

1. **Increased Accessibility Open Access**

OA) programs are committed to ensuring that all scholarship is openly accessible to everybody, and integrating AI with these endeavors has increased the facilities' excitement and scope. By making it easier to find and retrieve open access articles, repositories, and databases, artificial intelligence (AI) can make access easier. AI-enabled search engines and indexes, for instance, are designed to make it possible for users to easily peruse vast volumes of open-access content in multidisciplinary or other areas. AI facilitates the dismantling of linguistic and format barriers to increase the inclusivity of knowledge. High-quality translation technologies driven by artificial intelligence make it easier for non-native speakers to access and comprehend research published in other languages. Text-to-speech technologies improve accessibility for those with visual impairments by making open access resources more user-friendly for a variety of target audiences.
. By creating conditions that are fair and inclusive for the dissemination of academic knowledge, these technologies advance open access standards.
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2. **Collaboration and Knowledge Sharing-** That is a time that is very close to reality because the advancement of AI research keeps everyone inside powered walls of clear access rather than physically separating them. This is true even though there are no barriers to entry into the promising internal collaboration contribution of open access to a larger whole that has used real-time collaboration and determination through the identification of matched works, potential collaborators with common identified interests-research networks, and other recommendations from such-bridged AIs. These tools create an academic ecosystem that is interconnected and free from barriers and boundaries, allowing innovators and ideas to flow freely.

CHALLENGES AND ETHICAL CONSIDERATIONS

1. **Data Privacy and Security** – Data security and privacy become more important as academic libraries employ AI tools more and more for resource discovery, customisation, and user assistance. The foundations of AI rely on vast amounts of bulk data about users, including search terms, borrowing habits, and interactions with different library services. Although the data is useful for improving services and training algorithms, managing it carries a high risk and a suggestion of dishonesty. Libraries must adhere to data protection laws and make significant investments in cutting-edge security measures to prevent data breaches and misuse. In nations with stringent data privacy regulations, like the European Union's General Data Protection Regulation (GDPR), compromised ethical use of

customer data is a crucial foundation for trust and privacy.Finally, in order to guarantee that AI personalization does not jeopardize user privacy, libraries must create explicit data governance rules. Public regulations on the gathering, use, and storage of data can help reduce privacy risks and reassure consumers that their data is managed carefully.

. 2. **Bias in AI Algorithms** Of course, other risk factors like bias in AI algorithms present a significant obstacle to the effective integration of AI in academic libraries. Machine learning models are trained on historical data, which already has biases that may exacerbate the unfairness or discrimination of recommendations and outcomes. For instance, it is possible for AI search engines or recommendation systems to favor studies from reputable organizations and omit data from less popular sources or organizations, so excluding voices or important research from the Global South.

3. **Sustainability and Resource Allocation** To effectively use AI and open access systems in academic libraries, both the necessary infrastructure and human resources must be available. Theoretically, artificial intelligence (AI) has the potential to increase an institution's efficiency and improve its services. However, the cost of implementing and maintaining AI systems is a drawback that prevents most institutions from utilizing AI since they cannot afford the related expenses. Once more, the expenses associated with creating and managing open-access repositories will always be ongoing sources of support and funding, placing a significant burden.

CONCLUSION

AI is transforming digital repositories, increasing the effectiveness, inclusivity, and impact of open access. AI technologies are leading this change by improving user engagement, automating intricate procedures, and promoting international information exchange. But integrating AI calls for a well-rounded strategy that puts user-centric design and ethical issues first. The goal of universal access to knowledge is becoming more and more attainable as we adopt AI-driven solutions, enabling scholars, educators, and students everywhere to make contributions to a better informed and connected society. An AI potential for expanding open access in academic libraries is presented in this article. Academic resource discovery, curation, and accessibility are being completely transformed by AI technologies like machine learning, natural language processing, and intelligent recommendation systems.

Thus, through improved resource discovery, increased automation, and user-specific experiences, AI has improved library operations and the accessibility of open access resources. Additionally, AI's integration with open access platforms enables global cooperation and knowledge equity while making academic research accessible and inclusive.

REFERENCES

JOURNALS

- Dr A S Chakravarthy (2025)Artificial intelligence and open access: new frontiers in academic libraries journal of emerging technologies and innovative research
- Divyaprashiktha .T.K (2024) Development of AI and Issues pertaining to Copyright: A Critical Study, International Journal of Scientific Research in Engineering and management
- Kumar Jatindra(2022) Reformulating India’s Artificial Intelligence Regulatory Framework: Retrospect and Prospect , Journal Of Indian Law Institute
- Jain, P., & Sharma, R. (2022). "AI and Open Access: Transforming Knowledge Management in Indian Higher Education." Indian Journal of Library Science and Information Management, 10(2), 85-96.

ARTICLES

AI and Fair Use: Navigating Legal Challenges in India and the United States

Fair Use of Training Data in Generative Artificial Intelligence

ACTS

- Copyright act 1957
- Copyright (amendment) 2012

BOOKS

- VK AHUJA , Law relating to intellectual property

