Presentation 5 – Discussing the Usage of Artificial Intelligence to Answer Virtual Patron Questions

Mark Bachofer

San Jose State University

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Dr. David V. Loertscher & Professor Charlene Peterson

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Introduction

In many areas of modern society, the prevalence of artificial intelligence is increasing. This technology guides product searches, offers suggestions for a wide variety of problems, and even writes comprehensive – if potentially plagiarized – essays. These potential uses come with many benefits and drawbacks, but there are some that are particularly relevant for public libraries. Currently, AI technologies are able to automate a number of tasks within libraries across the world. They can offer personalized recommendations on book titles, analyze borrowing patterns and predict future activity, and even promote inter-branch collaborations (Herrlich, 2023). However, while this is undoubtedly an impressive list, AI does have its limitations – both within the code, and without. Maintaining the privacy of library patrons' accounts is difficult to ensure when implementing artificial intelligence (Johnson, 2018), but exceptionally important. Additionally, the addition of such new technologies to the library's repertoire can be very expensive. With this in mind, this paper proposes that the best way to integrate artificial intelligence technologies into the library environment is in the form of a virtual chatbot or companion.

Digital Patron Needs

The first reason that this paper argues that the ideal use of library AI is as a virtual companion is simple: a computer-based system is ideal for engaging virtual patrons. Even before, but especially since, the advent of the COVID-19 pandemic, many resources available at public libraries have gone virtual. Today, patrons can place holds on local and inter-library items, access e-books and e-audiobooks through apps such as Overdrive and Libby, and utilize thousands of digital databases from the comfort of their own home. Unfortunately, this convenience comes at a cost. Without a librarian on hand, many patrons find themselves lost in a sea of unfamiliar

resources without a guide. Furthermore, while FAQ sections of the webpage can provide guideposts, some digital patrons still need more personalized and explicit instructions on how to navigate all that the library has to offer. This struggle offers a great opportunity for AI technologies.

AI as a Chatbot

Chatbots are nothing new to the internet. Early programs such as ELIZA, a therapist bot, and Parry, an emulation of a paranoid individual, have been around since 1966 and 1972 respectively (McNeal, et al., 2013). These programs utilize language recognition tools to provide a reasonable approximation of human conversation – and in some cases, were even able to convince real people of their humanity. This illusion was made possible through a call-and-response scenario, where chatbots "operated by recognizing keywords or phrases in the input, which triggered the output of corresponding responses" (McNeal, et al., 2013). This model of chatbot design has continued to this day – albeit at a much more sophisticated level. In today's libraries, "[a]n AI-powered indexing tool can automatically assign keywords based on concepts it identifies in a text through content analysis and can help university library users discover new sources of information from different disciplines, allowing them to find more specific and accurate material to support their research." (Banks, 2023). These improvements seem well-poised to support AI libraries – indeed, one study found that chatbots were the primary intended use of artificial intelligence within interested branches from the Association of Research Libraries (Lo, et al., 2023). But before full implementation of AI chatbots begins, the alternatives should still be considered.

Alternatives

What alternatives to AI chatbots exist? In order to answer this question, the needs of the virtual patrons again must be considered. As stated previously, many of the queries that virtual patrons approach with have similar root causes, but there are exceptions to the rule. Specific questions about obituaries and microfiche are likely to be outside of a chatbot's expected parameters. Additionally, should a patron misspell words in their query, or simply describe an issue without using proper grammatical structure, such as 'can't check out', there will not be enough data present for AI to come up with a solution. As advanced as AI is, most "automatic reply agents or robots can only deal with some simple enquiries which are phrased in a standard way" (Huang, et al., 2023). In cases like this, a staff-manned inbox is likely the best answer to the questions of virtual patrons. A library staff member will be familiar with not only common issues, but also would be aware of a local system update that would prevent online checkouts. As Dr. Souvick Ghosh puts it, "Such systems are very good at answering simple questions, but unlike librarians, they cannot evaluate the nature of the user's information need" (Ghosh, 2021). However, reviewing, analyzing, and addressing virtual patron questions is a very time-intensive process. Library staff must prioritize the individuals in the branch with them, and may not have enough time to address emails in a timely manner. Therefore, another alternative, a FAQ where easy solutions to frequent problems can be found, can be considered. This option does have a few advantages over the staff-manned inbox and AI chatbots – it can be integrated with the catalog search, and provide all of the answers virtual patrons may be looking for in one place. Unfortunately, the issues here twofold. Firstly, Frequently Asked Questions are just that: frequent. More obscure queries will not be able to be answered by an FAQ. Secondly, many virtual patrons may already be lost on the library website. Adding additional information can

only help inundate them further. Overall, the alternatives to AI chatbots do best them in some ways – but are severely lacking in others.

Conclusion

Initially, this paper stated that the best way to integrate AI technologies in the library was via virtual chatbots. This statement is still true, but with a twist. The best way to introduce AI in libraries is with a hybrid approach. As stated above, chatbots have come a long way since 1966 – but they cannot answer every question. Likewise, specifically maintaining a library inbox is extremely time-consuming, and FAQs do not have the breadth needed. This paper therefore proposes a system that involves the most effective aspects of all three systems. When faced with a question, virtual patrons will still email their queries to a library inbox. However, instead of going directly to a librarian, their questions will first pass through an AI filter. Having already scanned the FAQs, this system can identify key words, and redirect virtual patrons to the information they are looking for. Its advice will be relevant and helpful, and subsequently, in-branch library staff can answer the more complicated, grammatically-challenged, and locale-specific questions. By utilizing such a hybrid approach, AI technologies can be better implemented in public libraries, and truly improve our branches.

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