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Ethical principles for the integration of AI in libraries: navigating between innovation and responsibility

Présentation

by

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Libraries are dedicated to collecting, organizing, preserving, and providing access to books and other written materials. They serve as resources for research, study, and recreational reading, and often host educational and community events. Libraries play a crucial role in preserving and disseminating human knowledge and culture. As digital technologies advance, libraries adapt; offering new and innovative ways to make their collections more accessible to a global audience.

Artificial intelligence is at the forefront of today's advanced technologies, transforming the way we live, work and interact; opening up unprecedented possibilities for change. However, we are aware that technologies, especially AI, are not neutral and can pose new challenges. Given the undeniable potential of AI, it is important to ask ourselves under what conditions AI can be responsibly integrated into libraries. This is the central question that will guide my presentation.

An overview of the potential of AI in Library

The integration of AI in Libraries enhances the way these institutions operate and engage with the public, significantly aids in the preservation and interpretation of cultural and historical assets. Here's an overview of how AI is being used in libraries.

Cataloging and Classification

AI aids in automating the cataloging process, making it faster and more efficient. It can classify and index materials in ways that are more nuanced and user-friendly.

Here are some AI tools used in cataloging and classification:

- Machine Learning Classification Algorithms: For automatically categorizing books and resources.
- Optical Character Recognition (OCR): Used to digitize texts and improve searchability.
- Enhanced Cataloging/Automated Metadata Generation : Generative AI assists in creating more nuanced metadata for library materials, improving searchability and organization.
- Predictive Analytics for Collection Development: AI algorithms predict trends and public interest, helping Libraries decide which new materials or subjects to focus on. Tools like Google Analytics and custom AI models can predict visitor interests and trends, helping institutions plan their collections and exhibitions.

Information Retrieval and Recommendation Systems

Libraries use AI to enhance search functionalities, enabling users to find materials more efficiently. AI can also recommend books and resources based on a user's reading history and preferences.

Here are some AI tools used in Information Retrieval and Recommendation Systems:

- Search Algorithms and NLP: Enhancing search functionalities with semantic search capabilities.
- Collaborative Filtering and Content-Based Filtering: For personalized book and resource recommendations.

Document Preservation and Analysis

AI helps in digitizing and preserving documents. It can also analyze textual data to identify trends, patterns, and significant historical insights.
Here are some AI tools used in Document Preservation and Analysis:

- OCR and Handwriting Recognition: For digitizing handwritten documents.
- Text Mining and Sentiment Analysis: To analyze textual data and extract historical insights.

Educational and content generation

AI is used to generate summaries, abstracts, and even full texts, aiding in the creation of new learning materials or reinterpretation of existing works. Developing educational content, such as interactive guides or explanatory materials that adapt to different user groups or learning styles.

- Chatbots for Educational Tools : AI-powered chatbots, using platforms like Dialogflow, are increasingly being used for interactive educational experiences, guiding visitors through collections and providing contextually relevant information.
- GPT-3 for Content Creation : OpenAI's GPT-3 is being used for generating summaries, translations, or even drafting new content based on existing library materials.

Visitor Experience

AI-driven tools can personalize library visits, offering virtual tours or interactive experiences tailored to individual preferences.
Some AI tools used in the Visitor Experience are:

- Chatbots and Virtual Assistants: Powered by natural language processing (NLP) for interactive visitor engagement.
- Personalization Algorithms: Utilizing user data to tailor virtual tours and interactive experiences.

Mapping risks and challenges

While AI offers numerous benefits for libraries, they also encapsulate multifaceted challenges and risks that libraries need to consider while integrating AI into their operations and services. Indeed, the AI ecosystem seems largely dominated by a techno-utopian discourse, presenting the potential of AI in the form of techno-solutionism (techno-solutionism being the belief that technology can unilaterally solve all social problems). This techno-utopian discourse often masks the drawbacks, failures and dangers associated with the use of AI, with alienating consequences for the cultural integrity of our societies and the institutions that are supposed to protect it.

Ethical and Social Considerations

a) Ethical and Privacy Concerns

The use of AI, especially in data analysis and visitor tracking, raises concerns about privacy and data security. Ensuring the ethical use of visitor data and protecting against data breaches are significant challenges.

b) Bias in Algorithms

AI systems can inherit biases present in their training data. In the context of the library, this could lead to biased interpretations of history or art, skewed recommendations, and exclusion of underrepresented groups in cultural representations.

c) Digital Divide

The increasing focus on digital access to collections and AI-based features might widen the gap between communities with varying levels of technology access, leading to unequal access to cultural resources.

Cultural and Intellectual Integrity

a) Depersonalization of Cultural Experience

Loss of the unique human element in cultural interpretations and experiences. Over-reliance on AI might lead to a depersonalized experience. The unique human touch that comes from curators, historians, and librarians could be overshadowed by algorithm-driven processes.

b) Intellectual Property Issues

Challenges in defining ownership and copyright of AI-generated works. The use of AI in creating art or reproducing existing works can raise complex intellectual property questions. Determining the ownership of AI-generated works or ensuring that AI respects the copyright of original works can be challenging.

c) Determining Authorship and Credit

With generative AI creating new artworks or content, determining authorship and assigning appropriate credit becomes complex. This raises questions about the role of the AI versus the human operator or programmer in the creative process.

d) Intellectual Property Rights

Issues of copyright and intellectual property rights become more complex when AI generates new works, especially if these works are derivative or inspired by existing human-created pieces.

e) Misinterpretation and Over-reliance on AI Analysis

Potential for AI to oversimplify or misinterpret cultural and historical contexts. AI interpretations of cultural artifacts or historical documents might be taken as definitive, leading to the potential for misinterpretation or oversimplification of complex cultural contexts.

Technological and Operational Challenges

a) Dependence on Technology Vendors

Reliance on external tech providers for AI solutions. Libraries might become overly reliant on external tech providers for AI solutions, which can lead to issues related to cost, data control, and sustainability of technology.

b) Skill Gap

Lack of necessary AI-related skills within current Libraries workforces. The effective use of AI requires specific skills and knowledge. There can be a skill gap in current libraries workforces regarding the understanding and handling of AI technologies.

c) Preservation of Original Artifacts

Ensuring that digital representation does not overshadow the importance of physical preservation. There's a risk that the digital representation of artifacts and documents might

overshadow the importance of preserving the original items. Balancing digital and physical preservation is crucial.

Employment and Professional Development

a) Job Displacement

The introduction of AI in various functions might lead to concerns about job displacement, particularly in roles that could be automated, such as cataloging, basic customer service, and some aspects of archival processing.

b) Changing Skill Requirements

As AI becomes more integrated into Libraries operations, the skill sets required for professionals in these sectors will evolve. There might be a greater demand for technical skills, including data analysis and digital literacy, potentially leading to a skills gap.

c) Role Transformation

While AI can automate certain tasks, it also creates opportunities for new roles and responsibilities, focusing more on managing AI systems, data curation, digital outreach, and enhanced visitor engagement. This shift could require significant retraining and professional development for current staff.

d) Digital labor

Addressing these employment-related risks involves strategic planning, including workforce training, role adaptation, and a clear vision of how AI can augment rather than replace human expertise in libraries. It's essential to focus on the complementary nature of AI, where it enhances human capabilities and leads to more enriching job roles, rather than viewing it purely as a replacement for human labor.

e) Ethical Moderation and Oversight

The need for human oversight to manage, interpret, and ethically guide AI outputs will be crucial. This might require existing professionals to gain new competencies in ethical decision-making and AI management.

Authenticity and Interpretation

a) Over-Reliance on Technology for Interpretation

There's a risk that AI could lead to an over-reliance on technological interpretation of cultural and historical artifacts, potentially overshadowing traditional methods of research and scholarship that involve critical thinking and human insight.

b) Authenticity in Digital Reproductions

As AI is used to create digital reproductions or restorations of historical artifacts and artworks, there may be concerns about maintaining the authenticity of these items. Ensuring that digital reproductions do not misrepresent or oversimplify the original works is crucial.

c) Cultural Sensitivity and Contextual Understanding

AI, lacking human cultural understanding and sensitivity, might misinterpret or inadequately represent cultural nuances. It's important for libraries to ensure that AI applications respect cultural contexts and do not lead to misrepresentations.

d) Authenticity of AI-Created Content

In cultural contexts, there's a significant challenge in ensuring that AI-generated interpretations of history or culture maintain authenticity and do not misrepresent the source material.

e) AI as a Cultural Interpreter :

The use of AI to interpret or recreate cultural heritage raises questions about the machine's ability to understand and represent complex human and cultural nuances.

f) Quality Control

Ensuring the quality and accuracy of AI-generated content, especially in historical and cultural representations, requires significant oversight and validation.

g) Reliability and Consistency

The reliability of generative AI in producing consistently high-quality and contextually appropriate content is a challenge, necessitating ongoing monitoring and adjustment.

Technocoloniality

Technocoloniality refers to the set of logics of coloniality induced by technology (Mboa 2020a). According to Thomas Mboa (2020a), the different modalities of technocoloniality are : technology transfer, techno-utopian discourse, coloniality of knowledge and neo-capitalist practices:

a) The techno-utopian discourse

The techno-utopian discourse is part of the rhetoric of modernity described in the colonial matrix of powers. According to Mignolo and Walsh (2018, 110), modernity refers to a coherent set of diverse discourses, originating in Western cosmology. In terms of technology, narratives of modernity consistently celebrate the idea of novelty and its associated concepts of revolution and innovation (Mignolo and Walsh 2018, 140). Sismondo (2004, 139) says in this regard that 'Technology was a symbol of Europe's modernity, and was something that Europeans could generously take to the rest of the world'. The techno-utopian discourse usually takes the form of techno-solutionism, which refers to the view that technology can unilaterally solve difficult social problems (Lindtner et al. 2016, 1390).

b) Coloniality of knowledge

Coloniality of knowledge The coloniality of knowledge is the imposition of Western global history on nonWestern peoples; this results in the subalternization of local historicities (Escobar 2004, 217). Through the coloniality of knowledge, the crucial question of how Western modernity has spread by displacing other cultures, subordinating others and colonizing the imaginary of colonized peoples is addressed. This coloniality is kept alive in books, in academic performance criteria, in cultural models, in common sense, in peoples' self-image, in self-aspiration and in many other aspects of our lives (Maldonado-Torres 2007, 243).

c) Technology transfer from North to South

The transfer of technology from the North to the South is a perfect example of a vehicle of knowledge coloniality. In this case, the coloniality of knowledge often manifests itself through isomorphism, which designates the adoption in Africa of forms structurally similar to those of the West (Shrum and Shenhav, 1995). This isomorphism is present in the way libraries (traditional, smart, digital) are designed in Africa; in strict compliance with Western standards, management, acquisition and classifying processes.

d) Neo-capitalist practices

In the past few years, advances in information and communication technologies have contributed to a tenfold increase in the production of collective knowledge, thus opening the

way for very insidious but powerful practices of capitalism that exploit free information on the Internet to the detriment of the communities and individuals who produce it. This is the result of the share, cognitive capitalism arising from the excesses of the sharing economy (Moulier Boutang 2007, 2008).

Environmental Impact

a) Energy Consumption

AI systems, particularly those involving large-scale data processing and storage, can be energy-intensive. This is significant in the context of libraries, which often strive to be environmentally responsible. The energy demands of running advanced AI models could contribute to a larger carbon footprint.

b) E-Waste and Technological Lifecycle

The lifecycle of the technology used for AI, including servers, computers, and other hardware, contributes to e-waste. As technology evolves, the need to upgrade hardware can result in more electronic waste, which is a growing environmental concern.

c) Resource Intensive Infrastructure

Setting up the infrastructure for AI (like data centers) can be resource-intensive, not only in terms of energy consumption but also in terms of the physical space and materials required.

Financial and Resource Allocation

The high cost of implementing AI and potential diversion of funds from other critical areas. The implementation of AI can be costly. There's a risk that funds might be diverted from other important areas like collection preservation, staff training, or community outreach.

Key actions to ensure responsible use of AI in Libraries

There is no doubt that AI has the potential to revolutionize various aspects of life and society, particularly in the Library. But as well as their enormous potential, these technologies also have negative effects that undermine the way AI works and its aims. So, like other digital technologies, AI has advantages and disadvantages.

Librarians should be well equipped to navigate this duality and ensure that the benefits of AI are realized without compromising the integrity, accessibility, and cultural significance Achieving this requires a balanced, ethical, and sustainable approach of AI, which we refer to as Responsible AI. Here are key actions to ensure responsible AI use in Libraries:

1. Develop Ethical Guidelines and Policies

- Establish clear ethical standards for AI use specifically tailored to libraries contexts, focusing on data privacy, transparency, and accountability.
- Regularly review and update policies to keep pace with evolving AI technologies and societal norms and values.

2. Address Bias and Ensure Inclusivity

- Diversify training data to minimize biases in AI algorithms.
- Actively work to reduce biases in AI systems by using diverse data sets and involving diverse teams in AI development.

- Ensure representation and inclusivity in AI implementations to serve diverse audiences.

3. Enhance Privacy and Data Security

- Be transparent with visitors about data collection and use, and seek consent where appropriate.
- Adopt robust data protection measures to secure personal and sensitive information.

4. Balance AI with Human Expertise

- Avoid over-reliance on AI for interpretation and decision-making in cultural contexts.
- Complement digital AI experiences with physical interactions, especially in areas requiring cultural sensitivity and contextual understanding, to maintain the authenticity of the cultural experience. Use AI to enhance, not replace, human curation and storytelling.

5. Foster Digital Literacy and Skills Development

- Encourage continuous learning about AI and its implications in the libraries context.
- Provide AI education and training for staff at all levels to ensure they are equipped to work alongside AI technologies.
- Stay updated on AI trends and advancements, and understand their implications for libraries.
- Showcase the benefits and address concerns regarding AI through exhibitions, talks, and educational programs.

6. Promote Sustainable and Eco-friendly Practices

- Opt for energy-efficient AI solutions and consider the environmental impact of AI infrastructure.

7. Encourage Collaboration and Community Engagement

- Collaborate with academic, technological, and cultural communities to share knowledge and best practices.
- Involve the public and stakeholders in discussions about AI use in Libraries, ensuring transparency and community buy-in.
- Participate in cross-sector collaborations to explore innovative uses of AI in libraries.

8. Monitor and Evaluate AI Impact

- Regularly assess the impact of AI on visitor experience, operational efficiency, and cultural representation.
- Be open to feedback and adapt AI strategies based on ongoing evaluations and stakeholder input.
- Develop a long-term strategy for AI integration, considering future trends and potential shifts in technology.
- Prepare for ongoing adaptation and evolution of AI tools to stay ahead in a rapidly changing digital landscape.

9. Intellectual Property and Copyright Considerations

- Navigate intellectual property laws carefully, especially when AI is used to create or reproduce works.
- Respect copyright and ensure compliance in AI-generated content.

10. Preserve Authenticity and Integrity

- Maintain the authenticity of cultural heritage when using AI for restoration or digital reproduction.

- Ensure AI applications respect the historical and cultural context of the materials and artifacts.

By following these guidelines, libraries can harness the benefits of AI while mitigating its risks, ensuring that this powerful technology is used in a way that enhances cultural preservation, accessibility, and engagement.

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