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AI and the Library World: Part 3

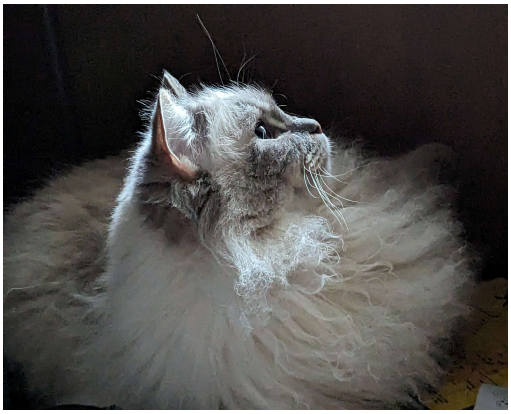
Eric McKinney, CMC Cataloging Trainer

Online with the CMC, October 9, 2025, 10-11 a.m.

IHLS Illinois Heartland Library System

Join CMC Cataloging Trainer Eric McKinney for another foray into AI. This time, focusing on the ethics and legalities of its use in the library world.

About Me



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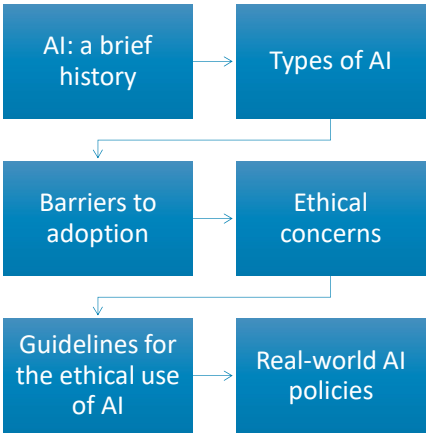
My name again, is Eric McKinney. I've been here at the Cataloging Maintenance Center for four years as of last Saturday. I arrived here from an academic library, and that's where the bulk of my cataloging experience lies. Go big blue. I'm married to a high school librarian, so I guess I come by the work honestly. In our spare time, we enjoy spoiling our pets. That's Tyrion on the left there, my doggie. He just turned 11 this summer, what a handsome fella. Griffin there in the middle, pretending that he's a supermodel cat and looking good. And then we have many, many squirrels running around our backyard, and this one is our favorite. This is Piebald, also known as Pie. And I'm pretty sure he considers my wife and I his pets, but that's okay. He has us trained to keep him well-fed. In our spare time, we also enjoy gardening, gaming, and reading, as most library folk do. With that out of the way, here is our agenda for today.

Agenda



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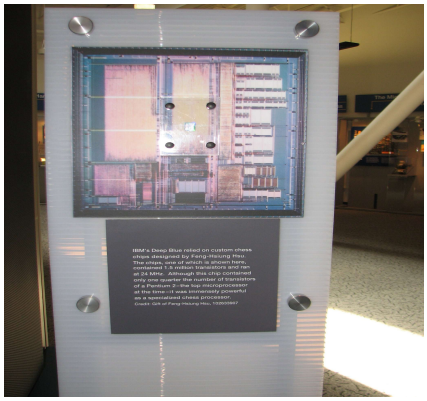
For today's presentation, I'd like to start with a brief history of AI. After, I'll review the types of AI. We will look at the top barriers to the adoption of AI in libraries and then examine some of the ethical concerns for its use. We will look at some guidelines for the ethical use of AI in libraries. I will wrap up by looking at a couple of real-world examples of AI policies.

AI: a brief history



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Most experts agree that artificial intelligence as we know it today was born of the work of British scientist Alan Turing. Turing proposed the Imitation Game to better define thinking machines, what we call artificial intelligence. In a nutshell, the Imitation Game imagines a person and a machine in separate rooms. Both are questioned with a computer and keyboard, and the questioner must determine which is the person and which the machine by the responses received. The computer is considered intelligent if it cannot be determined which is which.

The term, “artificial intelligence”, was officially coined in 1956 by Professor John McCarthy who considered AI to be science and engineering creating intelligent machines. McCarthy is known as the “Father of Artificial Intelligence” today.

The first AI program was created in 1951 by Christopher Strachey. It was a checkers program that could play a complete game at a reasonable speed. In 1952, another program called Shopper could memorize items in different shops and remember where to find them. The first AI program in the United States was also a checkers program, written by Arthur Samuel in 1952.

The growth of AI took off in the 1960s as government funding became available and computers became cheaper. An AI milestone was reached in 1987 when IBM's Deep Blue AI defeated chess champion Garry Kasparov. With today's machines much faster than those of the 1980s, AI is now used in search engines, facial recognition apps, digital assistants like Siri and Alexa and numerous other technologies.

Types of AI

CAPABILITY BASED

FUNCTIONALITY BASED

ADDITIONAL CAPABILITIES

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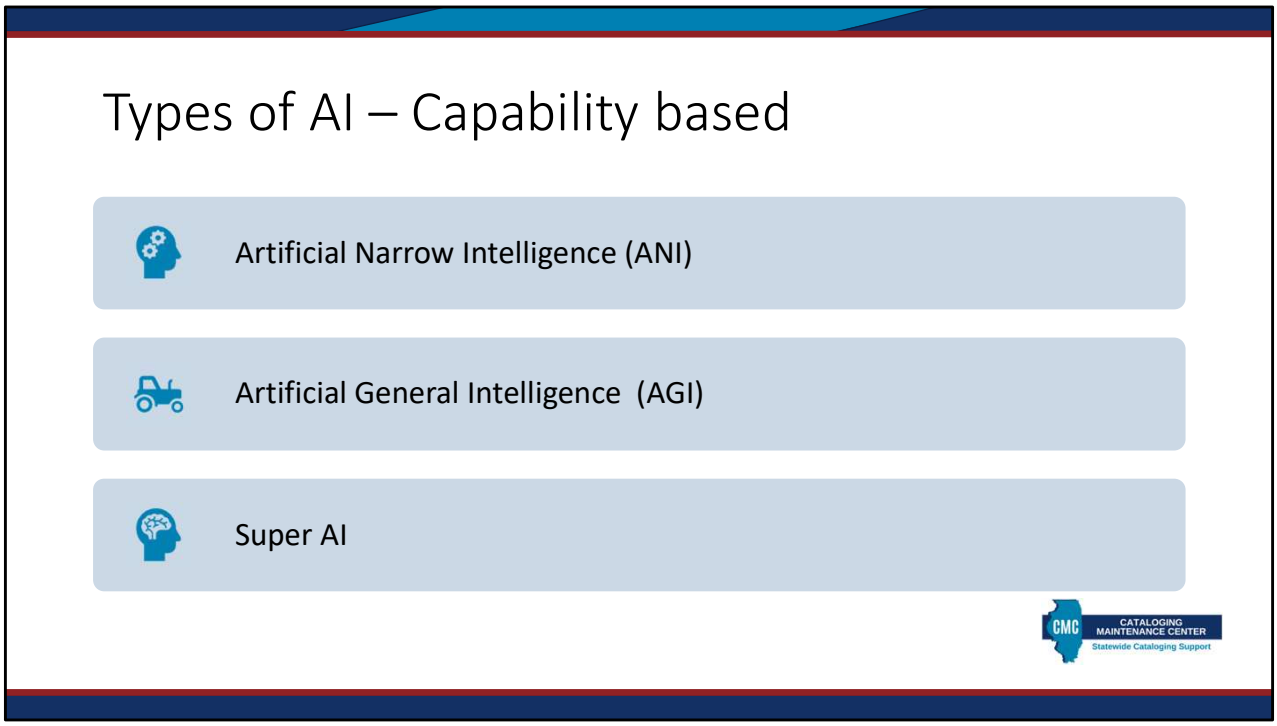
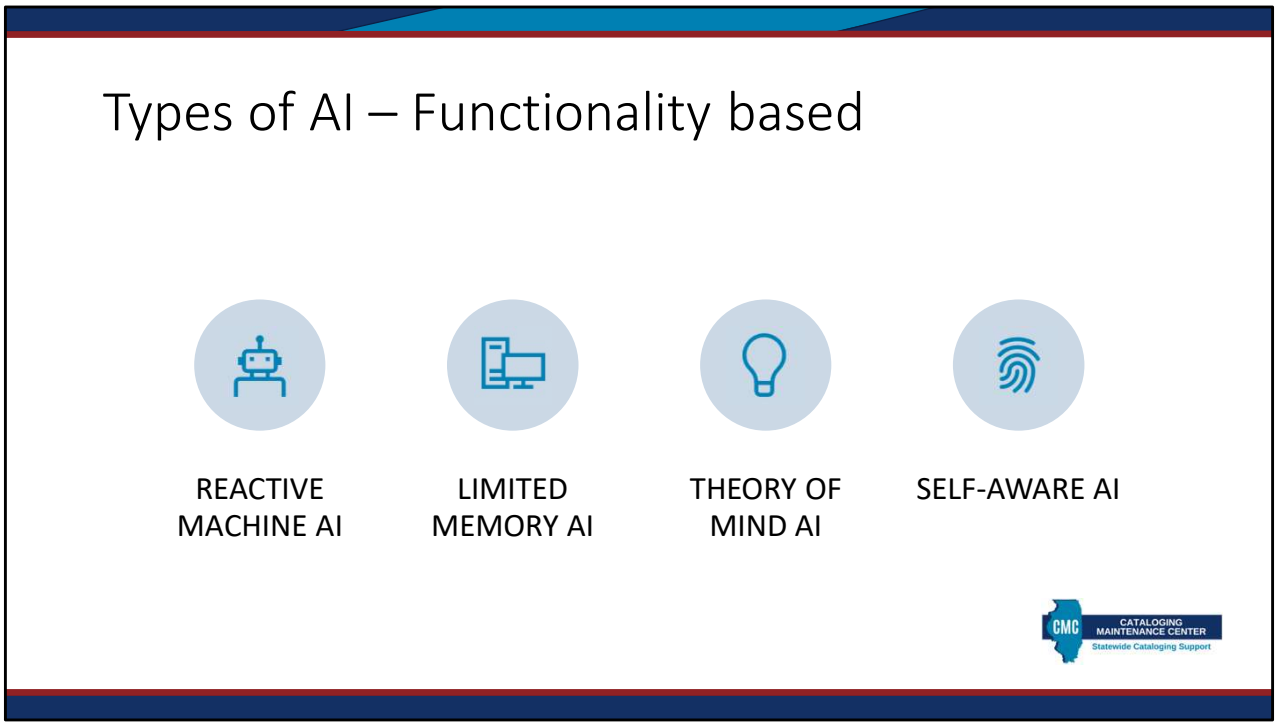
It is important to note, that while there are many types of AI, not all are in existence. Quite yet anyway. Our first type is the capability-based AI.



Artificial Narrow Intelligence (ANI), also known as weak or narrow AI, excels at doing specific tasks. It can learn from the data it collects as it performs its task. Think of the AI chatbots many libraries are using. Self-driving cars, facial recognition software and your phone's digital assistant all make use of ANI.

Artificial General Intelligence (AGI) is also known as general or strong AGI. The goal for AGIs is to have them think, act and make decisions like humans. Artificial general intelligence is used for robotics, natural language processing, speech recognition, and image recognition without human interference.

Super AI, or artificial superintelligence, is currently only theoretical. A Super AI would have the capability to think, reason, learn and make judgments that far surpasses our own.



Reactive machines are the most basic AI. They are great at specific tasks but have no memory for recalling previous searches and answers. All answers are based on the information loaded. IBM's Deep Blue mentioned earlier is an example of a functionality-based AI.

Limited memory AI does have some memory so it can make decisions from past experiences with programmers and users. Limited memory AI can be found in most AI programs like the aforementioned library chatbots, self-driving vehicles, and digital assistants.

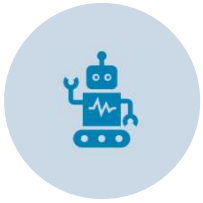
Theory of Mind AI is also currently only theoretical. If realized, an AI would have the ability to simulate human relationships through learning to understand the thoughts and emotions of humans. Interaction with such an AI could be highly personalized if it can understand a person's thoughts or emotions.

Self-aware is still a way off yet. In addition to understanding peoples' thoughts and emotions, a self-aware AI would understand its own internal conditions. It would have its own separate set of needs and beliefs. It would be a true thinking machine.

Almost all AI in use today are ANI with limited memory.

Types of AI – Additional capabilities

COMPUTER VISION



ROBOTICS

EXPERT SYSTEMS

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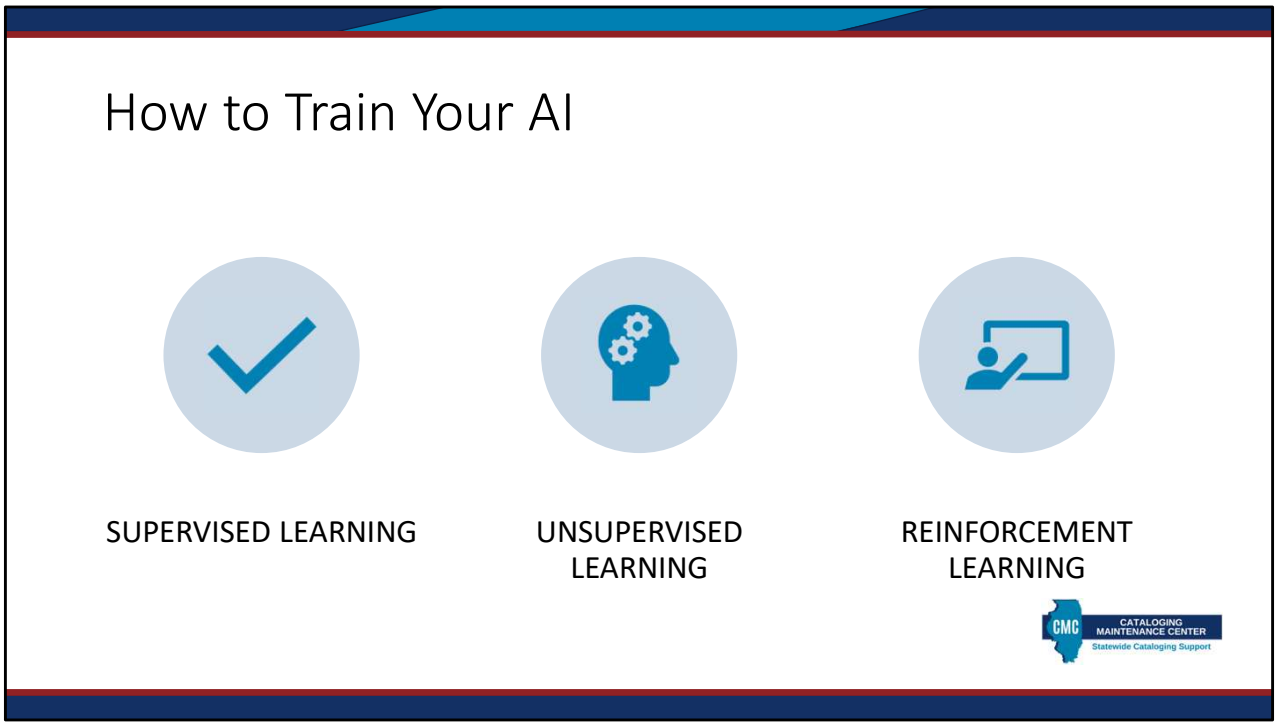
Computer vision can be used with narrow AI to teach it to analyze and interpret objects in images and videos. Used in self-driving cars, Roombas and hopefully self-driving library carts soon!

Robotics -- As mentioned, narrow AI excels at performing repetitive tasks. As do robots in factories. Combine the two and you get the AI that assist surgeons in surgeries. And Roombas!

Expert Systems – Many businesses spend a lot of time and money trying to predict what might happen and trying to plan for it. Expert systems with a narrow AI can examine vast amounts of data to look for trends that might help the business make better decisions.



AI training is one of the biggest controversies of the technology. Some crawl the internet like a search engine, sucking up ALL information, copyrighted or not. Thousands of authors have sued AI companies for having their copyrighted work essentially pirated by the AI. End users can use that material to create and profit from their own art, stories, etc., based on the copyrighted work. Fortunately, it is not necessary for libraries to take this route.

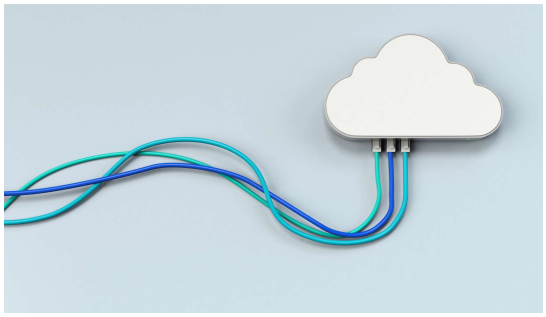
Supervised learning models in AI rely on well-defined data. These AI can use historical data and user input for prediction tasks like spam detection and forecasting market changes and consumers behavior. This would be the best model for libraries.

Unsupervised learning models in AI excel at sorting and filtering through large amounts of unstructured data to find the best results.
Reinforcement learning models is sort of a mash-up of supervised and unsupervised. These models can work with structured or unstructured data and make decisions based on future impact. Many automation tasks benefit from reinforcement learning.

AI use in libraries

Common uses:

- Resource discovery
- Patron services
- Collection management
- Digital preservation
- Accessibility



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Resource discovery uses Natural Language Processing and Machine Learning to connect patrons with materials. Recommender systems use algorithms to recommend material based on patron preference and past searches.

Chatbots and Virtual Assistants are popular uses of AI in patron services, especially in public and academic libraries. These systems also use Natural Language Processing to better understand patron queries, providing better results.

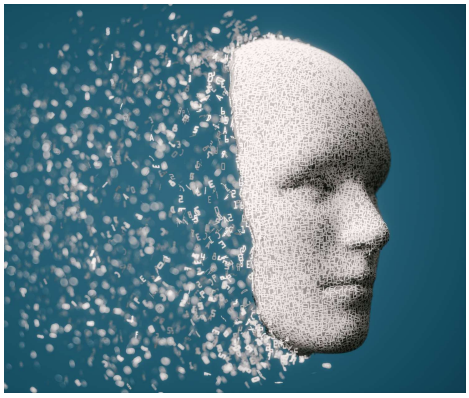
With AI's ability to sort through massive amounts of data quickly, libraries might make use of Data Mining and Predictive Analytics to manage the collection. Data collected might point to what needs weeded or what areas of the collection could use shored up. While there are tools to accomplish these things currently, AI speeds up the process immensely. AI can also be used to automatically classify and catalog items based on their metadata information.

Digital preservation might use Image Recognition and metadata information to sort through thousands of images for a certain image or even a person in a certain image. Though facial recognition AI has stirred up controversy with its

real-world use. To such an extent that you can now buy masks that prevent AI recognition.

Finally, accessibility can be enhanced by AI with text-to-speech searching and apps using computer vision that can describe materials to vision or hearing-impaired patrons.

Barriers to AI adoption



- Data challenges
- Cost concerns
- Limited understanding & expertise

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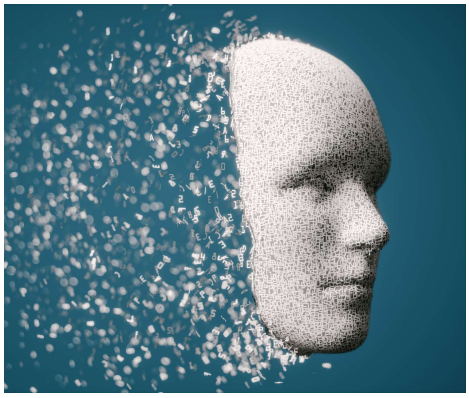
While AI is certainly a useful tool for many library applications, it might be hard to implement for some libraries. Here are some common barriers to adoption to be aware of:

Data challenges: Making current data available to new systems can often be difficult. The data in the legacy system might require additional work to make it available to an AI.

Cost concerns: With budgets already tight for many libraries, the cost of equipment, software licenses and upkeep may be cost-prohibitive.

Limited understanding & expertise: Libraries are less likely to adopt ANY new technology when they do not understand what it can do for their library.

Barriers to AI adoption (cont.)



- Legacy systems and integration issues
- Lack of clear use cases
- Resistance to change

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Legacy systems & integration issues: New equipment might be needed to ensure the AI tools operate properly. Concerns of, “Who will make our legacy data compatible” or “Who do we turn to if we have a problem with the system?” might also prevent consideration. Especially in smaller libraries who might not have the staff to dedicate to the technology.

Lack of clear use cases: While adoption is taking off in libraries with the chatbots, more clear examples of its use could help overcome this barrier. Often, word-of-mouth is a good way to communicate the benefits of further AI use in the library world.

Resistance to change: the bane of any new technology. There will always be a portion of library workers and patrons resistant to change. For the workers, their objections may be the cost concerns or the need for new training. The patrons might simply not see the need.

As you can tell, adopting the technology takes a lot of planning. It may require new infrastructure, new equipment, more staff training and the ongoing cost of

upkeep. Doing a cost/benefit analysis may be the only way to determine if AI adoption is suitable for a particular library. Though I believe the costs will come down as the technology ages.

Ethical concerns

- Transparency
- Fairness
- Privacy and data protection
- Accountability

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Like many new technologies, AI does come with its own set of ethical concerns. Top among them, are:

Transparency – Libraries should be open with patrons about the data used and the decision-making process of the AI. This builds patron trust and makes it easier to identify biases in results.

Fairness – Does the AI serve all patrons impartially? Results should be monitored regularly to evaluate them for discriminatory or biased results with algorithms adjusted accordingly.

Privacy and data protection – Most people value their privacy, both in and out of the library world. Libraries are typically champions of patron privacy, but if their AI leaks a patron's private information, the damage is done.

Accountability – Libraries should establish clear guidelines and protocols for the use of AI and make them available to patrons both in print and online.

Transparency – Libraries should be open with patrons about the data used and the decision-making process of the AI. This makes it easier to identify biases in results.

Fairness – Does the AI serve all patrons impartially? Results should be monitored regularly to evaluate them for discriminatory or biased results.

Privacy and data protection – Libraries have a lot of information on their patrons.

Accountability – Libraries should establish clear guidelines and protocols for the use of AI and make them available to patrons.

Once concern I did not see mentioned in my research is the amount of energy AI requires. But it is certainly an ethical concern. AI requires so much that companies like Meta and Microsoft have plans to build their own nuclear reactors to meet future needs. MIT Technology Review notes that the latest studies indicated data centers in the U.S. accounted for almost 4.5% of energy usage in the United States. While not all of that went to AI applications, the Lawrence Berkeley National Laboratory research indicates more than half of the electricity going to data centers will be used for AI by 2028. At that point, AI could account for almost 25% of all households in the United States.

Guidelines for ethical AI use

While the concerns from the previous slide have been around since the advent of AI, there was little other guidance. With no clear guidelines for the ethical use of AI in libraries, Dr. Sudhakar Mishra of the Indian Institute of Technology Kanpur, set out to modify the ethical framework for library use. In a 2023 paper published in the e-journal Library Philosophy and Practice, Dr. Mishra identified 7 areas that should be considered when developing an ethical AI for library use.

1. Fairness: As mentioned in the previous slide, an AI should serve all patients equally and impartially. Algorithms should be evaluated regularly to ensure there is no bias or discrimination in the results.

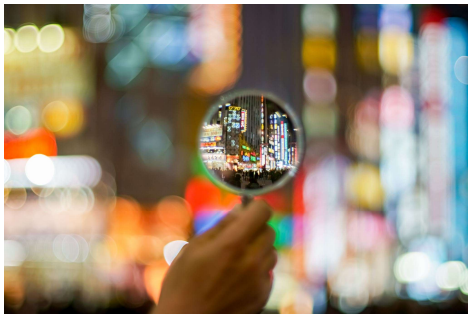
2. Transparency: Again, this is just the library being upfront with patrons on what data is used, how the data is used and how the AI comes to decisions.

3. Accountability: Libraries must have guidelines and protocols for the use of AI. And they should be made clearly available to patrons.

4. User autonomy: Users must retain control over their personal data. This might include specific privacy regulations and options for opting out of certain

features. I think this could also fall under accountability.

Guidelines for ethical AI use (Cont.)



Privacy

Human oversight

Benefit

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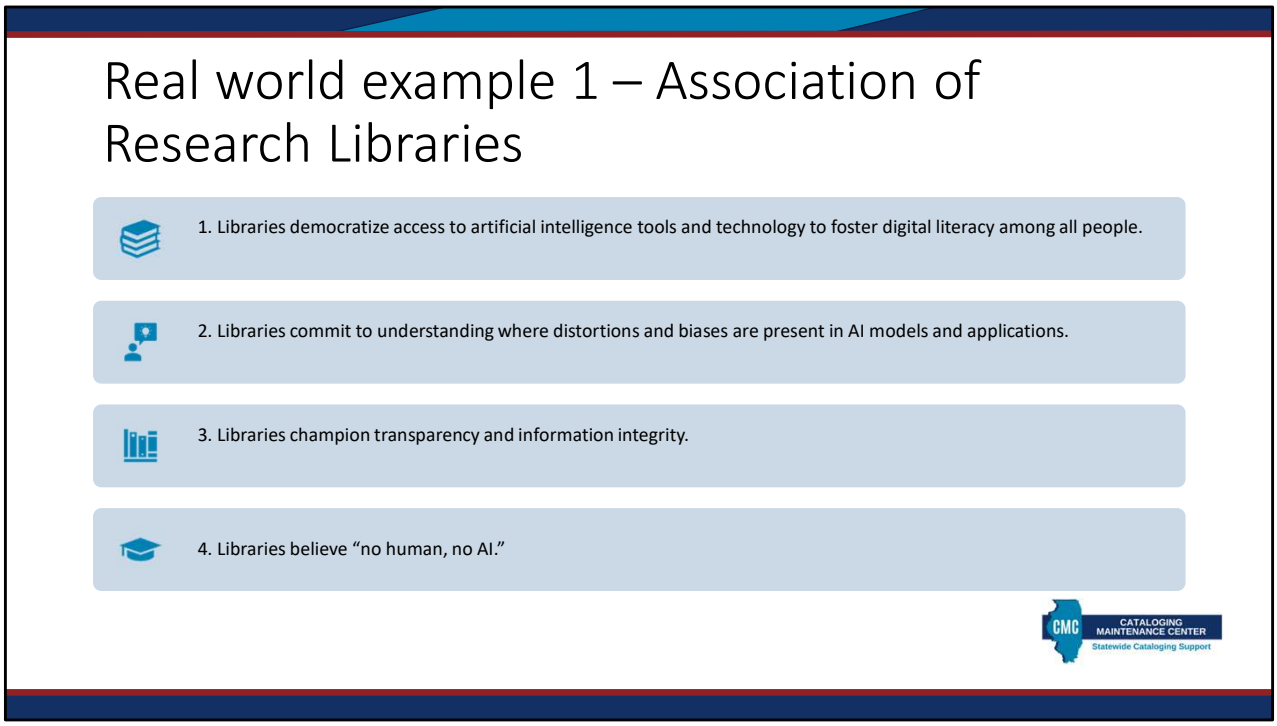
5. Privacy: Security measures should be taken to secure patron data. This might be an area where outside help is required to ensure digital information is safe. Any patron data used should be for legitimate library purposes only.

6. Human oversight: AI should always be overseen by humans, not other AI. Remember that documentary, The Matrix? That's why. Not really. But libraries should think about WHEN it might be necessary to intervene. Things like hallucinations, where an AI simply makes up an answer, and inadvertently releasing private data would be reasons to intervene.

7. Benefit: AI should be used for the benefit of the community. This requires prioritizing user needs while balancing them with the principles of the library. This balance can be spelled out in the protocols and guidelines.



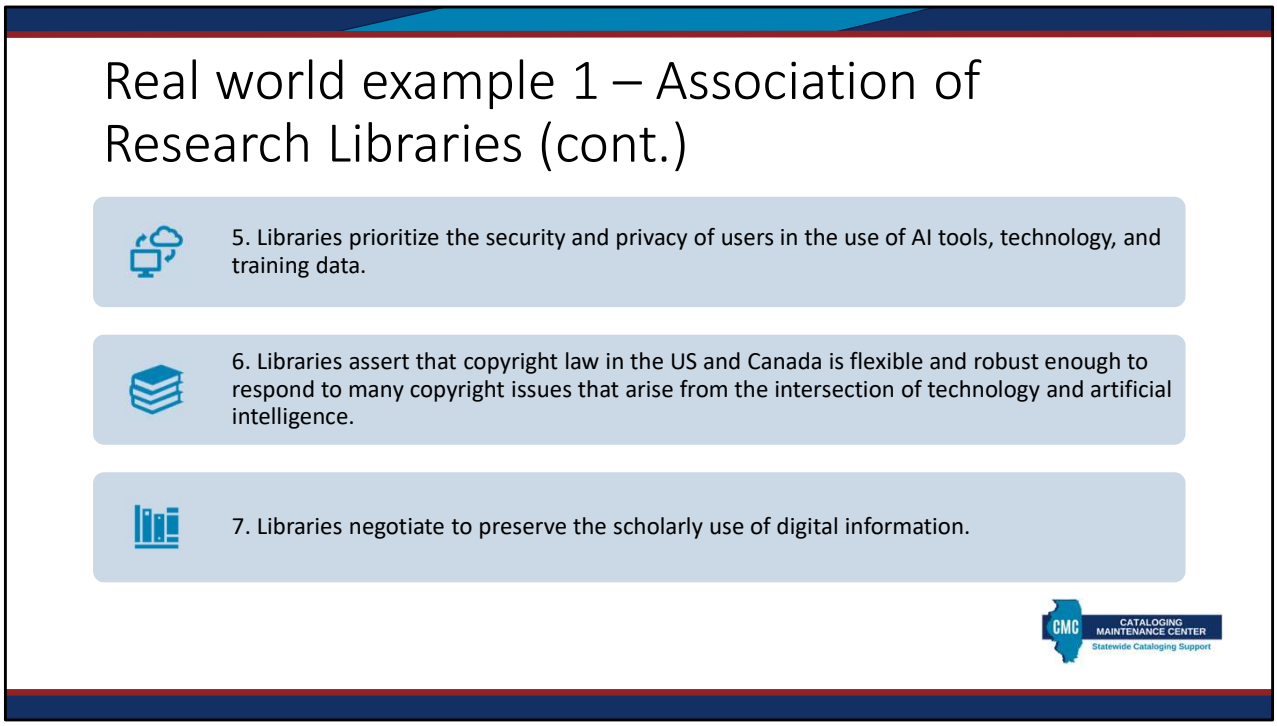
After learning more about what goes into making a good policy regarding AI, I decided to look for real world examples to see if they met the criteria put forth by Dr. Sudhakar. The first one I came across was a document on the guiding principles of the Association of Research Libraries (ARL). The ARL identified 7 principles they say, "will serve as a foundational framework for the ethical and transparent use of AI and reflect the values we hold in research libraries."

1. Libraries democratize access to artificial intelligence tools and technology to foster digital literacy among all people. (Fairness)

2. Libraries commit to understanding where distortions and biases are present in AI models and applications. (Transparency/accountability)

3. Libraries champion transparency and information integrity. (Transparency/accountability)

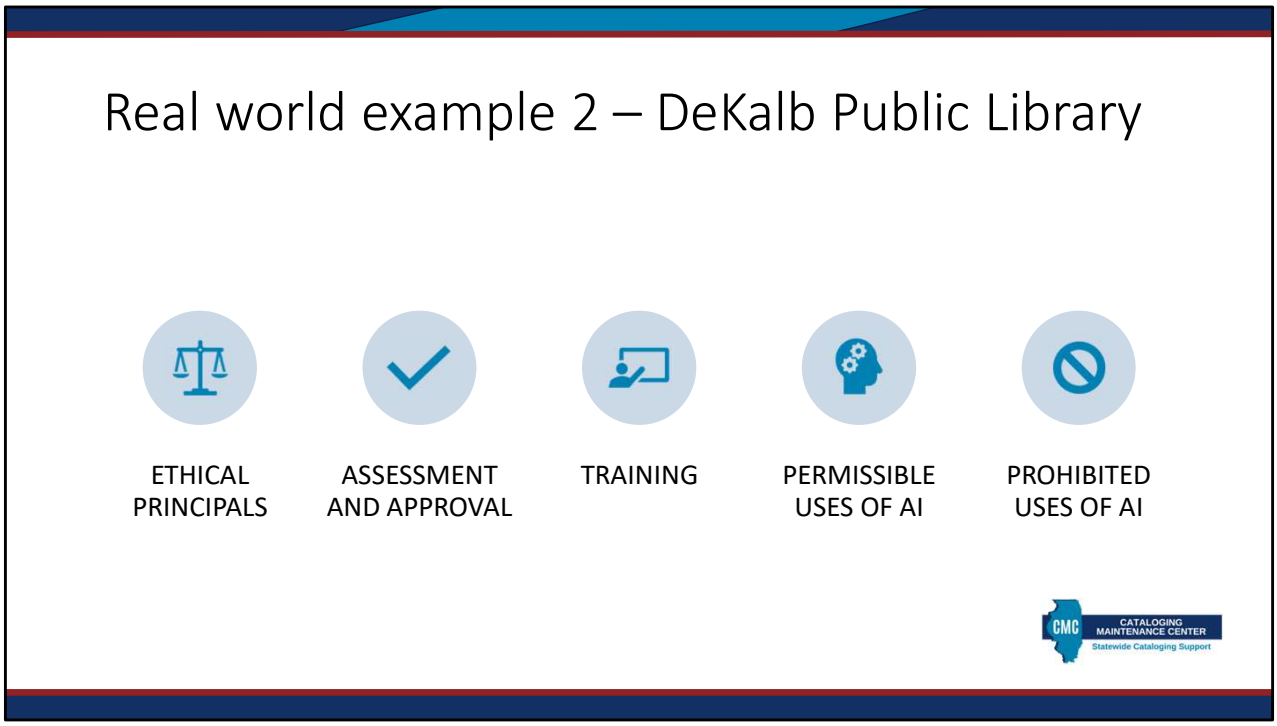
4. Libraries believe "no human, no AI." (Human oversight)



5. Libraries prioritize the security and privacy of users in the use of AI tools, technology, and training data. (Fairness/Privacy/User autonomy)

6. Libraries assert that copyright law in the US and Canada is flexible and robust enough to respond to many copyright issues that arise from the intersection of technology and artificial intelligence. (Accountability)

7. Libraries negotiate to preserve the scholarly use of digital information. (Benefit?)



While researching for this presentation, I found DeKalb Public Library's AI policy. (And then I got to meet a lot of their fantastic staff at PUG Day a couple of weeks ago in East Moline! What a great conference!!) Their policy was approved by their board in September of last year. It is just over a page long and does a great job of covering the bases. The first section lays out the ethical principles they will abide by.

Privacy protection, transparency, accountability, equity and accessibility are all explicitly mentioned in this section.

The next section, Assessment and Approval, describes how any AI use will be thoroughly assessed by library staff before being implemented. It must be approved by the board before implementation.

The document also requires staff to be trained before working with AI and helping patrons with its use. The document finishes by outlining what is permissible with their AI use and what is not. Overall, it is a fantastic document that covers all points of Dr. Sudhakar's ethical framework clearly and concisely. There is a link to it in the Resources if you would like to have a look for yourself.

Resources

- https://abriefhistoryofai.org/
- https://www.britannica.com/science/history-of-artificial-intelligence
- https://dkpl.org/policies-foia/
- https://www.ibm.com/think/topics/artificial-intelligence-types
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- Gürsen, Aylin Ecem, et al. "Artificial Intelligence Utilization in Libraries." *Athens Journal of Sciences*, vol. 10, no. 2, June 2023, pp. 83-94. https://doi.org/10.30958/ajs.10-2-2.
- Ikwuanusi, Ugochukwu Francis, Peter Adeyemo Adepoju, and Chinekwu Somtochukwu Odionu. "Advancing Ethical AI Practices to Solve Data Privacy Issues in Library Systems." *International Journal of Multidisciplinary Research Updates*, vol. 6, no. 1, 2023, pp. 33-44. https://doi.org/10.53430/ijmru.2023.6.1.0063.
- Jayavadivel, R & Arunachalam, Mohanraj & Nagarajan, G & Shankar, Prabhu & Viji, C & N, Rajkumar & Senthilkumar, K. (2024). Historical Overview of AI Adoption in Libraries Historical Overview of AI Adoption in Libraries. 10.4018/979-8-3693-2782-1.ch015
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That brings us to the end. Here are some of the resources used.

Resources (cont.)

- Mishra, S. (2023). Ethical implications of artificial intelligence and machine learning in libraries and information centers: A framework, challenges, and best practices. Library Philosophy and Practice (e-journal), 7753. https://digitalcommons.unl.edu/libphilprac/7753
- Narmada, Vishaka. (2024). Exploring the Impact, Challenges, and Ethical Implications of AI Integration in Libraries: A Rapid Review.
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- Nathania, Nisrina & Margono, Hendro & Mohamad Rosman, Mohamad Rahimi & Hamid, Haslinda & Md Radzi, Salliza. (2025). Ethical Challenges Regarding Library Integration with Artificial Intelligence. 15. 64-75. 10.24191/jikm.v15iSI1.6109.
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- https://www.technologyreview.com/2025/05/20/1116327/ai-energy-usage-climate-footprint-big-tech/
- https://techpulsion.com/different-types-of-ai/

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And here are the rest of them!

ON THE CALL TODAY

Questions? Contact the CMC: cmc@illinoisheartland.org

Barbera Scoby
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Dr. Pamela Thomas
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Mary Cornell
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Metadata Cataloger

Ryan Rafferty
Special Project Cataloger

Katie Roberts
Special Project Cataloger

Andrea Giosta
Special Project Cataloger

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Here are the fine folks here with me today.

Questions?

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And we are happy to address any questions now. If you don't have any about the presentation, that's o.k. Feel free to ask any cataloging questions you might have. Or share your plan for world domination using AI so we can all be better prepared!