The Impact of Generative AI on Libraries

ExLibris
Part of Clarivate

From unlocking mobile phones via facial recognition to voice-activated services like Siri or Alexa, artificial intelligence (AI) has been a common presence shaping numerous aspects of our daily lives. However, the recent shift from traditional AI to Generative AI has brought about something we've never seen before: AI that is capable of creating new content. This development is causing **revolutionary changes and stretching the possibilities for innovation across all sectors, including libraries**.

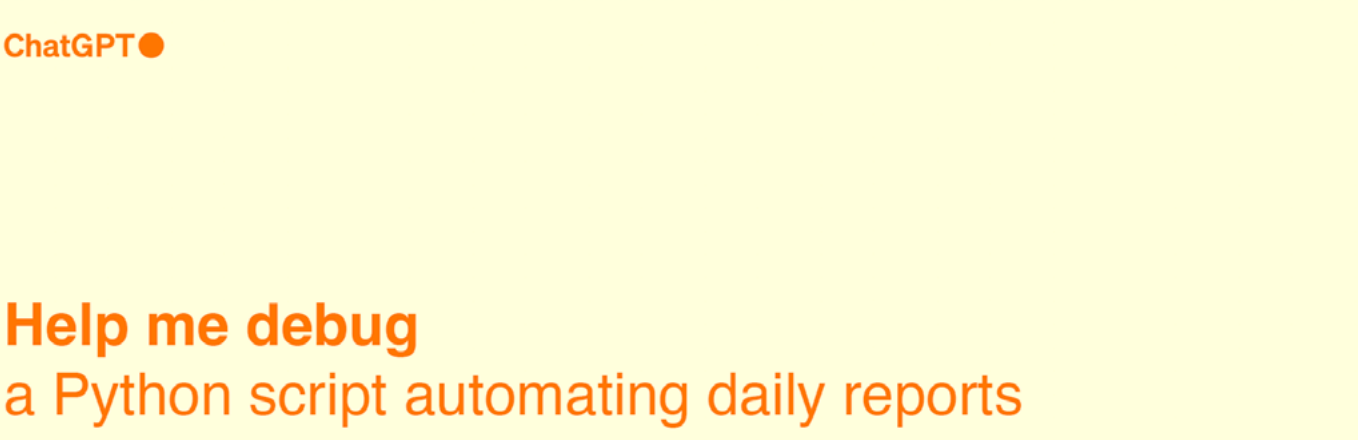
In this paper, we look at the rapidly evolving state of Generative AI – its benefits and risks; its limitations and extraordinary potential. We delve into the impact of OpenAI's ChatGPT on user expectations and the way we manage, share, and utilize data within trusted institutions like libraries. We also explore the role of Linked Open Data technology in connecting various systems to work collaboratively and improve the quality and reach of services.

The emergence of Generative AI

Generative AI represents a significant leap in the evolution of artificial intelligence. Rather than merely identifying patterns in large volumes of data to recommend or assist, **Generative AI is designed to generate new content or data**. This data takes the form of text, images, music, video, or countless other formats.

OpenAI's introduction of ChatGPT on November 30, 2022, marked a watershed moment. With its accessible, user-friendly interface and context-aware conversational abilities, ChatGPT brought Generative AI to the masses. Any user could harness its capabilities according to their needs. Despite being an early-stage technology, ChatGPT's success was immediate and striking, reaching one million users in a mere five days, rapidly outpacing other consumer tech platforms such as Spotify, Facebook, and Netflix, which took months or years to hit the same milestone. By May 2023, OpenAI reported that ChatGPT was handling 1.8 billion queries per month.[1]

The launch of ChatGPT also brought attention to numerous startups that had been quietly working on Generative AI solutions, with over 360 companies working in sectors ranging from reading and writing to marketing and media.[2] **The impact of these developments has been particularly significant in the fields of technology and education.**



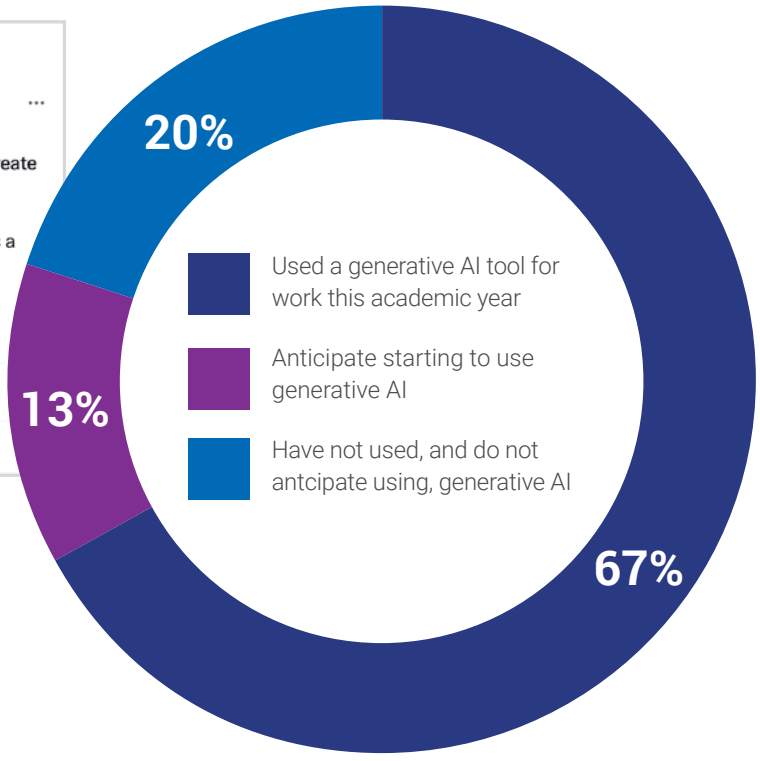
Facing educational obstacles

Following the launch of ChatGPT, many school districts, fearing widespread cheating and plagiarism, swiftly banned access on school networks and mandated handwritten submissions. However, it wasn't long before a student outsmarted these rules by connecting a 3D printer to ChatGPT, automating handwritten homework. AI services that can flawlessly mimic personal handwriting are now available, adding further complications.

A survey conducted in the US and UK found that a quarter of teachers had discovered at least one student using ChatGPT to cheat.[3] Beyond academic integrity, this raises other educational concerns around accuracy and critical thinking. **AI is only as intelligent as its training data; it can't corroborate sources or distinguish between them.** ChatGPT can't determine on its own what is a reliable source or what is mis- or dis-information. It is not infallible and will at times "hallucinate," delivering answers that sound accurate but are completely fabricated. Sam Altman, CEO of Open AI, warned, "ChatGPT is incredibly limited, but good enough at some things to create a misleading impression of greatness. It's a mistake to be relying on it for anything important right now."

Despite these concerns, optimism about the potential for AI in education is growing. In a recent study by Educause, 67% of respondents reported they're currently using Generative AI and an additional 13% anticipate future use.[4] Higher education institutions are quickly adapting and are now providing AI guidelines on their websites.

As computers gained power and intelligence over the last several decades, the promise for education has been **truly individualized learning that adapts to each student's background and skill set**. Today, with Generative AI, there are companies beginning to deliver on that promise. And for teachers, the reading and writing capabilities of Generative AI mean automated grading can extend beyond multiple-choice assignments.



The elephant in the room

So, is AI a threat that will replace us or an ally to the continued growth of humanity? The answer for now may be best illustrated by the story of Kellin Pelrine, an amateur Go player. Since IBM's Deep Blue first beat Garry Kasparov at chess in 1997, we've seen machines outperform humans in other complex games. For years, Google's AlphaGo beat the best Go players in the world. But that winning streak recently ended when Pelrine defeated AlphaGo. How did he do it? Ironically, he used ChatGPT and other AI platforms to identify AlphaGo's weaknesses.[5] The general consensus is that for the foreseeable future, **humans and AI will be working not against each other, but together, sometimes leading and sometimes supporting, to boost productivity and further progress**.

While there are valid concerns and challenges associated with the use of Generative AI and governments are taking notice. A debate is forming about how it should be regulated and by whom. In the meantime, the potential benefits are too significant to ignore and **businesses like ours have a responsibility to our researchers, students and faculty to explore the possibilities of this technology and harness its power responsibly**.

Kellin Pelrine

Enhancing discovery and patron services

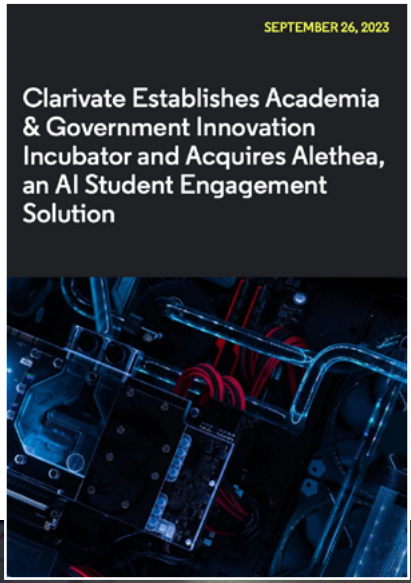
As we explore the possibilities of Generative AI, we should never lose sight of **our ultimate goal: to provide the best service to our users**. AI is a means to that end, not an end in itself.

Clarivate is in a position to leverage the benefits of Generative AI in our services without compromising our core values and community expectations of providing reliable and trusted content to our users. **Clarivate is home to vast databases, sources and resources, all of which are curated, maintained and trusted. When this bedrock is used to train Generative AI, we can produce incredible results, providing answers, recommendations and content tailored to the needs of each user.**

Through Generative AI, a transformational trend has emerged in the realm of discovery experiences: conversational discovery – users "chat" with the search engine, asking it questions and continually training it to refine the answers the engine delivers. Unlike traditional search engines, which search the internet without distinction of content sources or their levels of reliability, **the library discovery process is grounded in reliable, trusted, scholarly content produced by trustworthy sources and validated by experienced librarians**. Incorporating AI-powered conversational discovery offers convenience to users while emphasizing transparency, proper accreditation, and intellectual property rights.

By providing immediate answers to natural language queries and offering visibility into sources and references, libraries can empower users with a seamless and trustworthy discovery experience. AI can also improve glanceability and aid in the selection of best-fit works by **generating contextually relevant summaries or explanations**.

We're fast-tracking work in this area by creating an "Academic & Government Innovation Incubator" that will further accelerate our strategy to drive innovation, utilize AI and introduce novel solutions for our customers, including solutions that focus on realizing better learning outcomes and student success. In September, we acquired Alethea,[6] an AI-powered students' content engagement platform created by Pangea. Alethea facilitates meaningful engagement with academic texts, class readings, and assignments through personalized and adaptive guidance. Faculty and librarians gain the insights they need to analyze students' reading engagement and rapidly adapt their teaching. By incubating new technology and startups like Alethea, we intend to **improve learning outcomes, enhance student's content engagement and grow library content usage**.



Prioritizing diversity and inclusivity

One of the key considerations when implementing any technology in libraries and educational institutions is ensuring diversity and inclusivity. It's important to remember that AI is trained on data, and that data can reflect the biases of the society that created it. So, it's crucial to be aware of these potential biases and take steps to counteract them, such as **training AI models on diverse datasets and recommending resources with additional points of view to users**.

Emphasizing diversity not only enhances representation but also encourages interdisciplinary research and broader accessibility. By prioritizing works from underrepresented regions or publishers, libraries can broaden their collections and foster a **more inclusive and holistic learning environment**.

Solving metadata challenges

Despite the rapidly changing technology landscape, metadata remains a fundamental aspect of content organization. The challenge, however, lies in the scale at which it must now operate. With diverse content types in numerous formats coming from varied sources, maintaining consistency and connectivity in metadata has become more important and challenging than ever before. The ability to effectively manage and utilize metadata is critical in the efficient operation of large-scale discovery systems.

Tackling these challenges requires **scalable technology and collaboration between humans and machines**. Enriching metadata with persistent identifiers, such as Open Researcher and Contributor Identifiers (ORCIDs) and Web of Science ResearcherID, ensures the unique identification of authors and organizations, facilitating accurate categorization and improving searchability. Additionally, leveraging Linked Open Data networks and employing text mining and AI technologies can enhance metadata quality and consistency.

Collaborating as a community

The impact of AI on education and society necessitates a collaborative approach. Standards, agreements, and best practices can emerge from the collective efforts of all stakeholders, including libraries, organizations and individuals. Engaging with community-driven initiatives fosters knowledge-sharing and facilitates improvements based on feedback. The active participation of librarians, educators, researchers, and technology experts ensures that any AI applications in education will be **aligned with diverse needs and values, leading to more responsible and effective implementation**.

By emphasizing transparency, inclusivity, and collaboration, we can harness the power of AI to enhance educational experiences, broaden access to knowledge, and foster a learning environment that reflects the diverse perspectives of our global community.

Connecting the dots with Linked Open Data

The transition from traditional document-focused networks to data-focused networks marks a **new era for library systems**. The concept of the semantic web emphasizes focusing on data as individual, linkable elements managed in a distributed way. This idea forms the foundation of Linked Open Data technologies.

Linked Open Data allows different systems to connect and share information in a distributed way. It ensures the accuracy of data and improves metadata quality. Linked Open Data's true potential is in its ability to connect diverse systems beyond libraries, including research and human resource systems. This opens a wealth of opportunities for the creation and discovery of new connections and more intricate networks.

AI technology and Linked Open Data work together to revolutionize how data is understood and used. By creating structured data from existing content and establishing additional relationships within the network, AI enhances the potential for an enriched discovery experience. The structured nature of Linked Open Data allows AI to interpret and connect data with more precision. This convergence of technologies empowers **end-to-end solutions that span multiple systems and workflows, enhancing services such as data retrieval, metadata utilization, resource sharing and more**.

While embracing these technologies, it's important to maintain a balance. We must prioritize the diversity and trustworthiness of content as well as data privacy. The road to widespread adoption of Linked Open Data comes with challenges surrounding data management, data quality, and caching, but the advantages it presents make it a worthwhile pursuit.

Community-wide collaboration is crucial when scaling up these systems and bringing together hundreds of institutions. This approach reduces operational costs through AI automation and maximizes metadata reuse. Understanding available resources, identifying gaps, and aligning with standards are all essential components.

The importance of unified, integrated systems

Ultimately, the goal is to harness these tools and technologies to **elevate the services we offer to our community and enrich the user experience**. This collaborative approach necessitates a platform capable of managing vast amounts of data while also integrating seamlessly with other systems. In the long run, the best-fit technology for the purpose of improving processes, frees up time to focus on tasks that promote truly important topics, like improving research and learning outcomes, increasing the impact and visibility of the library.

Generative AI is an opportunity. It's an opportunity to improve our services, enhance user experiences and make our work more meaningful and impactful. The question is not whether we should embrace AI. Rather, it is about **helping our customers think forward about how AI technology can best serve them** in advancing teaching, learning and research - and transform their world for the better.

Academic libraries are vital for accessing trustworthy scholarly material. Watch this video to learn how new methods and technologies, like Generative AI, can enhance the library's discovery experience and align it with dynamic user expectations.

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