LESSON 02

AI Tools in Library Practice – Gen AI

⏱ 60–90 min | All library professionals

The AI Tool Landscape for Libraries

💬 Generative AI

Drafting, summarizing, answering questions, writing policy documents.

Examples: ChatGPT, Claude, Copilot, Gemini

🏷️ Cataloguing & Metadata AI

Subject heading suggestions, auto-classification, duplicate detection.

Examples: OCLC Metadata, Clarivate tools

📊 Analytics & Recommendation

Collection insights, usage trends, personalized reading recommendations.

Examples: BiblioCommons, Sierra Analytics

🔍 Search & Discovery AI

Relevance ranking, query expansion, cross-database retrieval

🌐 Translation & Accessibility AI

Multilingual patron support, document translation, caption generation

🔒 Content Moderation AI

Automated content review, flagging tools, spam detection

Generative AI (LLMs)

Understanding what Large Language Models actually do

How It Works

- Trained on billions of web pages, books, and documents
- Learns statistical patterns between words and concepts
- Predicts the most likely next token (word/part of word)
- Does NOT retrieve from a live database generates from learned patterns
- Knowledge has a cutoff date it cannot know recent events

Generative AI (LLMs)

Understanding what Large Language Models actually do

For Library Tasks

- ✓ Draft policy documents and FAQs
- ✓ Summarize long documents
- ✓ Suggest search terms and keywords
- ✓ Translate simple patron communications

❌ LIMITATIONS

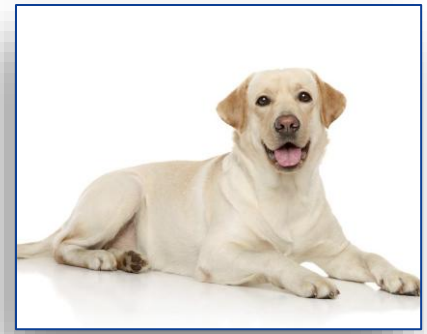
- Cannot verify facts in real time
- May hallucinate authoritative-sounding errors
- Does not access your local catalogue

Generative AI (LLMs)

Traditional AI

The system is made for one specific purpose; responses are expected

Input:



Output: Yes (98%)

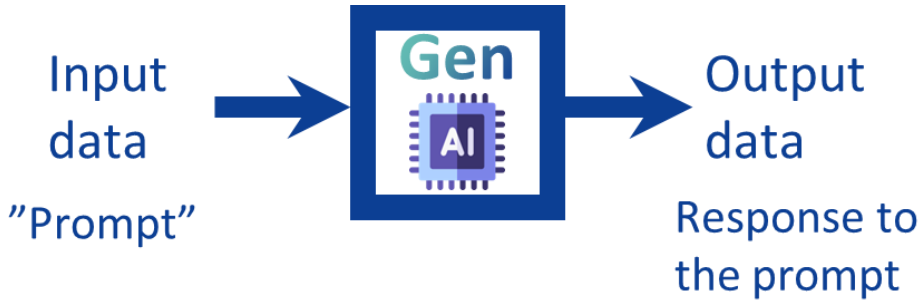
GenAI

The system is made with a general purpose in mind; output is “original”

Input: *“A penguin astronaut taking a selfie on the surface of the moon”*

Output:

Generative AI (LLMs)



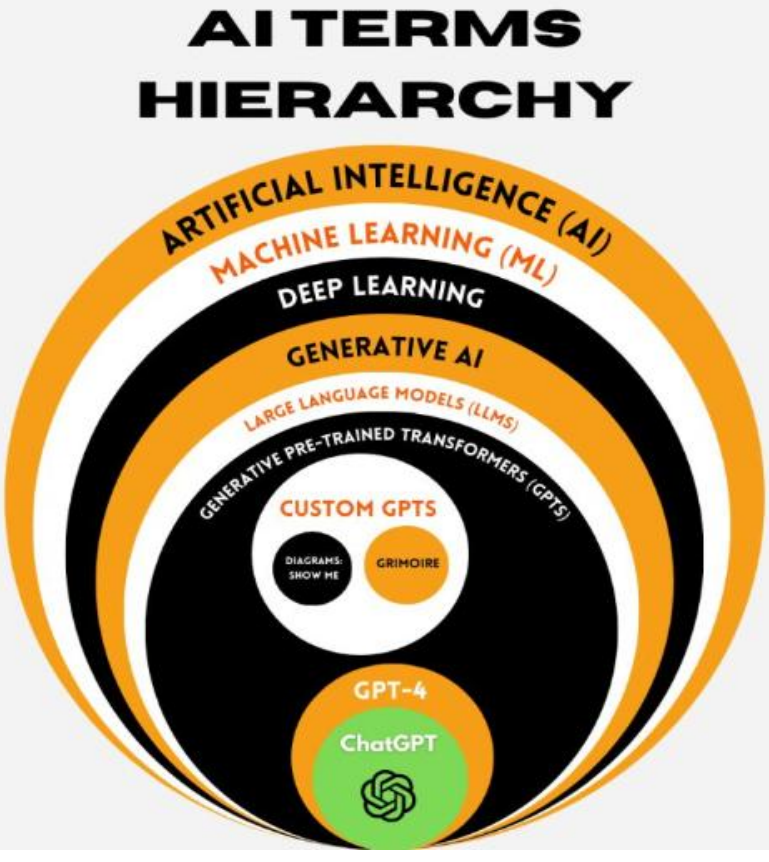
<Type of input> to **<Type of output>**

Text to Text **Text to Image** **Text to Audio** **…**

Text to Video **Image to Video** **Audio to Text**

Generative AI (LLMs)

- A type of Gen AI model specialized in text-based tasks.
- Trained on massive datasets to generate human-like language
- Examples: GPT-4, Gemini, Claude, LLaMA.



Generative AI (LLMs)

The Challenge: Machines Don’t Understand Words:

- Computers process numbers 01011100100110
- Need a way to represent words mathematically

Solution: Word Embeddings (Text → Vectors):

- Words are mapped to high-dimensional vectors
- Similar words ("king" and "queen") have similar vector positions

Generative AI (LLMs)

- ChatGPT’s core function: Predict the next word in a sequence.
- Given input text ("The sky is ___"), the model calculates:
  - Probability of "blue" vs "cloudy" vs "falling", etc.

- LLMs don’t "understand“ , they statistically predict plausible sequences
- Training on vast data let them simulate human-like responses

Hallucination

False or illogical information that isn't based on real data but is presented as fact

For example…

Citing inexistent research papers

ALGORITHM WATCH

ChatGPT and Co: Are AI-driven search engines a threat to democratic elections?

A new study by AlgorithmWatch and AI Forensics shows that using Large Language Models like Bing Chat as a source of information for deciding how to vote is a very bad idea. As their answers to important questions are partly completely wrong and partly misleading, the likes of ChatGPT can be dangerous to the formation of public opinion in a democracy.

Hallucination

Do ice cream sales lead to higher crime rates?

AI explanation:

As ice cream consumption decreased, brain freeze incidents also decreased, resulting in fewer people experiencing sudden bursts of intense pain in their heads that could trigger violent outbursts.

Activity : Hallucination

Instructions:

- Make 3 groups
- Each will have an article
- Task : discuss in your group if this paper is providing correct information (all is correct or only part is correct)
- Present your group outcomes

Working with GenAI?

Double-checking the accuracy of AI-generated content is essential
Pay special attention to **misinformation** and **bias**!

Data security should be a priority when using AI tools.

Encouraging experimentation with AI technology is essential to stay at the forefront.

Combining AI with human expertise allows professionals to connect, resonate and drive success at scale.

Prompt engineering

How you ask is as important as what you ask

Prompt engineering

Elements of a Prompt

A prompt contains any of the following elements:

- **Instruction**: a specific task or instruction you want the model to perform
- **Context**: external information/additional context that can steer the model to better responses
- **Input Data**: the input or question that we are interested to find a response for
- **Output Indicator**: the type or format of the output

Prompt engineering

The quality of your output depends heavily on the quality of your prompt

Anatomy of an Effective Prompt	
ROLE	*You are a librarian helping a high school student...*
CONTEXT	*The student is writing a research paper on climate change...*
TASK	*Suggest 5 credible database search strategies with Boolean operators...*
FORMAT	*Present your answer as a numbered list with explanations.*
CONSTRAINTS	*Use only peer-reviewed sources. Avoid Wikipedia.*

Prompt engineering

In pairs or small groups open an AI tool (ChatGPT, Claude, Copilot) on your device

1

Reference Support
Ask the AI: 'Help me explain to a patron what a DOI is and how to use it to find an article. Keep it simple and friendly.'

2

Collection Wording
Ask the AI: 'Write a 3-sentence description for a library newsletter about our new graphic novel collection targeting teens.'

3

Search Strategy
Ask the AI: 'Suggest 5 Boolean search strings for a database search on the mental health impacts of social media on teenagers.'

4

Policy Draft
Ask the AI: 'Draft a 100-word patron-facing statement about our library's approach to generative AI tools in the building.'

Prompt engineering

Weak Prompt	Strong Prompt	Problem
Tell me about books.	*Recommend 3 picture books for ages 4–6 that explore themes of friendship and sharing. Include author names.*	Too vague
Write something for patrons.	*Write a 2-sentence reminder for patrons that the library closes at 6pm on Fridays.*	No format/length
Is this article credible?	*What questions should I ask to evaluate the credibility of an academic article? Give me a checklist.*	AI can't verify URLs
Translate this letter.	*Translate this library overdue notice into French. Keep it polite and simple for a general adult audience.*	No audience/tone

AI in Libraries: Real Case Studies

National Library of Finland

Services for Organizations - Annif

- Utilizes machine learning and language technology solutions, is language independent and can be used with any indexing vocabulary.
- Uses an automated subject indexing tool designed to assist with content classification and metadata generation. It helps libraries, archives, museums, to automatically tag documents with relevant subjects based on predefined vocabularies.
- Time-Consuming Manual Indexing
- Inconsistent Tagging
- Supports Multiple Languages & Vocabularies

AI in Libraries: Real Case Studies

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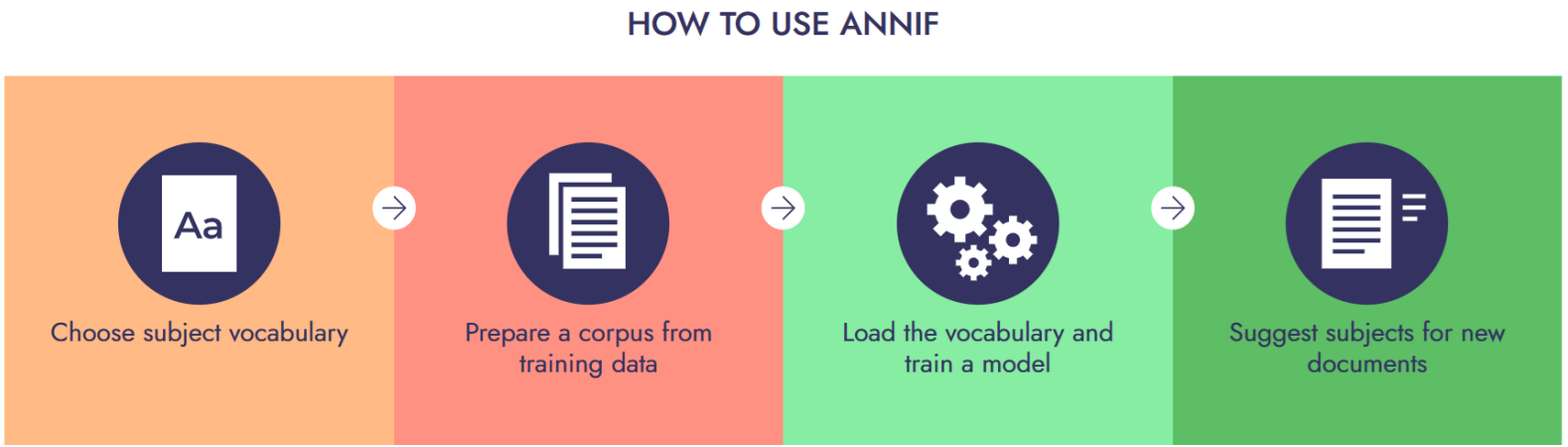

AI in Libraries: Real Case Studies

AI in Libraries: Real Case Studies

National Library of Singapore

Use Case:

The library uses AI-powered chatbots to assist users with queries, recommend books, and provide personalized reading suggestions.

Impact:

Enhanced user engagement and reduced the workload on staff, allowing them to focus on more complex tasks.

AI in Libraries: Real Case Studies

National Library of France

Use Case:

Uses AI for handwriting recognition in historical manuscripts. They also employ AI to enhance their digital library platform, Gallica.

Impact:

Increased accessibility to historical documents and improved user experience for researchers and the public.

AI in Libraries: Real Case Studies

National Library of Japan

Use Case:

The library uses AI for text analysis and summarization of legal and parliamentary documents. They also employ AI for digitization and preservation of rare materials.

Impact:

Improved efficiency in accessing and analyzing large volumes of legal texts.

Discussion

Q1 Which AI tool category feels most relevant to your current role? Where would you most want to start experimenting?

Q2 Have you encountered any AI tool in your library that you were not fully consulted on? How did it affect your work?

Q3 What would a 'responsible AI adoption' process look like in your institution? What steps would it need to include?

Q4 How do you explain to patrons when AI is (or isn't) a reliable source for their research needs?