

"You Autocomplete Me."

# Navigating Human-Machine Relationships for Responsible and Sustainable AI and Data Science Implementations

Jason A. Clark

Lead, Research Optimization, Analytics, and Data Services  
Montana State University Library

# Abstract

With new AI demos and generative computing models coming online almost daily, AI and data science can have the appearance of the wondrous and magical. And yet, hidden within this excitement are corollary thoughts about employee displacement and obsolescence. In this session, we'll look at project examples and models that Montana State University Library is beginning to employ to balance the wonder of AI while honoring constructive criticism around library implementations. The projects follow principles centered on being: dialogic, playful, transparent, and iterative. The goal is to socialize responsible AI and data science implementations while recognizing the humanity our employees bring to these applications. Attendees will come away with ideas about how to align AI with the values of cultural heritage institutions, how technology prototypes can facilitate dialogue in your organization, and learn how the question of human-machine relationships is about organizational culture as much as it is about technology implementation.

\* Inspiration for this talk derived from the recently awarded IMLS grant - [Responsible AI for Libraries](#). A brief mention of the research goals and open calls for participation on the grant will be included.

# What's Ahead

- Research Motivation
- Creating Dialogues around AI and Knowledge Work
- Using AI + Data Science Prototypes
- Organizational Learning and Competence
- Challenges, Research Implications, and Next Steps

# Research Motivation

## Artificial Intelligence (AI) as forms of automation in our work

- Recommender systems
- Image recognition/computer vision
- Automated metadata creation
- Chat bots
- Text analysis in digital humanities centers in libraries
- Speech-to-text/automated transcription of library resources such as oral histories

# Responsible AI: Tools for values-driven AI in libraries and archives.

Project Director: [Sara Mannheimer](#)

[www.lib.montana.edu/responsible-ai](http://www.lib.montana.edu/responsible-ai)

[www.imls.gov/grants/awarded/lg-252307-ols-22](http://www.imls.gov/grants/awarded/lg-252307-ols-22)



- Develop practical resources that support responsible use of AI in library and archives contexts.
- Help library and archives practitioners consider ethical implications as they embark on new AI projects that support increased impact and new uses of library resources.

From the text: "Like many humanities scholars, archivists often fear that they lack the skills ... to participate in these debates. But there is no need to be a computer scientist or software engineer to have a productive discussion on AI, transparency and accountability."

2:33 AM · Apr 26, 2022

Excitement  
and  
Despair

*Archives, Access and Artificial Intelligence* edited by Lise Jaillant



# AI + Knowledge Work

## Creating Dialogues

Open  
Across Organization  
Demo & Concept  
Series of Discussions

Edit | [Icons] | Join | Busy | 15 minutes before | Categorize

Hi, Everyone.

As we've gotten further into the [Responsible AI grant work that Sara Mannheimer](#) is leading, I'm wanting to share some of the research and thinking that is coming forward. To this end, I'm looking to conduct a series of dialogues to give us all a chance to learn about the state of the Artificial Intelligence (AI) field and move from the hype towards a more nuanced understanding.

A dialogue session might include a short slide deck review of a concept, a read and review of an article, some demos of applications, or a set of questions on an AI topic to get us thinking and discussing.

I'm seeing these as voluntary, drop-in sessions and a safe place to ask questions of this emerging technology. There are no right answers or bad questions. And you don't even have to participate. If you just want to be present and listen, that's fine. My goal is to help the organization think about how these technologies get applied, the importance of keeping *humans in the loop* with these systems, and potential implications for library work.

For this session, I'd like to pick up on the idea of AI and generative computing for producing text. This is the type of AI activity you are seeing in [the ChatGPT conversational prototypes](#) that [have Microsoft considering a \\$10 billion dollar](#) investment. I'm linking to a couple of articles that can help provide context for a discussion below. If you only read one, ***AI Homework by Ben Thompson*** will get you thinking. I'm also linking to a scientific abstract text summarization project that Leila Sterman, Hannah McKelvey, and I have been working on with graduate student fellow, Haining Wang.

Looking forward to seeing folks!

# Invites and Setting Expectations

Dialogues are centered  
on trust, truth-telling, and interest in  
shared learning.

# AI + Knowledge Work Using Prototypes

Transfer Learning - Image classifier

<https://github.com/jasonclark/image-classifier>

Voice interface for digital collection

<https://github.com/jasonclark/voice-user-interface>

ArchiveBot

<https://github.com/jasonclark/archive-bot>

NLP Text Summarization for Citizen Science

<https://github.com/msulibrary/msu-article-summarization>

Dialogic  
Playful  
Explainable

# Chatbot Automating a Web Archiving Experience

<https://github.com/jasonclark/archive-bot>



```
[Jasons-MBP-2:archive-bot jasonclark$ node index.js
👻 Boo! Hello! Found something you want me to archive?

? What type of thing are you archiving? (Use arrow keys)
> Article
  Book
  Course
  CreativeWork
  Dataset
  MediaObject
  Movie
(Move up and down to reveal more choices)
```

```
Jasons-MBP-2:archive-bot jasonclark$ node index.js
```

```
👻 Boo! Hello! Found something you want me to archive?
```

```
? What type of thing are you archiving? Book
```

```
? What is the title? Streamlining information services using chatbots
```

```
|Jasons-MBP-2:archive-bot jasonclark$ node index.js
```

```
👻 Boo! Hello! Found something you want me to archive?
```

```
? What type of thing are you archiving? Book
```

```
? What is the title? Streamlining information services using chatbots
```

```
? What is the url? http://www.worldcat.org/oclc/866899954
```

```
Jasons-MBP-2:archive-bot jasonclark$ node index.js
👤 Boo! Hello! Found something you want me to archive?

? What type of thing are you archiving? Book
[? What is the title? Streamlining information services using chatbots
[? What is the url? http://www.worldcat.org/oclc/866899954
? Would you like me to add any tags?
  ● _todo
  ○ _toread
  ○ archive
  >● library
  ○ metadata
  ○ design
  ○ ux
(Move up and down to reveal more choices)
```

```
Jasons-MBP-2:archive-bot jasonclark$ node index.js
👻 Boo! Hello! Found something you want me to archive?

? What type of thing are you archiving? Book
? What is the title? Streamlining information services using chatbots
? What is the url? http://www.worldcat.org/oclc/866899954
? Would you like me to add any tags? _todo, library
? How about a description? a report on how to create a chatbot + script
```

```
Jasons-MBP-2:archive-bot jasonclark$ node index.js
👾 Boo! Hello! Found something you want me to archive?

? What type of thing are you archiving? Book
[?] What is the title? Streamlining information services using chatbots
[?] What is the url? http://www.worldcat.org/oclc/866899954
? Would you like me to add any tags? _todo, library
[?] How about a description? a report on how to create a chatbot + script

👾 All done! Here is what I've written down:

----
type: "Book"
title: "Streamlining information services using chatbots"
link: "http://www.worldcat.org/oclc/866899954"
tags: [_todo,library]
timestamp: "Wed Feb 28 2018 11:48:29 GMT-0700 (MST)"
----
a report on how to create a chatbot + script

? Does this look right? (Y/n) █
```

```
Jasons-MBP-2:archive-bot jasonclark$ node index.js
👻 Boo! Hello! Found something you want me to archive?

? What type of thing are you archiving? Book
! ? What is the title? Streamlining information services using chatbots
! ? What is the url? http://www.worldcat.org/oclc/866899954
! ? Would you like me to add any tags? _todo, library
! ? How about a description? a report on how to create a chatbot + script

👻 All done! Here is what I've written down:

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tags: [_todo,library]
timestamp: "Wed Feb 28 2018 11:48:29 GMT-0700 (MST)"
----
a report on how to create a chatbot + script

! ? Does this look right? Yes

👻 Perfect! I saved your metadata and added files to your archive as _archive/Streamlining-information-
rvice-s-using-chatbots.json and _archive/Streamlining-information-services-using-chatbots.md and _archiv
Streamlining-information-services-using-chatbots.png. 🎉🎉🎉
```

Humanize the technology

Provide an Experience

Allow us to ask Questions



# Organizational Learning

## Human + Machine Relationships

Understanding  
requires  
transparency.

# "What are the roles we have in AI?"

Information  
Literacy

Teaching Concepts

- Generative Computing
- Transformers
- Models

Interpreting Models

# "What are the roles we have in AI?"

Facilitation

Tools

Prompt Engineering

# "What are the roles we have in AI?"

Supervision

Ethics

Quality Control of Data  
and Models

Implementation

# Challenges + Opportunities

# Why is the ChatGPT seen as an existential risk for the humanities but not for other fields?

1:45 PM · Jan 20, 2023 · **184K** Views

## Existential Anxiety

<https://www.transcript-publishing.com/978-3-8376-5584-1/archives-access-and-artificial-intelligence/>

## Challenges...

Obsolescence

Learning new skills and roles

- How do I contribute?
- What does this automation mean for our organization?



## Opportunities...

### New internal partnerships

- Applying summarization and language models to systematic reviews.

### Allowing others to conceive AI projects

- Tasks that can be supplemented.
- Identifying extensions to current work.

# Research Implications

### Implications...

GLAM institutions as leaders in generative computing.

Understanding how or why AI has a role in knowledge work.

Creating new research and projects based on trust and learning in dialogue sessions.

[Home](#) | [About](#)



# MSU Research AIAssistant

Enter question, instructions, or text to summarize...

Generate



## MSU Research AIAssistant

Read and summarize the article below for a 10th grade audience.

Reviewing the Reviewers: Training NeuralNetworks to Read Peer Review Reports

Martin Paul Eve, [Birkbeck](#), University of London | Robert [Gadie](#), University of the Arts, London | Victoria [Odeniyi](#), University of the Arts, London | [Shahina Parvin](#), Brandon University, Canada and [Jahangirnagar](#) University, Bangladesh. Abstract

The study of academic peer review is

Generate



## MSU Research AIAssistant

Read and summarize the article below  
for a 10th grade audience.

Reviewing the Reviewers: Training  
NeuralNetworks to Read Peer Review  
Reports

Generate

- Generating and loading a reponse... Watch space below.

**Scientists at PLOS ONE have built a database of peer review reports. The scientists trained a neural network to read peer reviews reports, which failed to produce accurate levels of recall and precision. The scientists suggest there are uses cases for this technology, both for good and ill.**

Positioning a library or archive as a partner in the AI research and learning process.

Demonstrating how to apply AI to university research and institutional data questions.

**\*\*Thank you\*\***

Jason A. Clark

[jaclark@montana.edu](mailto:jaclark@montana.edu)

[www.jasonclark.info](http://www.jasonclark.info)



## References and Follow-up Resources

Responsible AI - Institute of Museum and Library Services grant

- <https://www.lib.montana.edu/responsible-ai/>

Jaillant, Lise (2022). *Archives, Access and Artificial Intelligence*. Bielefeld: transcript Verlag.

<https://doi.org/10.14361/9783839455845-fm>

Kent, M.L. (2002). "Toward a dialogic theory of public relations". *Public Relations Review*. 28: 21-37. [doi:10.1016/S0363-8111\(02\)00108-X](https://doi.org/10.1016/S0363-8111(02)00108-X)

Klein, Ezra (2023). Interview of Gary Marcus on Current State of AI.

<https://www.nytimes.com/2023/01/06/podcasts/transcript-ezra-klein-interviews-gary-marcus.html>

Thompson, Ben (2022). AI Homework. *Stratechery*.

<https://stratechery.com/2022/ai-homework/>

# AI Prototyping - Tools and Getting Started

- OpenAI Examples
  - <https://beta.openai.com/examples>
- Hugging Face - Testing and Release of Computational Models
  - <https://huggingface.co/models>
- MSU Library Examples
  - [Transfer Learning - Image classifier](#)
  - [Voice interface for digital collection](#)
  - [ArchiveBot](#)
  - [Text Summarization for Citizen Science](#)
    - Public model - [https://huggingface.co/haining/sas\\_baseline](https://huggingface.co/haining/sas_baseline)