



DIGITAL EQUITY

Leadership Brief: Explorations of Generative AI for Library Systems

OCTOBER 2023

ABOUT THIS LEADERSHIP BRIEF

Artificial intelligence is rapidly transforming the previously impossible to be possible. This Leadership Brief looks to position the library as a resource for the practical and responsible application of generative AI. By providing the current context of AI usage and exploring the implications of cutting-edge AI technologies, the brief sets the stage for integration of generative AI capabilities in library services and functions.

OVERVIEW: In May 2023, the Urban Libraries Council convened U.S. and Canadian library leaders for a CEO Roundtable focused on workforce development, economic opportunity and emerging technologies such as AI. The AI discussion built on the foundation set by a [2019 ULC Leadership Brief](#) that public libraries are well-equipped to address AI from the human, moral, ethical and social perspectives. Library leaders shared that their hopes and concerns around AI represent several factors:

- Further complications around the identification of misinformation.
- Negative impact on literacy, diminishing social expression and interaction.
- Augmentation of medium- and low-skilled jobs.

[Dr. Chirag Shah](#), an information sciences professor at the University of Washington who also works with tech companies on AI research, encouraged ULC library leaders to shift their assumptions of what AI is and can do. Rather than just thinking AI is a tech and coding resource for individual work, he challenged that it should instead be seen as a service-delivery tool for institutions such as libraries.

Dr. Shah argued that people need to better understand what the machine needs from the user rather than what the user needs from the machine. Or as authors of a 2023 article from the [Harvard Business Review](#) wrote: “To foster a symbiotic relationship between humans and AI, organizations must find the appropriate balance between investing in human skills and technological capabilities....”

Being on the frontline of new technology is a common position for libraries. An example of an opportunity where library services can assume leadership in the AI revolution is in the process of generating command prompts for AI, recommended Dr. Shah. This process, known as prompt engineering, presents an opportunity for swift integration with library services since this is based on user-system interactions.

With that mindset of responsible use, libraries should be optimistic about the future of AI. While there are general concerns about AI being used for misinformation or disinformation, the positives of generative AI’s productive applications greatly outweigh existing concerns. These applications include responsible applications that improve efficiency, speed up communication and serve as a useful tool for showcasing and validating library services and resources.

“AI should not be seen as a replacement for human interaction but rather as a tool for augmenting human impact.”

— David Leonard, President, Boston Public Library



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WHAT IS GENERATIVE AI?

While generative AI is built on the successes of preceding AI technologies, its simplicity of use in generating outputs through text, images and video has made it by far the most widely adopted AI technology.

Although generative AI models and technologies are costly to produce and require massive amounts of data, platforms powered by heavy venture capital investments such as ChatGPT have made it possible for the public to [gain access to generative AI technologies](#) at little to no cost. [ChatGPT](#) is an AI-powered language model developed by OpenAI. A free version launched in November 2022, and it quickly reached 100 million active users in its first two months.

How does this technology work? Generative AI systems are trained using massive amounts of data, enabling these systems to quickly understand prompts and questions from users. These AI systems generate accurate responses by pulling from all available digital sources on the internet and can augment human tasks by accelerating productivity and effectiveness of a person's time spent on tasks. This speed and efficiency makes generative AI applications very effective in completing activities that students, researchers or entrepreneurs conduct every day in a snap.

This is also why generative AI is truly groundbreaking. Unlike preceding models, the configuration of generative AI enables the technology to not only observe and classify but to also create. Additionally, various industries are beginning to adopt certain aspects of this technology for their business processes or at least for developing plans in anticipation of [industry-specific models](#) of the future.

While generative AI systems are not entirely perfect and have issues such as computational bias and a tendency to hallucinate, they are largely efficient.

WHY RESPONSIBLE AI?

If managed responsibly, generative AI has the potential to greatly improve the quality of the lived experience and maximize human productivity and efficiency. Whether to mandate responsible applications of AI was discussed on the world stage in the past year.

From U.S. congressional [hearings on AI oversight](#), to the White House issuing a [Blueprint for an AI Bill of Rights](#), to G7 leaders developing [international technical standards for AI](#), governments are looking to regulate advanced AI so that its evolution is equitable and responsible. However, as [The New York Times recently noted](#), it often takes the U.S. government decades after the advent of a technology for Congress to pass a major law to regulate it.

AI ADOPTION AND SENTIMENT

A [May 2022 global study from IBM](#) found that 35% of businesses worldwide use AI.

- ▶ This is a steady increase from the year before with the highest adoption being in China, Latin America and India.
- ▶ Use of AI for businesses in Canada is 28% and 25% for the United States, per the report.

In the United States, recent [reporting from Pew Research](#) looked at the number of U.S. workers currently exposed to AI and whether it will impact their jobs in the future.

- ▶ Workers with a bachelor's degree or higher (27%) are twice as likely to be exposed to AI when compared to workers who only have a high school diploma (12%).
- ▶ Nearly one-in-four U.S. workers (23%) are employed in the least exposed jobs, compared with one-in-five workers (19%) in the most exposed jobs. Low exposure jobs to AI include barbers, child care workers and firefighters; medium exposure roles include chief executives, veterinarians and fundraisers; and high exposure jobs are budget analysts, technical writers and web developers.
- ▶ 62% of Americans believe artificial intelligence will have a major impact on jobholders overall in the next 20 years, but far fewer think it will greatly affect them personally.

HOW TO INTEGRATE GENERATIVE AI AT LIBRARIES

The ideal future is one where AI augments productivity of current organizational processes, workflow systems and personnel. It can do this while creating new businesses and equitable pathways to wealth that are more broadly distributed. Libraries can be a key player in ushering in a preferred future with AI through the following approaches.

1. Move from Informing to Practicalizing

In addition to its core function of providing access to information, libraries should invest in providing avenues for the practical application of AI technologies. This can be in the form of including AI elements into already existing services, tools and resources.

The San Jose Public Library leverages AI tools for performance improvements and program design. SJPL currently uses machine learning tools to increase the accuracy of data recorded by people counters across all its 25 locations. This includes a process for pinpointing and normalizing outliers, making it possible to have reliable forecasting of visitation volumes for budgeting and operational planning purposes. SJPL also has an AI program for children in the community. This program is designed to teach children the basics of AI and practicals of machine learning, which includes helping a machine learn how to recognize [fish in the ocean](#).

Other libraries are also setting up internal structures to evaluate the implementation of AI systems for improving library services. At the New York Public Library, a cross-departmental working group is evaluating existing AI-related activities across the library, engaging staff in conversations about the opportunities and challenges of AI, and conducting a series of experiments to test AI applications across various patron-facing and internal use cases.

A SENSE OF SCALE:

- ▶ OpenAI's ChatGPT-3 was trained with 45 terabytes of text data. This is equivalent to almost 1 million feet of bookshelf space!

2. Leverage Prompt Engineering Skills

AI models still require some form of human input despite the cutting-edge technology that powers them. For large language models in particular, the type of the prompts entered in by the user decides the quality and relevance of the output.

This reality presents an opportunity for professionals in the library field to carve out a reserved space in the AI-capable workforce. This is simply because library professionals are trained to find bodies of information using key words or phrases. Through training focused on skill transfer, professionals in the library field can gain advanced knowledge on prompt engineering.

Another area to consider the possible application of AI in the future at libraries is in developing tools that make administrative processes more seamless. Such tools would increase efficiency of internal library processes, freeing up staff time and ensuring improved service delivery. A few examples of such tasks include compilation of internal reports, as well as cataloging of library resources.

3. Advance Information Literacy

Generative AI tools are getting more effective, widely available and inexpensive. This makes understanding the provenance, authority and validity of information more challenging than ever for a user. Library staff can address these issues through education and training efforts around information literacy. These efforts are now even more important, and libraries have an opportunity to be at the forefront of this revolution by providing leadership and training for

“The best uses of AI would be in cases where we are able to effectively balance the human awareness and cognition with the precision of AI tools and technologies.”

— Gayathri Kanth, Library Services Director, City of Palo Alto Library Department

information literacy in the age of generative AI to both patrons and staff.

The Palo Alto City Library recently hosted an [AI storytelling event](#) designed for people interested in exploring AI tools for creative expressions. The event included a workshop where participants learned how to generate short stories and poetry with AI. Libraries are also using generative AI in 3D printing labs and when creating lessons for language classes, as well as in workforce development programs such as career mapping, resume writing and cover letter design.

4. Create an AI-Focused Digital Inclusion Network

One of the potential issues with the industrialization of AI is the increasing possibility of widening an already existing digital divide. The fast-paced adoption, proliferation and integration of AI will speed up business processes and economic output but could also become a barrier to accessing economic opportunity for some if left unmanaged.

Existing cross-sector initiatives, like the Digital Inclusion Network in Oregon, focus on raising awareness of digital equity barriers and developing pathways to ensuring inclusion and access to the economic opportunities such technologies bring. A similar model dedicated to AI should be explored to minimize the possible divide and to instead improve access to economic benefits of new AI powered technologies.

5. Advocate for the Responsible Use of AI

As AI technologies continue to evolve and change, libraries need to be actively involved in the conversations that determine the direction and path of AI development. This is to ensure that the highest moral and intellectual honor codes are followed, and

that the established pathways to acquiring knowledge and information are standardized.

This task should not be solely left to computer engineers or for-profit corporations. The design process of technologies such as generative AI should include inputs from regulatory bodies to ensure risk mitigation that reduces the possibility of usage by bad actors. At the same time, the design process should include libraries and educational institutions to ensure such advancements benefit the community at large, and that foundational standards of education, innovation and access to information are preserved.

CONCLUSION

While generative AI remains a powerful tool with amazing capabilities and enormous economic potential, it also has short falls, challenges and potential risks. One of the major issues with generative AI is its inability to verify the sources of the information compiled, as well as its potential to sometimes hallucinate and provide made-up information.

Other concerns include:

- Intellectual property and private information risks.
- Cybersecurity risks, including the potential for more sophisticated phishing and increased disinformation.
- The possibility of AI models to reduce social interaction, amplifying existing bias and widening the digital divide.

In March 2023, more than 1,000 [tech leaders and academic researchers](#) called for a six month pause to the development of the most powerful AI systems until usage regulations can be developed and put in place. This is in response to concerns that the race to



“Libraries are trusted spaces for accessing information and have the responsibility of ensuring that they remain in service to people that are furthest away from opportunity.”

— Vailey Oehlke, Director of Libraries, Multnomah County Library

build more powerful models of generative AI could lead to the development of systems with behaviors the creators might not be able to anticipate or control. Other emerging concerns around AI's acceleration are job security and creative licensing such as the [demands of striking Hollywood writers](#) for regulation that stops AI from writing or rewriting any film materials, as well as copyright campaigns by the [Authors Guild calling on Congress](#) to ensure that authors are adequately compensated for the intellectual property used to train AI models.

As generative AI tools become more accessible, effective and less expensive, new opportunities for

libraries to lead around information literacy are emerging. While the core function of the library is to provide its community with access to information, safeguarding the quality of this information is equally essential. Not only should libraries develop AI-informed solutions and approaches to help bolster current efforts to counter disinformation and misinformation, libraries have an important role to play in championing the responsible use of AI. Libraries need to be developing solutions for community-based challenges, as well as ensuring digital divides are narrowed and not widened.

The Urban Libraries Council is an innovation and action tank of North America's leading public library systems. We drive cutting-edge research and strategic partnerships to elevate the power of libraries as essential, transformative institutions for the 21st-century. We identify significant challenges facing today's communities and develop new tools and techniques to help libraries achieve stronger outcomes in education, workforce and economic development, digital equity and race and social equity.

ULC would like to acknowledge the following individuals for their contributions to this Leadership Brief:

- Brian Bannon, Merryl & James Tisch Director, New York Public Library
- Jill Bourne, City Librarian, San Jose Public Library
- Pete Huang, Vice President, San Francisco Public Library Commission
- Gayathri Kanth, Library Services Director, City of Palo Alto Library Department
- David Leonard, President, Boston Public Library
- Vailey Oehlke, Director of Libraries, Multnomah County Library
- Dr. Chirag Shah, Professor, Information School, University of Washington

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