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Library at the crossroads of AI technology?: AI in South African Academia: Unravelling Opportunities and Strategies

Selemetsela, Daisy; Matizirofa, Lazarus Gallant

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UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Library at the crossroads of AI technology?

CLARIVATE Seminar: AI in South African Academia: Unravelling Opportunities and Strategies

Daisy Selematsela & Lazarus Matizirofa

23 – 26 April 2024

Clarivate™



image generated by Midjourney (prompt: generative artificial intelligence, academic libraries, –ar 16:9 –v 5)

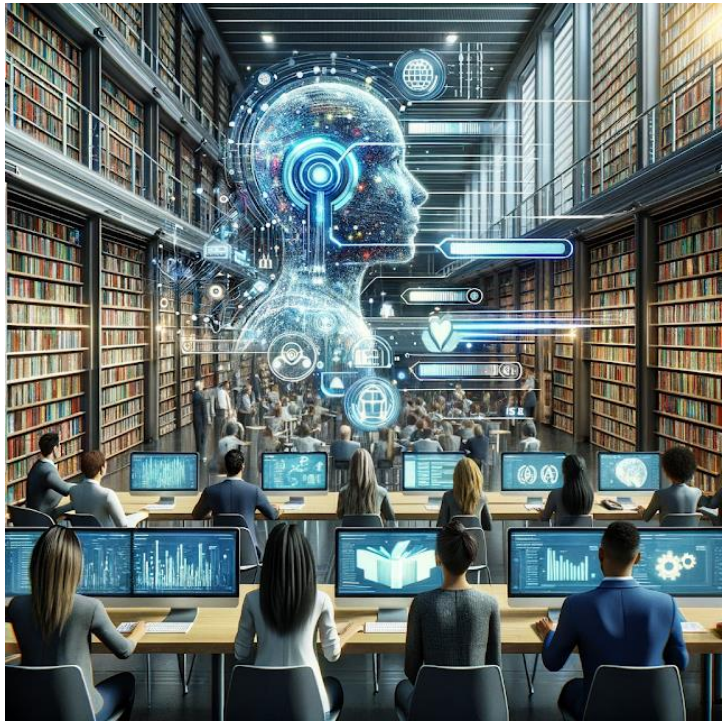
Libraries as “Premier Data Providers”

- Libraries have a track record of adapting to technological changes

- Commitment to
  - Advancing transparency, innovation, and the responsible use and dissemination of publicly funded data assets
  - *Above* Embedded in the libraries Open Access Policies *(in some ways)*
  - *However;* are the institutional policies including Library OA Policy considering the following:
    - *The data assets for use by data-driven AI technologies?*
    - *The development of AI-ready open data assets? And*
    - *Data dissemination standards?*

Libraries as “Premier Data Providers”

- Are libraries continually:
- Refining its processes for creating, curating, and distributing its data (hosted in Repositories) as new technologies emerge?
- Seeking ways to improve *(submitted/deposited research data sets)* creation, curation, and distribution of these open data assets to facilitate the development and advancement of AI technologies such as Generative AI ?



ChatGPTLibrarian: Bridging ChatGPT and Librarianship

Status Quo?

- Libraries today face a new technological change
  - Emergence of AI technologies that provide improved information and data access to users
  - AI technologies present both ***opportunities/challenges*** for both data producers (Faculty/researchers/students) and data users (library users) i.e industry, academia, civic society

- Libraries interest should focus on:
  - (GenAI) generative AI applications that digest disperate sources of text, images, audio, video, etc to produce new content (i.e LibGuides, OERs, Archival material, digital preservation, etc)

AI Transformative changes

- AI has brought transformative changes to many industries such as
  - Health, Finance, Education, Transportation, etc

WHILST

- GenAI has the promise of democratising access to data by
  - Enabling the average person to engage with data in ways that had not been possible before!
  - GenAI tools allow users to input simple prompts to engage with content gathered by these tools from a wide range of sources – including public data

AI as Intermediary

- What is the libraries' role in achieving better data integrity, accessibility, and quality of emerging AI technologies?

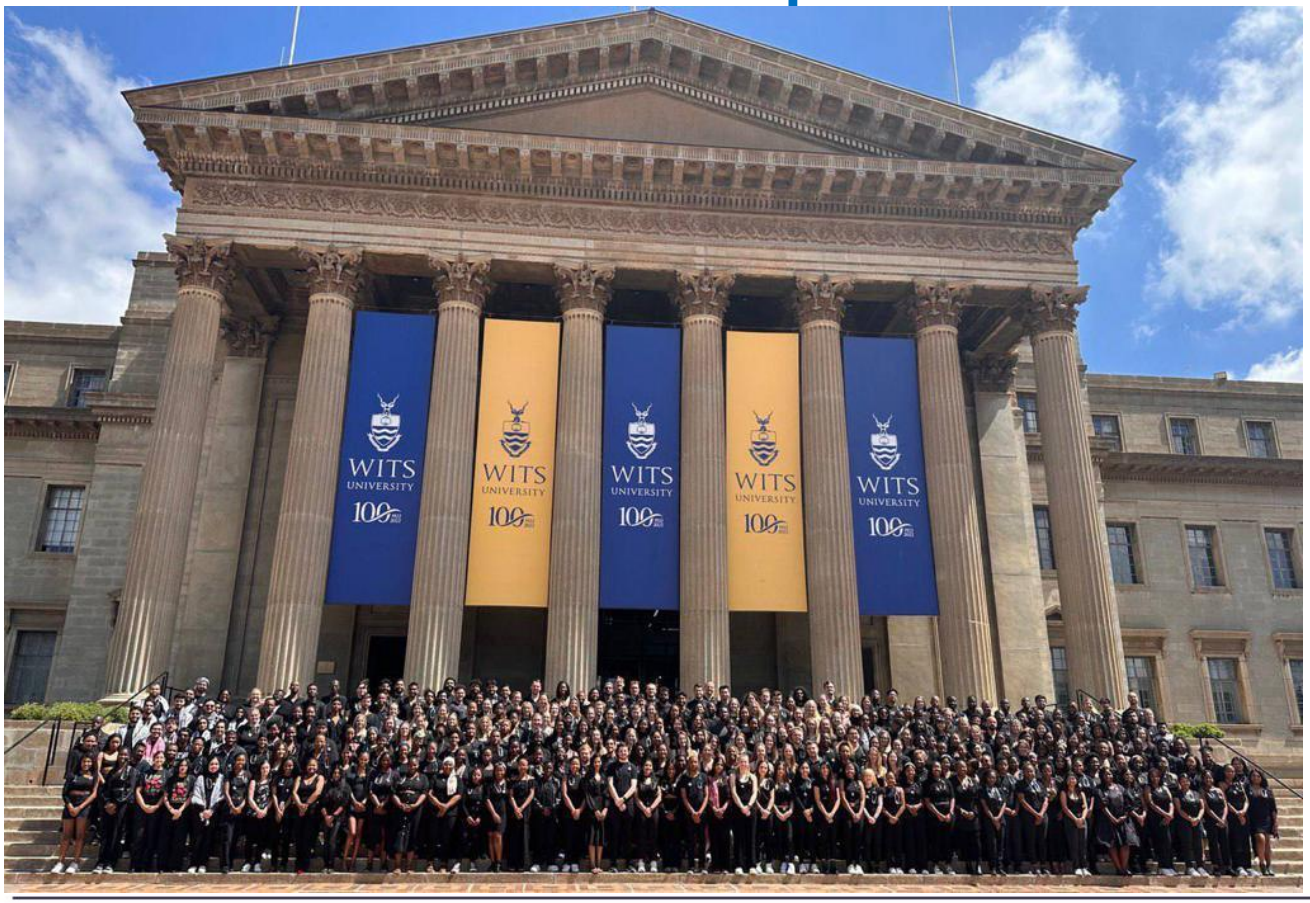
  - In ensuring that these AI Intermediaries can appropriately access ***its*** data without **losing** the integrity and quality;
  - In order for AI systems to utilise data for *training* and for *instant data retrieval ;* its data may need to be **reconfigured** in easily consumable formats
  - AI tools requires mass amounts of **trustworthy** information to accurately respond to the needs of its users
  - AI tools are used for **data analysis** and **data access**
  - How do libraries ensure that the data these tools consume is easily **accessible** and "**machine understandable**" *versus just* "**machine readable"**

AI technologies Uniqueness

- GenAI systems
  - The interpretation and use of data is no longer solely executed by human experts (i.e scientists, engineers, software developers) who bring their own knowledge and understanding to working with research data for example.
  - The human understanding is grounded in **shared disciplinary** and in **human readable documentation** that is generally provided i.e by data producers
  - Lack of **common knowledge** and the ability to use such knowledge in their activity – GenAI demonstrate intelligence and fluency
  - Outputs often driven by **contextual prediction** rather than **higher-order reasoning capabilities**

How do HE respond to the challenge and realise opportunity offered by AI technologies?

How do libraries respond to the AI?



AI as transformational in libraries

5 Ways Artificial Intelligence Impacts Libraries

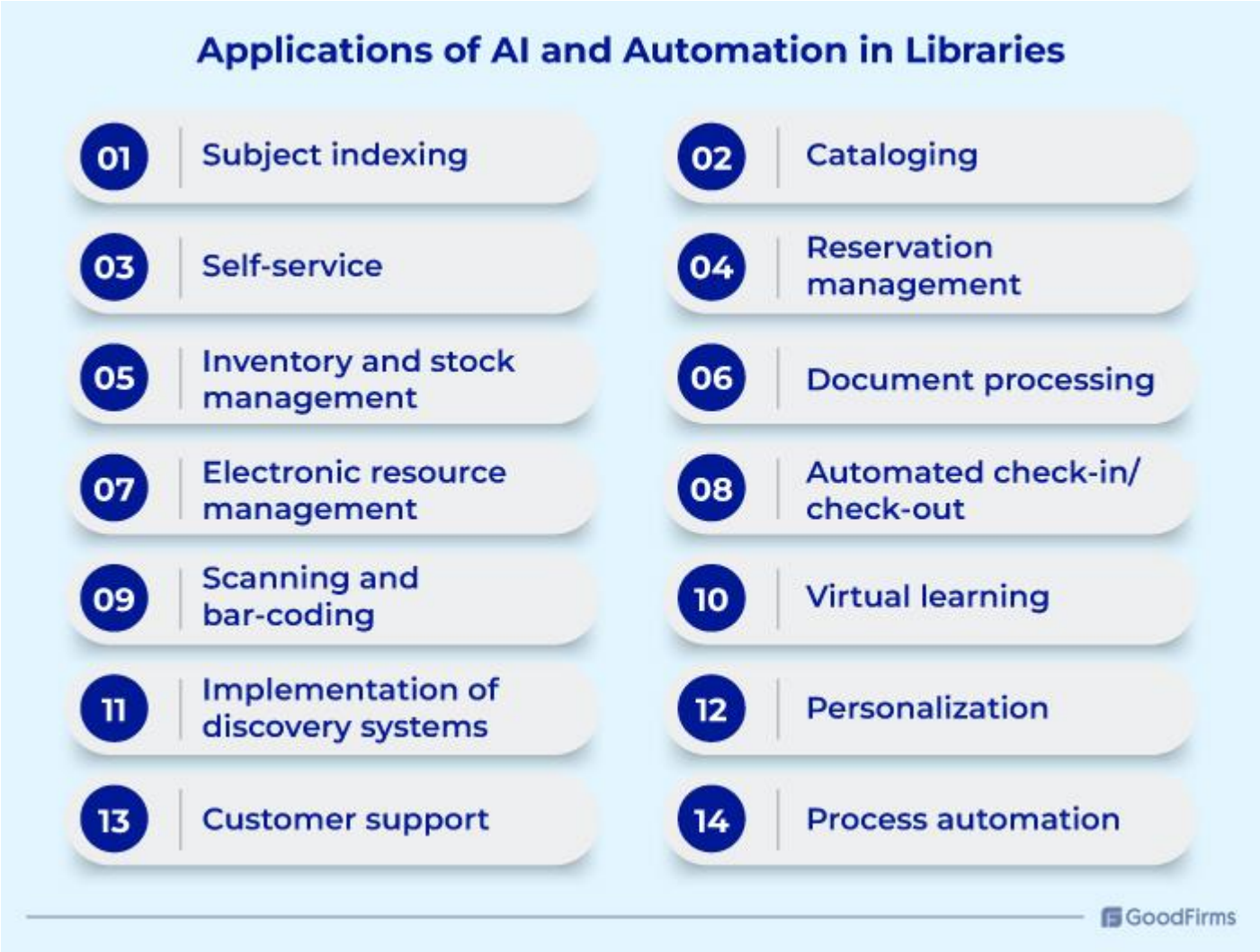
AJE

- Information Professionals
- Library Operations Robotic Process Automation Smart Libraries
- User Services
- Data and AI Literacy
- Library Analytics



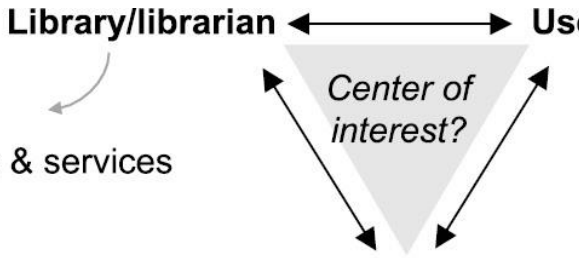
https://www.aje.com/arc/ways-artificial-intelligence-impacts-libraries/

AI and Automation in libraries



https://www.goodfirms.co/library-automation-software/blog/future-libraries-ai-automation

Understanding Artificial Intelligence in Research/Academic Libraries



Roles of libraries or librarians

- Professional using AI tools & services
- Professional developing AI tools & services
- Guardian of values
- Investigator of change
- Professional replaced by AI
- Partner/participant in change
- Agent of desirable change

Roles of users

- Information seeker
- Being exploited by AI
- Victim of bias
- Community member
- Learner of AI technology
- Consumer of AI services
- Beneficiary of AI help in knowledge creation
- Part of a trade-off with AI
- Co-designer
- Bypassing librarians

Roles of AI (non-human)

- Tool/system
- Extension of human skills
- Replacement of human skills
- Black box
- Mediator
- Agent/actor

https://liberquarterly.eu/article/view/10934/13103

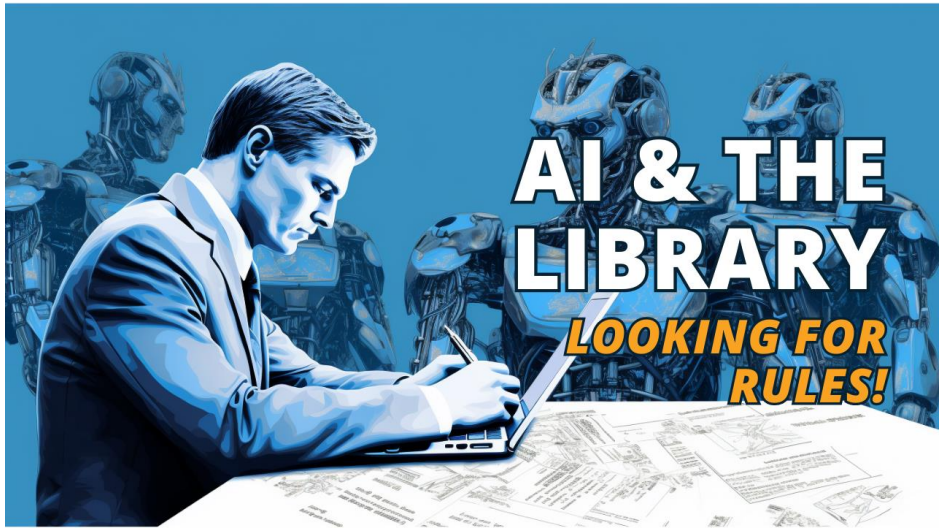
Partnership engagement

- How can industry and academic stakeholders collaborate to shape the design and dissemination of AI-ready open data?
- What are potential areas of partnership – government?
- How can industry and academia contribute to enhancing data quality, integrity, and usefulness for AI purposes?



Data Ethics

- What are the best protocols for ethical data collection, processing, and storage that prioritise data integrity and accuracy?
- What steps are needed to establish clear legal and ethical guidelines for AI data usage, ensuring privacy rights, preserving property rights, and focusing on equitable outcomes?
- What policies could be implemented to identify and mitigate biases?



https://the-digital-librarian.com/2023/08/21/ai-the-library-looking-for-rules/

Data Integrity and Quality

- What are best practices that are employed to enhance the integrity and accuracy of data when used in AI applications?
- What are best practices for data verification and validation?
- What security protocols can be developed to mitigate risks of unauthorised data access and manipulation?

Data dissemination standards

- What data dissemination standards should be adopted to support human-readable and machine understandable data?
- What data licensing practices, standards, and usage elements are considered to support broad, equitable, and open access to datasets and metadata?
- What current standards exists or underdevelopment that should be considered i.e in order to signal that data is available for use by AI systems including conditions/restrictions?

Data Accessibility and Retrieval

- How can data assets be made more accessible and available to the AI community (i.e improved API access, web crawlability, etc)?
- How can intuitive and accessible data portals be developed to facilitate easy navigation and retrieval?
- How can i.e libraries understand the needs of users regarding “data holdings” and the *return on investment* in making data more AI-ready?

The growing recognition of AI's transformative potential in the scientific community and the need for informed, collaborative strategies to harness its benefits in and for science

- **Australia**: Preparing for human-centric use of artificial intelligence
- **Benin**: Anticipating the impacts of artificial intelligence on West Africa's aspiring digital services hub
- **Brazil**: Reaping the benefits of artificial intelligence with some cautionary notes
- **Cambodia**: Seeking artificial intelligence approaches to national research missions
- **Chile**: Finding possibilities to apply artificial intelligence in an existing research financing ecosystem
- **China**: Promoting the Artificial Intelligence for Science approach

- **India**: Gaining insights into transformative technologies and their social integration
- **Malaysia**: Enabling the Fourth Industrial Revolution
- **Mexico**: Creating a national lead agency for artificial intelligence
- **Oman**: Fostering innovation through an Executive Program
- **Uruguay**: Following a roadmap to prepare national science systems for artificial intelligence
- **Uzbekistan**: Building the right conditions and skills for artificial intelligence

Preparing National Research Ecosystems for AI

STRATEGIES & PROGRESS IN 2024

References

- Federal Register Vol.89, No. 75, Wednesday, 17 April 2024/Notices: 27411 – 27413
- Abbas *et al. Int J Educ Technol High Educ (2024) 21:10*
- https://doi.org/10.1186/s41239-024-00444-7
- https://council.science/publications/ai-science-systems
  - Preparing National Research Ecosystems for AI: strategies and progress in 2024
  - Publisher: International Science Council
  - Date: March 2024
  - DOI: 10.24948/2024.06
- EBSCO Blog 2024/03/12



Thank you

Presenters

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AI in South African Academia: Unravelling Opportunities and Strategies

23 April 2024 I Kleinkaap Boutique Hotel I Johannesburg



Agenda

09.00 – 09.30
Welcome coffee

09.30 – 09.45
Clarivate welcome address
Tami King, Country Manager – South Africa, **Clarivate**

09.45 – 10.45
Keynote
AI in Higher Education Research: Navigating Opportunities and Challenges for South Africa
Explore the impact of AI on higher education research in South Africa during our keynote. Discover practical insights and opportunities that AI brings, empowering attendees to harness its benefits for enhanced academic research and innovation.

10.45 – 11.00
Coffee break

11.00 – 11.45
Clarivate in the Age of AI: Innovation Rooted in Academia
In this session, we explore the transformative influence of Generative AI in higher education. Delve into the evolving attitudes of institutions towards Gen AI, and gain insights into Clarivate's strategic approach. From responsible applications and community collaboration to operating a sustainable model, join us in unraveling the dynamic landscape as we realize our vision for Gen AI within the academic realm.
Christine Stohn, Senior Director, Product Management, **Clarivate**

11.45 – 12.30
Research Trends in South Africa: Spotlight on Artificial Intelligence
Leveraging the Web of Science Core Collection as its data source, this session provides insights into current research trends in South African Higher Education, benchmarking against global trends, and a focused view of key patterns in South Africa's research landscape in the field of Artificial Intelligence.
Tracey October-Vilakazi, Senior Product Sales Manager, **Clarivate**

12.30 – 13.30
Lunch and networking break

13.30 – 14.30
Roundtable Discussions

- Ethical Considerations in Implementing AI in Higher Education
- AI in Research: Transformative Applications and Collaborations
- Preparing Students for the AI Era: Curriculum Innovation and Skills Development
- Building a Data-Driven Culture: Leveraging AI for Institutional Insights

14.30 – 14.45
Closing remarks and networking
Sylvia Kgorane, Country Manager – South Africa, **Clarivate**

About Clarivate

Clarivate™ is a leading global provider of transformative intelligence. We offer enriched data, insights & analytics, workflow solutions and expert services in the areas of Academia & Government, Intellectual Property and Life Sciences & Healthcare. Working with the scientific and academic community, we empower institutions and libraries to drive research excellence and student outcomes by connecting trusted content, deep expertise and responsible innovation.

Clarivate is home to leading research, education and library solutions, including Web of Science™, ProQuest™, Ex Libris™ and Innovative™. For more information, please visit clarivate.com. For more information, please visit **clarivate.com**.

Clarivate™

AI in South African Academia: Unravelling Opportunities and Strategies

24 April 2024 I Southern Sun Elangeni & Maharani I Durban



Agenda

09.00 – 09.15
Welcome coffee

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AI in South African Academia: Unravelling Opportunities and Strategies

25 April 2024 I Graham Hotel I Grahamstown



Agenda

09.00 – 09.15
Welcome coffee

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Clarivate welcome address
Tami King, Country Manager – South Africa, **Clarivate**

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Seminar

AI in South African Academia: Unravelling Opportunities and Strategies

26 April 2024 I The Alphen Boutique Hotel I Cape Town



Agenda

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