Experiences Building, Training, and Deploying a Chatbot in an Academic Library*

David Meincke (dmeincke@jwu.edu)
Digital Services Librarian, Johnson & Wales University Library, Providence, RI

Try out the chatbot yourself!

Introduction

In the Summer of 2016 we started experimenting with additional ways of extending library services in the midst of discussions about adjustments to opening hours, staff coverage, and other issues that pertain to the breadth and quality of service we provide to our community.

We had experimented with chatbots before, but when Librarianship showed an example of a functional chatbot (using Python and the sleekempp python library), we decided to start experimenting with something more systematic. After a period of exploring identifying the necessary features of a functional chatbot, and testing out free services we launched a working prototype in late Fall 2016. The chatbot was able to handle basic questions relating to library hours, locating books and articles, providing basic library information, and answering jokes.

Setting up a connection between a chatbot and a libsity was not too difficult. The bot setup, maintenance was relatively simple and (continuing to train the bot through the web interface is a quick, almost enjoyable task).

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Two Ways of Looking at a Bot Interaction

How the Bot sees it

How the user sees it

<table>
<thead>
<tr>
<th>How the Bot sees it</th>
<th>How the user sees it</th>
</tr>
</thead>
<tbody>
<tr>
<td>23:07 lib_bot: hello</td>
<td>23:07 User: Hello</td>
</tr>
<tr>
<td>23:07 User: I would like to complain about the on-campus library hours...</td>
<td>23:07 lib_bot: I think you could find something in our 'How Do I?' Knowledgebase...</td>
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Commonly Used Words & Phrases (by Patroma, to Chatbots)

- "user's phrase and category and search term/keyphrase |

Chatbot Usage Frequency (weekday/hour)

<table>
<thead>
<tr>
<th>How/when was it used?</th>
<th>Unless otherwise indicated, all data is from October 2016 to May 2014</th>
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<tbody>
<tr>
<td>Quick Stats:</td>
<td>- Average response time: &lt; 1 second</td>
</tr>
<tr>
<td></td>
<td>- Average chat length: 4.5 minutes (human: 10 minutes)</td>
</tr>
<tr>
<td></td>
<td>- Questions answered: 596 (human: 5487)</td>
</tr>
<tr>
<td></td>
<td>- Busiest hours: 8PM-11PM (172 Questions, or 50% of all Questions asked)</td>
</tr>
<tr>
<td></td>
<td>- Average number of messages sent by user in a transaction: 4.5</td>
</tr>
<tr>
<td></td>
<td>- Average number of words sent by user in a transaction: 21</td>
</tr>
</tbody>
</table>

Next Steps

Branding and Access Points: If you check out the chatbot to Figure 8 it to the left you will see that usage was low when the button was hidden (when Librarians were online). It is likely that if the chatbot were given a dedicated, always-on access point then the usage would increase. It is not yet easy to give this but buttons and feedback (especially as more library software companies are providing a text-based interface to books, articles, and library information) can bring this to a working prototype, as long as the chatbot is given a dedicated, always-on public access point. The text-based interface made finding information easier when it was adjacent to the streets (or across the globe). The chatbot is now firmly embedded in the library's 24/7 frontpage space, but I'm close. After we run a few usability tests and bug fixing (log analysis, unit tests, create an issue reporter)

New Features

- Features in the works include an improved textbook search, para searches, and a kind of 'free-talk' mode for when the chatbot is not ready to give a full-fledged answer to a question but the user has articulated a desire to do so (if the chatbot is not ready to give a full-fledged answer it will launch a redissolved Libbot button)

Issues & fixes

- Usability Testing: This would have been useful.
- Feedback: Aside from in-chat transcripts it was tough to gather feedback.
- Messaging: Prompt text, FAQ, video, etc.
- Features: Include a kind of 'free-talk' mode for when the chatbot is not ready to give a full-fledged answer to a question but the user has articulated a desire to do so (if the chatbot is not ready to give a full-fledged answer it will launch a redissolved Libbot button)
- Introduce a kind of 'free-talk' mode for when the chatbot is not ready to give a full-fledged answer to a question but the user has articulated a desire to do so (if the chatbot is not ready to give a full-fledged answer it will launch a redissolved Libbot button)
- Log in to the wit.ai interface periodically and fix issues.
- Add more robust help function so that the user can find it without the bot.
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Questions, Observations, Comments

- is this really an artificial intelligence? Or just a 'conversational interface'?
- How satisfied were the students? How satisfied are you with bots in general?
- Text has been described as "incredibly comfortable medium. Text-based interaction is fast, fee, flexible, intuitive, descriptive and even consistent in style and voice. This won't replace reference librarians...but it could augment their abilities to answer questions". This was written by a student. What does this experience teach about possible futures for librarianship?
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Citations


Acknowledgements

Any & all from librarianship/provide a case study for librarianship to a basic question: What do librarians do all day? Is it possible to run a chatbot on a webpage without connecting it to a 3rd party service?

Python: I'm pretty sure that you could easily write the main code in JavaScript, Ruby, PHP, etc. You need a language that can handle REST requests as well as text parsing.

Cloud Server: you could run this on a laptop/desktop, but you would have to keep it on the whole time, you could also run it on an always-on raspberry pi.