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AI IN CANADIAN LIS JOURNALS: A TEXT ANALYSIS (Full paper)

Abstract
Since its inception in 1955, the term "artificial intelligence" (AI) has seen a recent revival with generative AI. But what does this mean for Canadian Library and Information Sciences (LIS) responses? Text analysis was performed in 56 AI publications from nine Canadian LIS journals spanning 1982 to 2024. Using diachronic and sentiment trends, the identified corpus highlights that past familiarity with more traditional AI has led to a balanced and possibly more critical sentiment that provides context, acceptance, and concern for future generative AI technologies within the Canadian LIS landscape.

Introduction

In 1955, McCarthy et al. coined the term "artificial intelligence" (AI) in their proposal for the 1956 Dartmouth Summer Research Project on Artificial Intelligence (McCarthy et al., 2006). Their proposal signalled a historical shift as they sought to explore ways "to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves" (p.12). Since then, the term "AI" has seen renewed interest with the advent of ChatGPT, particularly the 2023 release of GPT-4. As a result, AI has become the centre of growing controversy, concern, and debate, with growing calls to "pause" further training on generative AI systems until a thoughtful policy can be developed and the implications of AI investigated (Future of Life Institute, 2023).

AI refers to the capability of a computer system to mimic human cognitive functions (Omiye et al., 2023; Government of Canada, 2024), completing tasks independently by detecting and replicating patterns in data (Government of Canada, 2025). Traditionally, AI refers to a machine learning model that makes predictions about the data on which it was trained (Omiye et al., 2023; Zewe, 2023). More recently, generative AI refers to a machine learning model that creates new data similar to the data on which it was trained (Zewe, 2023). One example of generative AI is Chat Generative Pre-trained Transformer or ChatGPT (Zewe, 2023).

But how has the Canadian Library and Information Science (LIS) community responded to AI in its literature? Can historical trends in AI discussions shape and inform present and future Canadian LIS AI literature? As such, this research question aligns with the 2025 CAIS conference theme of "Back to the Future." This study applies text analysis to examine "artificial

intelligence" in journal publications from Canadian LIS journals. As opposed to "close reading," Moretti (2007) coined the term "distant reading" which is a "specific form of knowledge: fewer elements, hence a sharper sense of overall interconnections" (p. 1). The approach is to "reduce the text to a few elements, and abstract them from the narrative flow, and construct a new, artificial object." (p. 53). This approach emphasizes explanation over interpretation or, rather, the explanation of general structure over the interpretation of individual texts (Moretti, 2007). As such, the few elements to which the text is reduced are words, and the frequency of those words is measured, analyzed, and visualized as part of text analysis, allowing a better understanding of AI in Canadian LIS journals without the need to engage in AI debates.

Guiding research questions for this investigation include:

1. How has "AI" appeared in Canadian LIS literature over time?
2. What does the sentiment towards AI look like over time and by publication type?
3. What is the progression or trends of AI, academic library, and "hot topic" terms over time and by publication type?
4. What does this text analysis signal for future research and trends in the Canadian LIS landscape?

With these questions in mind, we argue that "artificial intelligence" has increasingly become a topic of interest and–despite controversy and concern–a balanced, yet potentially more critical, sentiment is apparent in the literature from Canadian LIS journals.

Methods

Canadian LIS journals were identified from two websites with compiled lists of LIS journals (University of Saskatchewan Library, n.d.-b; University of Alberta Library, 2024). In total, 11 Canadian LIS journals were identified (Appendix Table 1). Eleven Canadian LIS journals were searched for "artificial intelligence" to include explicit mentions and focus on direct discussions of AI using journal websites (Appendix Table 1) and databases LIS Source (LISS) and LIS Abstracts (LISA). Full-text journal publications were included, whereas conference abstracts and reports were excluded. Individual journal article reviews, book reviews, and product reviews were excluded because the sentiment could be about the article/book/product being reviewed, rather than a sentiment about AI.

Text analysis can include diachronic analysis, sentiment analysis, and social network analysis. Social network analysis examines the links between authors and other entities; for example, journals or journal publications (Rockwell & Sinclair, 2016). Social network analysis was performed using Palladio, a web-based visualization tool (Stanford Humanities + Design Lab, n.d.). Palladio generates a network visualization comparing two columns in a Comma-Separated Values (CSV) file.

Full-text journal publications were prepared for analysis in Voyant Tools, a text analysis environment (Sinclair & Rockwell, 2016). To be consistent across all journal publications, text from tables, table captions, figures, figure captions, and appendices were removed. The full text of the journal publications was compiled in an eXtensible Markup Language (XML) file to be imported into Voyant Tools (Sinclair & Rockwell, 2016). The XML file was prepared to allow for import based on publication year and publication type, which were selected as subsets to investigate. Publication type required categorization into either Editorial, Commentary, or Article.

Diachronic analysis examines data for changes over time (Rockwell & Sinclair, 2016). Sentiment analysis examines author opinions in the text to identify sentiment towards a topic (Kitchin, 2014), considering positive and negative language in the specific corpus. The Voyant Tools Terms tool reports word frequency and Trends tool graphs relative frequency. Diachronic analysis was facilitated considering publication year using Trends tool and ScatterPlot tool for Correspondence Analysis. Specific terms were identified to evaluate in the corpus: AI terms (Omiye et al., 2023; Zewe, 2023), common academic library terms (Ducas et al., 2020), and "hot topic" terms (University of Saskatchewan Library, n.d.-a). Sentiment Analysis was facilitated with various tools including Trends, Collocates, and Contexts tools.

Results

As of January 10, 2025, the search identified 56 publications from nine Canadian LIS journals from 1982 to 2024 (Figure 1). Of the nine journals under investigation, law and archives journals had the highest publication counts with 14 and 12 publications, respectively. Two journals had nine publications each: *CJILS* and *EBLIP*. Thirty-nine publications were published in 2020-2024, with 13 in 2023 and 12 in 2024 (Figure 1). For the remaining decades, 10 publications were published in 2010-2019, zero in 2000-2009, four in 1990-1999, and three in 1980-1989. Based on publication type, 36 were article, 13 were editorial, and seven were commentary (Appendix Figure 1). In 2023, six were article, five editorial, and two commentary. Interestingly, in 2024, nine were article, one editorial, and two commentary.

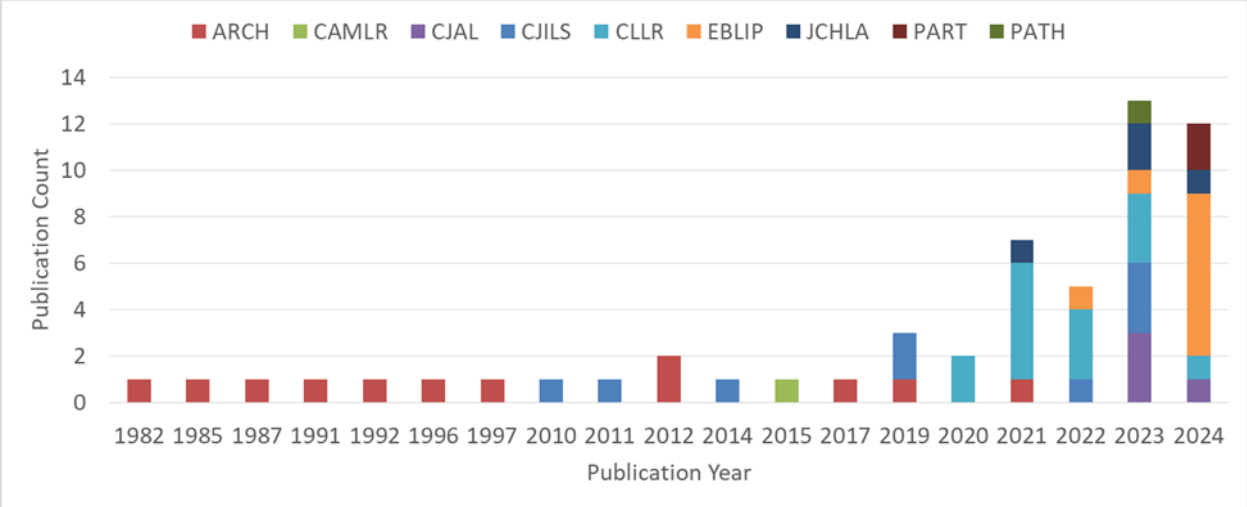


Figure 1: Publication Count by Publication Year and Journal.
Note: Journal abbreviations listed in Appendix Table 1.

Social network analysis reveals limited interaction between the nine journals and 85 authors (Figure 2). Only one author, Blechinger, published in two different journals, *CJAL* and *PATH*. In the remaining seven cases where authors had multiple publications, these appeared in the same journal: Tanner with four, Nayyer with two, and Garingan with two in *CLLR*; Yeo with two and Bearman with two in *ARCH*; Mongeon with two in *CJILS*; and Pawliuk with two in *JCHLA*.

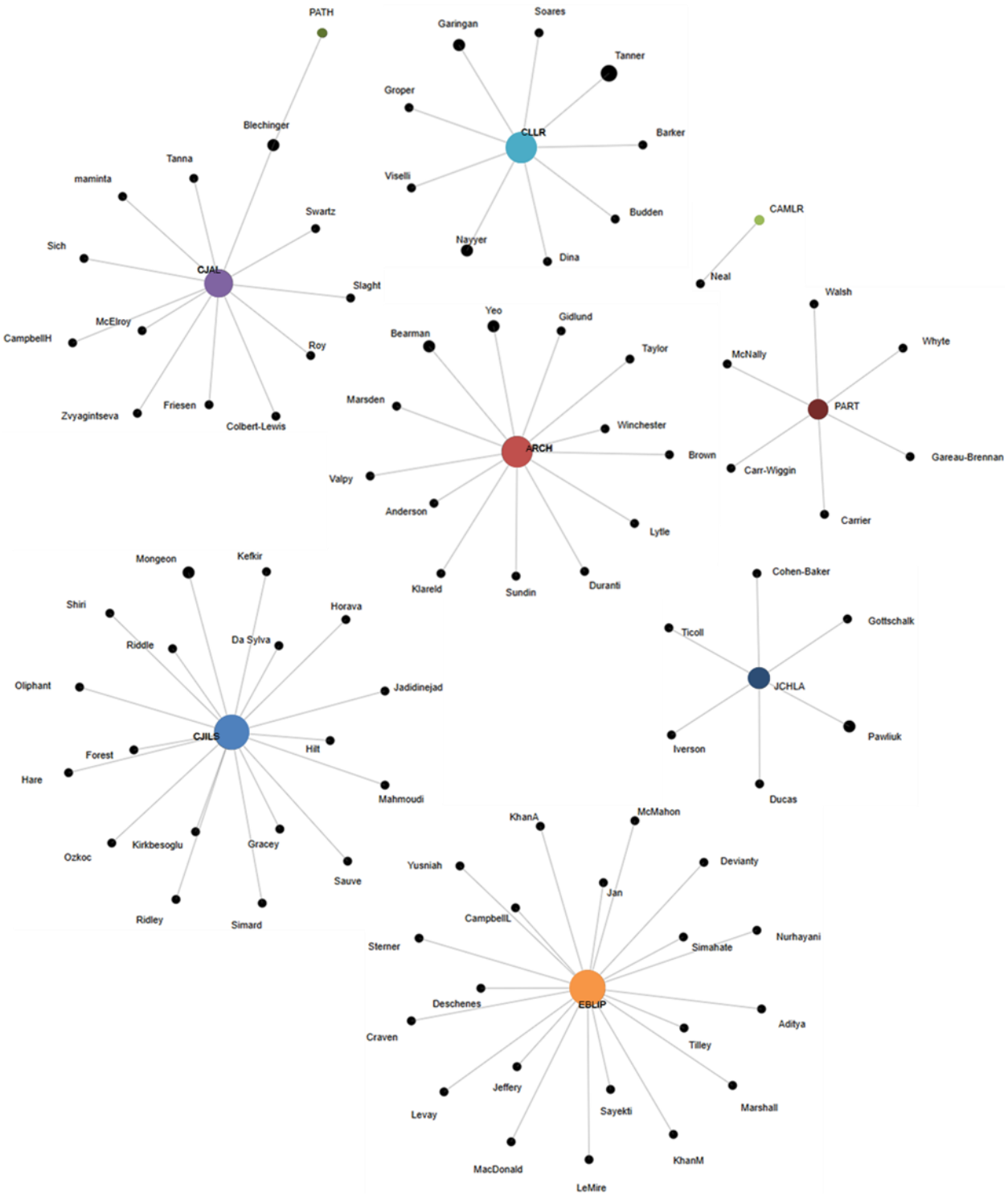


Figure 2: Network for nine journals and 85 authors.
Note: Node size indicates frequency.

Examining all of the texts, “ai” was the 5th most frequent term (frequency 1245). “Artificial” and “intelligence” were the 30th (454) and 32nd (450) most frequent terms (Figure 3). “Artificial intelligence*” appeared 396 times. The first to sixth most frequent terms were information (2275), records (1474), library (1416), research (1351), ai (1245), and data (906).

Figure 3: Word Cloud of 50 most frequent terms.

Correspondence Analysis considering publication type revealed that “ai” was associated with articles, and “artificial” and “intelligence” were associated with editorials (Figure 4). “Law” and “legal” were associated with editorials, “information” and “research” with articles, and “records” and “archives” with commentaries.

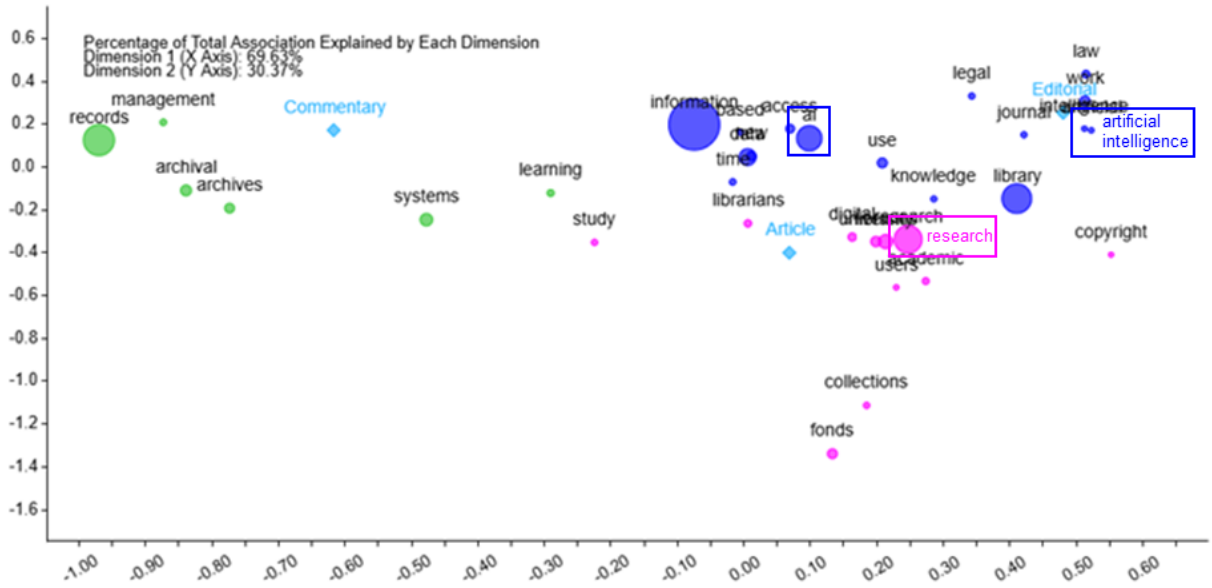


Figure 4: Correspondence Analysis by Publication Type
(relative frequency, 3 clusters, 2 dimensions, 36 terms).
Note: When labels located above were overlapped, labels were retyped and relocated to the right.

Using the AI terms to evaluate trends in AI technology over time, “machine learning*” appears in the corpus first with “ChatGPT*” emphasized in 2023 and “generative ai*” emphasized in 2024 (Figure 5).

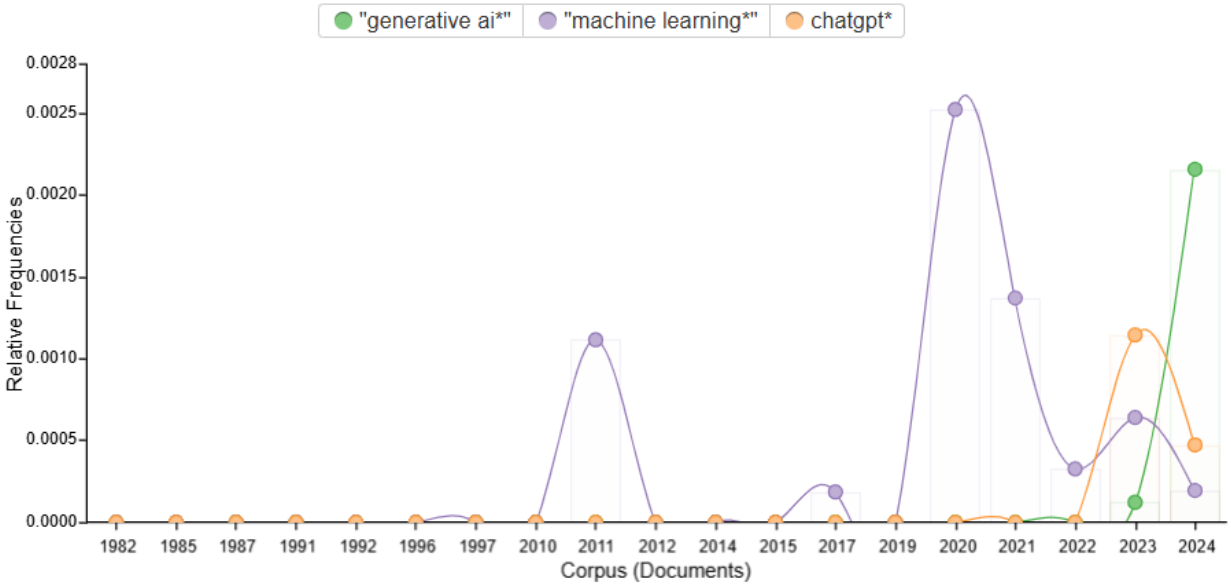
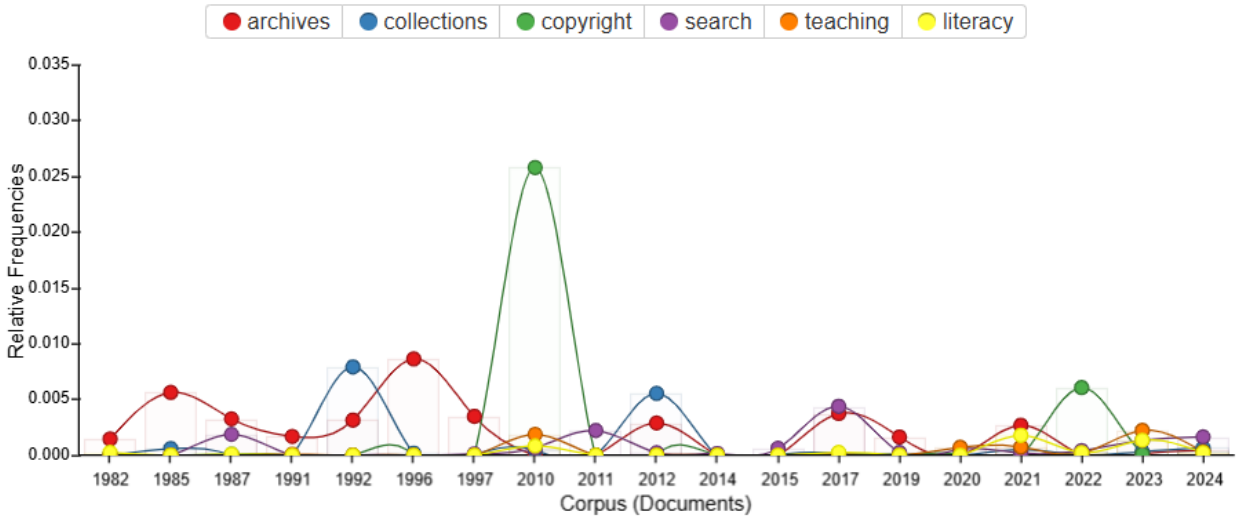


Figure 5: AI Terms trends by Publication Year.
Note: Terms include use of wildcard (*).

Over time, common academic library terms (archives, collections, copyright, search, teaching, and literacy) revealed that the focus on AI was “archives” and “search” in the 1980s, “archives” and “collections” in the 1990s, “copyright” and “collections” in the 2010s, and “copyright” and “archives” in the 2020s (Figure 6a). Looking closer at 2020-2024 (Figure 6b) revealed that the AI emphasis was “teaching” and “search” in 2020, “archives” and “literacy” in 2021, “copyright” in 2022, “teaching,” “search,” and “literacy” in 2023, and “search” in 2024.

(a)



(b)

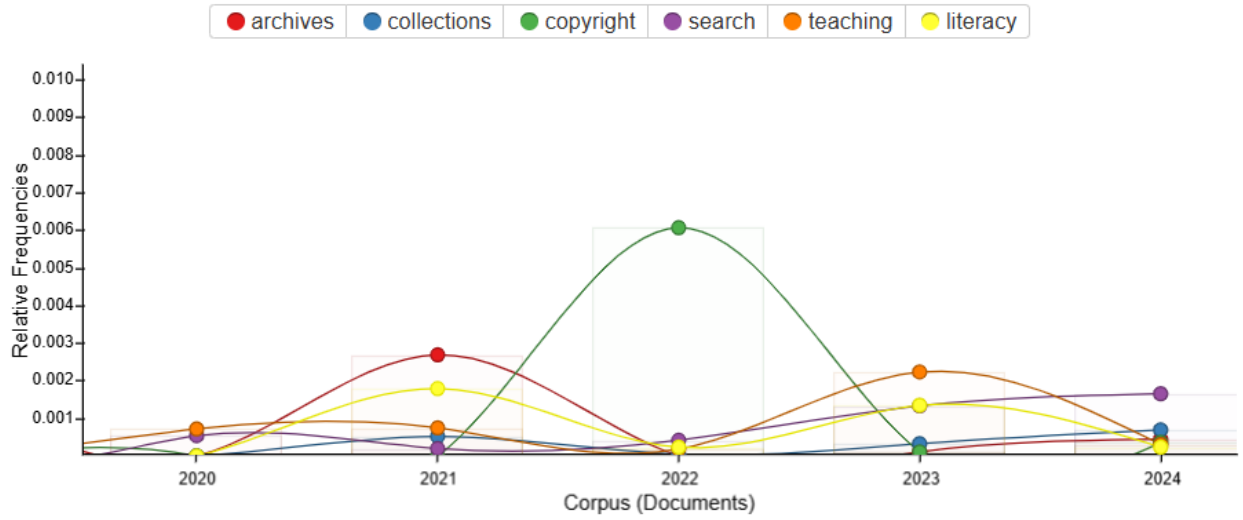
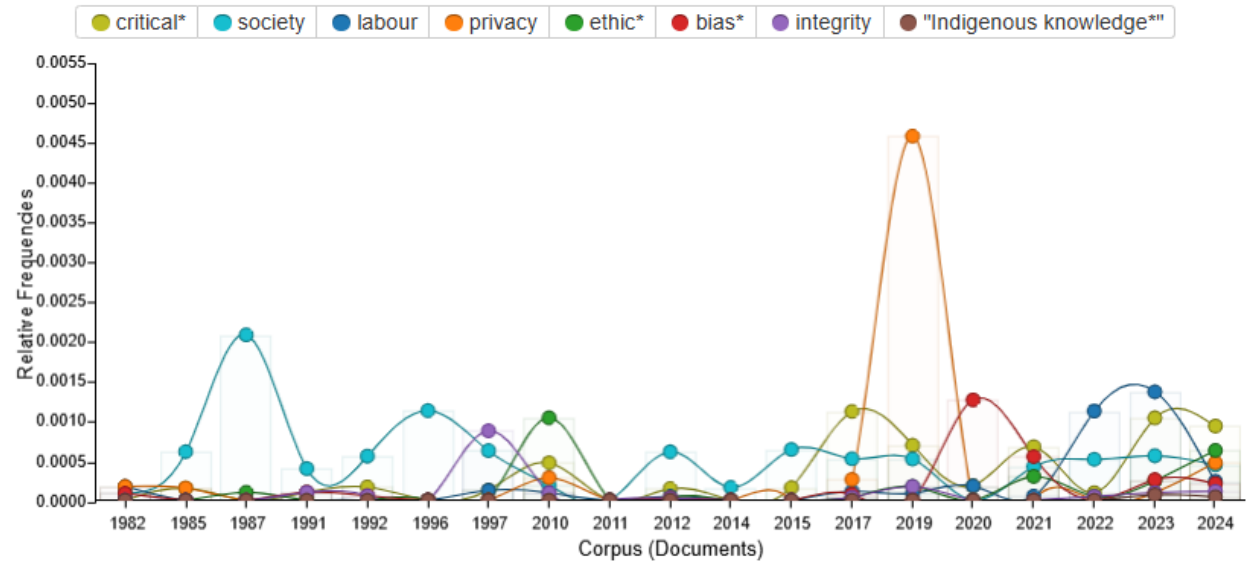


Figure 6: Academic Library Terms trends by Publication Year: (a) 1982-2024, (b) 2020-2024

A historical view of hot topic terms (critical*, society, labour, privacy, ethic*, bias*, integrity, and Indigenous knowledge*) shows a focus on “society” in the 1980s and 1990s, remaining a term over time (Figure 7a). The use of “integrity” peaks in 1997, while “ethic*” peaks in 2010. The literature in 2019 shows a distinct focus on “privacy” before shifting to “bias*” in 2020 (Figure 7b). The 2023-2024 period shows a relatively balanced focus across the terms; however, “Indigenous knowledge*” first appears in the corpus in 2023.

(a)



(b)

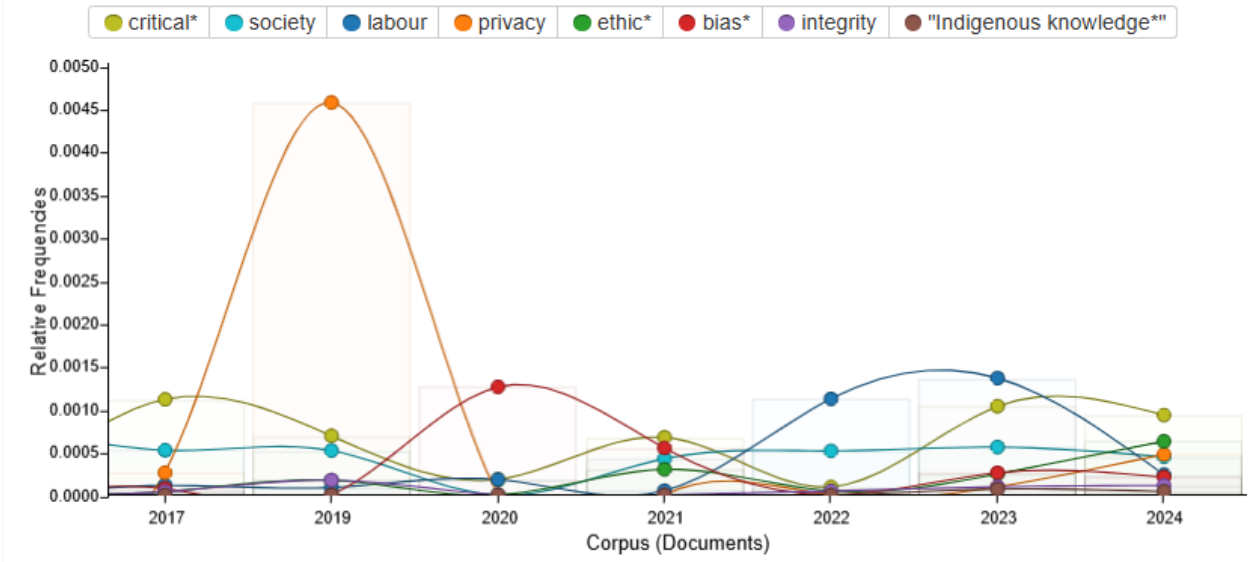


Figure 7: Hot Topic Terms trends by Publication Year: (a) 1982-2024, (b) 2017-2024

When examining hot topic terms by publication type, “critical*” and “bias*” are the only terms to appear in editorials (Figure 8). While “privacy” is the main focus of commentaries (followed by “society” and “critical*”), its usage in articles is relatively low. Alternatively, the usage of “labour” in commentaries is quite low, whereas it becomes one of the three foci of articles (preceded by “critical*” and “society”). Other terms (“ethic*,” “bias*,” and “integrity”) see relatively similar usage in both commentaries and articles.

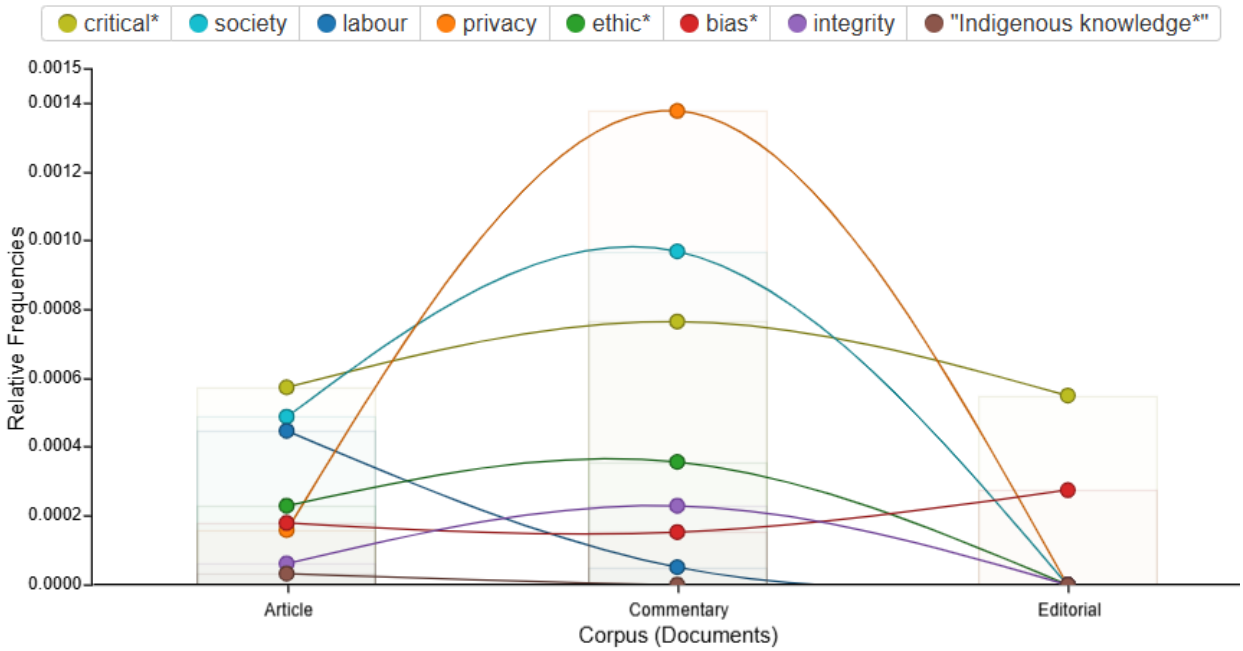
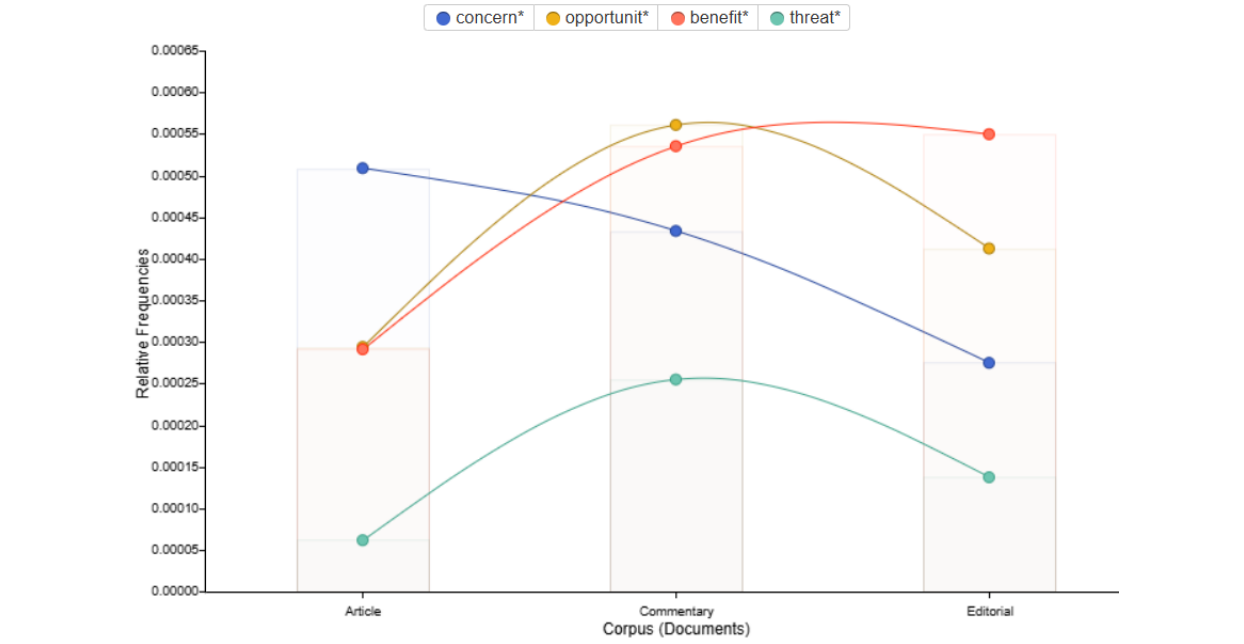


Figure 8: Hot Topic Terms trends by Publication Type

Sentiment analysis by publication type found articles had a balanced view of AI ("concern*," "opportunit*," "benefit*," then "threat*") (Figure 9a). However, editorials and commentaries appear more positive with similar order of selected sentiment frequency ("benefit*" and "opportunit*," then "concern*" and "threat*"). A diachronic sentiment analysis found that while negative sentiment trends were high from 1982-1996, positive sentiment grew in 1997 (Figure 9b). While 2023 finishes with a balanced view of AI, 2024 sees terms start to separate as "concern*" leads, followed by "benefit*," "opportunit*," and "threat*," respectively.

(a)



(b)

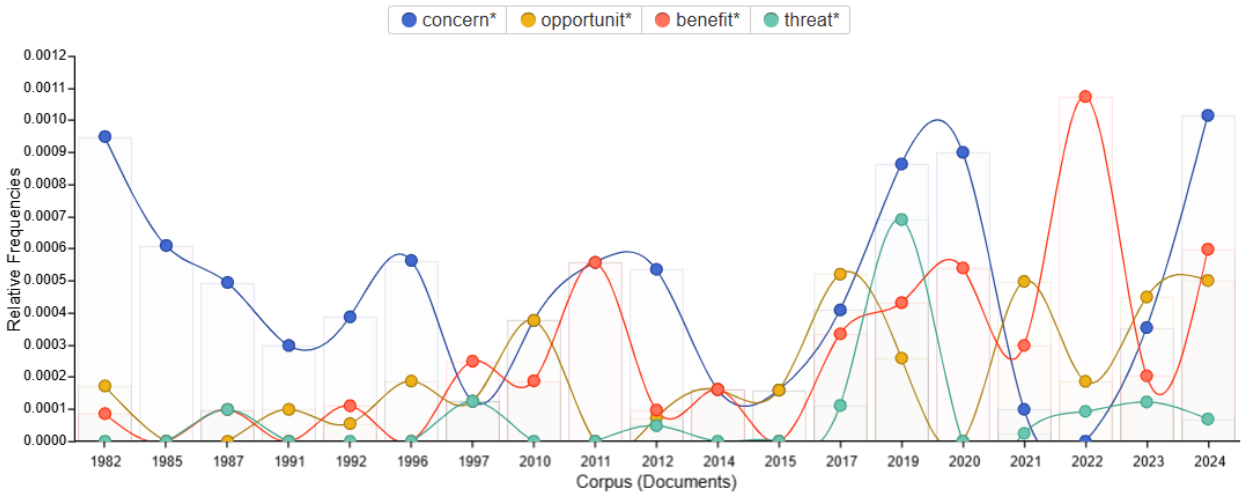


Figure 9: Sentiment trends: (a) By Publication Type, (b) By Publication Year

Discussion

The AI discussion in Canadian LIS literature has changed and will continue to shift into the future. To begin, a comparison of "machine learning," "ChatGPT," and "generative ai" signals a shift in AI technologies as the focus moves away from machine learning and its concerns, opportunities, and benefits to the advent of generative AI, specifically through the increased awareness of ChatGPT in 2022 (Roose, 2022). Interestingly, ChatGPT appeared more frequently than "generative ai" in 2023 before being completely overtaken by "generative ai" in 2024, whereas "machine learning" has become the least used of the three. This spike in 2023 highlights the effect that ChatGPT had on the AI scene within LIS journals, potentially even standing in as a representative of all generative AI. However, as the AI sector sees a diversification of AI technologies, it is only logical that the literature of Canadian LIS journals reflects that evolving environment, adjusting to discuss the concerns and opportunities that affect information and library sciences.

As of the end of 2023, Canadian LIS journals gave AI balanced consideration, but, in 2024, the balance appears to be shifting. Interestingly, commentaries and editorials appear to present a more positive view of AI, focusing on the benefits and opportunities as opposed to the threats and concerns. Alternatively, articles focus on concerns. While historically, all sentiment terms have peaked at different times, more recently, there appears to be a shift away from looking at, or at least using the language of, threat as it relates to AI. Later, by the end of 2024, concern appears to be increasing again. For example, concerns arise regarding the use of AI chatbots for research (Deschenes & McMahon, 2024) and the readiness of libraries to adopt AI (Jan, Khan, & Khan, 2024), which would have implications for labour and AI. However, concerns are balanced by calls for librarians to seize the opportunity to lead the response to rapidly changing generative AI in the academic world (Deschenes & McMahon, 2024).

This shift perhaps reflects growing concerns and controversies within AI discussions. While historically "concern" has always been a part of the language surrounding AI literature in Canadian LIS journals, opportunities and benefits have also trended upward, peaking at various times. The increased awareness of ChatGPT in 2022 (Roose, 2022) appears to correlate with a significant spike in opportunit(ies) as the new world of generative AI emerges. By 2023, there was a relatively balanced sentiment towards AI. However, 2023 brought GPT-4 and its rapid changes, growing concerns, and calls to pause (Future of Life Institute, 2023) at the beginning of 2023. While the literature is still relatively positive in 2023, despite this open letter, it was slow to respond to these new developments, perhaps due to publishing cycles and timelines. As such, 2024 literature appears to be responding to and reflecting these growing concerns. However, this potentially signals an issue with the time it takes to move through a publication cycle. While due diligence in peer review is important, failing to keep up with current concerns (especially for a rapidly changing issue) has implications. As future research emerges, it will be interesting to see the trajectory of sentiment moving forward, especially as it relates to library and hot topic issues and terms.

By looking at common library terms that coincide with librarian responsibilities and roles, one can develop an understanding of the shifting focus in the literature as related to AI. Originally, AI literature focused (as machine learning) on archives and search implications or capabilities. Archives continue to be a significant part of LIS/AI discussions into the 2020s. Alternatively, copyright experienced a significant spike in 2010. The increased frequency in 2010 could be tied to current events surrounding the introduction of proposed changes to the Copyright Act in 2010 (later passed in 2012) (Lithwick, 2010). "Copyright" increases again in 2022, losing priority and focus in subsequent years. Surprisingly, this shift comes at the introduction of ChatGPT and seems noteworthy that, with concerns of corpus copyright for AI training, it ceased to be a focus. However, it could be a study limitation as copyright may be too broad a term to represent the specific terminology of the topic (e.g., intellectual property, labour, etc.). Current trends see an increased focus on "search" in 2022, becoming the focus in 2024. This focus highlights changing discussions, and inevitably implications/opportunities, of AI for librarians and hints at future LIS research trends.

Similarly, several key themes arise in a discussion of hot topics. Canadian LIS literature appears to discuss "society" over time, while "critical" emerged as an emphasis in 2017 and remains a focus in subsequent years. Interestingly, the use of "integrity" peaked in 1997, with frequency decreasing through to 2024. Likewise, "ethic*" peaks in 2010 and lowers in frequency moving forward. However, both terms, specifically "ethic*," are broad umbrella terms that could be represented in numerous ways (i.e., by the ethical concerns themselves).

As well, the literature shows a distinct focus on "privacy" in 2019 before it seemingly disappears. Additionally, although "privacy" is the main focus in the commentaries, its usage in articles is relatively low. Surprisingly, this spike in 2019 and disappearance came before the introduction of ChatGPT and related privacy concerns. This timing and publication type disparity highlights a crucial research gap and opportunity for future investigation as the Canadian LIS world adjusts to these new technologies.

Furthermore, "Indigenous knowledge*" only appears in the Canadian LIS AI literature as of 2023. Its usage is in articles, although it only appears in two articles (Campbell & Sich, 2023; Colbert-Lewis et al., 2024). Corpus searches for "Traditional Knowledge" did not return additional results. While only a small part of the corpus, "Indigenous knowledge*" signals a significant research gap and future opportunity. Similar to issues of copyright, there are both opportunities and concerns surrounding not only the use and misuse of Indigenous Knowledges by generative AI, but also issues of intellectual property rights, Traditional Knowledges, Indigenous cultural rights, and Indigenous cultural sovereignty (to name a few) (University of Saskatchewan, n.d.-a). These discussions are particularly pertinent as Canadian LIS professionals further the work of decolonization in libraries.

Unfortunately, due to the nature of this study, there are a couple of limitations. The choice to consider Canadian LIS journals for the corpus does not include, but does acknowledge, that Canadian LIS professionals may publish in non-Canadian journals. However, Canadian journals were chosen with the hope that they would reflect the Canadian LIS landscape. Also, searches in the journals were only for "artificial intelligence" without synonyms, as the goal was to build a corpus around instances of the specific term "artificial intelligence" instead of developing a comprehensive search strategy for all related terms. In doing so, this study focuses on explicit uses of AI while also creating a manageable corpus.

Another limitation is the potential narrowness of the investigative terms. Unfortunately, researchers needed to balance the roles and responsibilities of LIS professionals with other connotations or uses (not in line with librarian roles) while also keeping results concise. As such, they chose words representative of a whole. For example, the study uses the terms "teaching" and "literacy" (as within a library context, most teaching will be literacy-oriented) with the acknowledgement that it could also have included "learning," "training," or "instruction"; however, "instruction" was too infrequent and "learning" or "training" could refer to the training of AI technologies as opposed to sentiment. As well, "search" could potentially have been "research" as another term to represent the role a librarian has in helping patrons search, perform literature searches, or research data management. However, as "research" is a top-five word, the results would have been too broad to connect meaningfully with other library terms.

Despite these limitations, the corpus clearly demonstrates that while Canadian LIS professionals have always considered the concerns and risks of AI, there has also been a willingness to view AI with positive sentiment as they look for benefits and opportunities. Although 2024's balanced sentiment may be drifting towards more negative sentiment, the historical overview of AI use can assure readers that future engagement with AI will not be one of blind acceptance, but a balanced approach investigating concerns while also looking for new opportunities.

References

Campbell, H., & Sich, D. (2023). Library curriculum as epistemic justice: Decolonizing library instruction programs. *Canadian Journal of Academic Librarianship, 9*: 1–39. https://doi.org/10.33137/cjalrcbu.v9.40964

Colbert-Lewis, D., maminta, l., McElroy, K., Slaght, G., & Swartz, M. (2024). The citation economy as a site of extraction for surveillance publishing. *Canadian Journal of Academic Librarianship, 10*: 1–22. https://doi.org/10.33137/cjal-rcbu.v10.43293

Deschenes, A., & McMahon, M. (2024). A survey on student use of generative AI chatbots for academic research. *Evidence Based Library and Information Practice, 19*(2), 2–22. https://doi.org/10.18438/eblip30512

Ducas, A., Michaud-Oystryk, N., & Speare, M. (2020). Reinventing ourselves: New and emerging roles of academic librarians in Canadian research-intensive universities. *College & Research Libraries, 81*(1), 43–65. https://doi.org/10.5860/crl.81.1.43

Future of Life Institute. (2023, March 22). Pause giant AI experiments: An open letter. Retrieved January 17, 2025, from https://futureoflife.org/open-letter/pause-giant-ai-experiments/

Government of Canada. (2024, March 11). What is AI?. Retrieved March 19, 2025, from https://www.canada.ca/en/department-national-defence/corporate/reports-publications/dnd-caf-artificial-intelligence-strategy/what-is-ai.html

Government of Canada. (2025, January 27). Artificial intelligence ecosystem. Retrieved March 21, 2025, from https://ised-isde.canada.ca/site/ised/en/artificial-intelligence-ecosystem

Jan, S. U., Khan, M. S. A., & Khan, A. S. (2024). Organizational readiness to adopt artificial intelligence in the library and information sector in Pakistan. *Evidence Based Library and Information Practice, 19*(1), 58–76. https://doi.org/10.18438/eblip30408

Kitchin, R. (2014). The data revolution: Big data, open data, data infrastructures & their consequences. SAGE. https://doi.org/10.4135/9781473909472

Lithwick, D. (2010). *Bill C-32: An act to amend the Copyright Act* (40-3-C32-E). Library of Parliament. https://lop.parl.ca/sites/PublicWebsite/default/en_CA/ResearchPublications/LegislativeSummaries/403C32E

McCarthy, J., Minsky, M. L., Rochester, N., & Shannon, C. E. (2006). A proposal for the Dartmouth summer research project on artificial intelligence, August 31, 1955. *AI Magazine, 27*(4), 12. https://doi.org/10.1609/aimag.v27i4.1904

Moretti, F. (2007). *Graphs, maps, trees: Abstract models for a literary history*. Verso.

Omiye, J. A., Gui, H., Daneshjou, R., Cai, Z. R., & Muralidharan, V. (2023). Principles, applications, and future of artificial intelligence in dermatology. *Frontiers in Medicine, 10*, 1–9. https://doi.org/10.3389/fmed.2023.1278232

Rockwell, G., & Sinclair, S. (2016). *Hermeneutica: Computer-assisted interpretation in the humanities*. The MIT Press. https://doi.org/10.7551/mitpress/9522.001.0001

Roose, K. (2022, December 5). *The brilliance and weirdness of ChatGPT*. The New York Times. https://www.nytimes.com/2022/12/05/technology/chatgpt-ai-twitter.html

Sinclair, S., & Rockwell, G. (2016). Voyant tools. http://voyant-tools.org/

Stanford Humanities + Design Lab. (n.d.). Palladio. https://hdlab.stanford.edu/palladio/

University of Alberta Library. (2024, November 25). *Library and information studies: Canadian LIS journals*. Retrieved January 10, 2025, from https://guides.library.ualberta.ca/library-information-studies/canadian-lis-journals

University of Saskatchewan Library. (n.d.-a). *Generative artificial intelligence: Ethical considerations.* Retrieved January 15, 2025, from https://libguides.usask.ca/gen_ai/ethical#s-lg-box-16801742

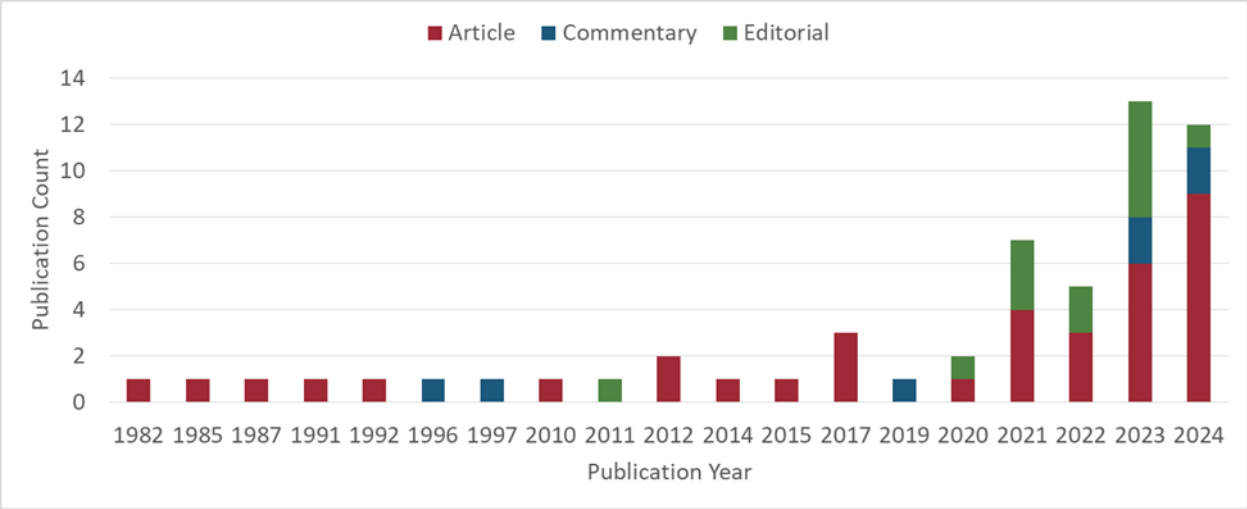
University of Saskatchewan Library. (n.d.-b). *Peer reviewed LIS journals*. Retrieved January 10, 2025, from https://library.usask.ca/research-collective/peer-reviewed-journals.php

Zewe, A. (2023, November 9). *Explained: Generative AI.* MIT News. https://news.mit.edu/2023/explained-generative-ai-1109

Appendices

Appendix Table 1. Eleven Canadian LIS Journals
(University of Saskatchewan Library, n.d.-b; University of Alberta Library, 2024).

Journal Title	Journal Abbreviation	Organization	Website URL
Archivaria	ARCH	Association of Canadian Archivists (ACA)	https://archivaria.ca
CAML Review	CAMLR	Canadian Association of Music Libraries, Archives, and Documentation Centres (CAML)	https://caml.journals.yorku.ca
Canadian Journal of Academic Librarianship	CJAL	Canadian Association of Professional Academic Librarians (CAPAL)	https://cjal.ca
Canadian Journal of Information and Library Science	CJILS	Canadian Association for Information Science (CAIS)	https://ojs.lib.uwo.ca/index.php/cjils
Canadian Law Library Review	CLLR	Canadian Association of Law Libraries	https://www.callacbd.ca/publications
Evidence Based Library and Information Practice	EBLIP		https://journals.library.ualberta.ca/eblip
Fonds d'Archives		Archives Society of Alberta	https://fondsdarchives.ca
Journal of the Canadian Health Libraries Association	JCHLA	Canadian Health Libraries Association (CHLA)	https://journals.library.ualberta.ca/jchla
Papers of the Bibliographical Society of Canada		Bibliographical Society of Canada	https://jps.library.utoronto.ca/index.php/bsc
Partnership: the Canadian Journal of Library and Information Practice and Research	PART	Partnership: Canada's national network of provincial and territorial library associations	https://journal.lib.uoguelph.ca/index.php/perj
Pathfinder: A Canadian Journal for Information Science Students and Early Career Professionals	PATH		https://pathfinderjournal.ca



Appendix Figure 1: Publication Count by Publication Year and Publication Type.