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

Summary

Montana State University (MSU), James Madison University, and Iowa State University seek $249,999 for a 3-year Implementation Grant to develop resources that support ethical use of artificial intelligence (AI) in libraries and archives. This project aligns with National Leadership Grants for Libraries Program Goal 3, Objective 3.1. The project serves to advance digital inclusion by promoting ethical, values-aligned practices and strategies for minimizing harm as libraries and archives enhance access and services through the use of AI.

Project Justification

Alignment with NLG Program Goals and Objectives

This project aligns with National Leadership Grants for Libraries Program Goal 3: *Improve the ability of libraries and archives to provide broad access to and use of information and collections with emphasis on collaboration to avoid duplication and maximize reach.* Specifically, this project supports *Objective 3.1: Advance digital inclusion*, by promoting ethical, values-aligned practices and strategies for minimizing harm as libraries and archives enhance access and services through the use of AI.

The current, broadly significant problem

AI in the United States

AI is becoming a part of our nation's infrastructure—powering social media and search engines; factoring into data-driven decision-making in education, the criminal justice system, and business; as the subject of academic research. AI is also integral to our everyday lives as we find relevant information with personalized Google results, watch recommended movies on Netflix, ask Siri to give us directions, feel safe from fraud when we use our credit cards, open an automatically spam-filtered email inbox, unlock our phones with face ID, and teach our smart thermostats our temperature preferences.

AI applications also raise a number of ethical questions. An illustrative example of AI gone awry is Microsoft's Tay AI chatbot, which, upon its launch in 2016, quickly began to make offensive statements and use racist language in response to a coordinated attack by members of a forum known for hateful discourse [1]. The chatbot designers evidently did not predict misuse of their tool nor the harm that such misuse could bring upon the public. More complex challenges arise when AI is used in higher-stakes contexts. For example, AI is now used to influence parole decisions, to surveil communities, and for predictive policing. Because training data are biased, AI is biased as well [2–5], and can cause at scale discrimination based on race, gender, sexuality, class, nationality, and other factors [3,6–10]. The Data Justice Lab keeps a running record of the "harms that have been caused by uses of algorithmic systems" [11]—an eye-opening document that shows the pervasive challenges of AI.

There is still limited guidance on responsible use of AI in the United States.[1] In fact, Stanford's 2021 AI Index Report states that "the AI Index team was surprised to discover how little data there is" on the topic of ethics and AI [12]. While companies like Microsoft and Google are interested in avoiding missteps, corporate values prioritize protecting trade secrets and ensuring continued profitability of products. The upheaval in Google's AI Ethics team [13] is one example of the potential conflicts between corporate values and critical engagement with the AI that powers products.

AI in Libraries and Archives

Over the past few years, libraries and archives have begun using AI to enhance library services, especially to support collection description and discovery. Some examples include using natural language processing,

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[1] The EU has begun to provide guidance on this topic—see the European Commission's Ethics Guidelines for Trustworthy AI. This project can contribute to informing similar policy guidance in the US.

computer vision, web scraping, and geocoding to improve metadata for digitized photos [14], applying deep convolutional neural networks to analyze imaged herbarium specimens [15], building machine-learning tools that complement human cataloging for audiovisual content [16,17], using natural language processing to power library chatbots [18], extracting images from digitized newspapers [19], and applying image processing and machine learning to enhance manuscript metadata [20], among other projects.

Libraries and archives are excited about the possibilities of AI, releasing library-specific state-of-the-field white papers, research agendas, and reports addressing AI [14,21,22], and holding conferences and summits with various focuses [23–25]. IMLS recently funded the IDEA Institute on AI, a professional development program to promote AI skills in libraries [26]. The Association of College and Research Libraries Research Planning and Review Committee has designated machine learning and AI a "2020 top trend" [27], and in 2017, the NMC Horizon Report: Library Edition [28] predicted the timeline to the adoption horizon for AI at four to five years—that is, by 2021-2022. With the ubiquity of AI in our daily lives, this technology is no less of a trend in libraries than it is elsewhere, and is likely going to attain a level of ubiquity in library-built or library-vended systems. Organizations like AI4LAM [29] have formed to cultivate community capacity beyond conference contexts and Europeana is assessing cultural heritage institution use of AI in Europe [30]. A 2020 article in Inside Higher Education suggested that "libraries have been reluctant to embrace artificial intelligence surveillance technologies due to our desire to protect the intellectual freedom of our patrons. Yet AI technologies could be harnessed to provide more tailored search results, monitor social distancing and integrate the library into personal assistants" [31]. The *Responsible AI* project arises from this tension between protecting library users and innovating library services.

The implementation of AI in libraries and archives is influenced by our values—including diversity, equity, agency, social responsibility, openness, and supporting the public good [32,33]. These professional values and our commitment to critical engagement with technology enhance our awareness of AI's potential to amplify harms to the communities we serve. In order to use AI to improve services while also upholding our values and protecting our communities from harm, it is imperative that we develop practical resources that support responsible use of AI in library and archives contexts. Our project team views libraries and archives as uniquely positioned to act as community advocates for measured and deliberate adoption of new technologies, taking to heart Library of Congress Director of Digital Strategy Kate Zwaard's idea that "through the slow and careful adoption of tech, the library can be a leader"[34].

Target group
The target group for this project are librarians and archivists looking to apply AI technologies to their work. Our project initially targets academic librarians and archivists in the United States. The National Bureau of Labor Statistics estimates that there are 19,310 academic librarians and 1,350 academic archivists in the U.S. as of 2020. While the deliverables proposed by *Responsible AI* can be used by practitioners at large research institutions who are building their own AI tools, the deliverables will also be fully applicable to practitioners at smaller or differently-resourced institutions to evaluate and implement vendor tools or other externally-built tools. With this in mind, we anticipate that the deliverables may ultimately benefit practitioners beyond academic institutions—for example, public libraries implementing chatbots or museums using commercial image recognition tools. We will engage directly with the target group via participatory workshops in Phase 3a (see page 6).

Beneficiaries
The primary beneficiaries of *Responsible AI* are library and archives users—this project aims to address potential harms to our users caused by AI tools; academic libraries serve an estimated 38 million users per year. We will engage directly with the primary beneficiaries via participatory workshops in Phase 2 (see page 5).

Secondary beneficiaries are libraries and archives as institutions; *Responsible AI* deliverables help practitioners anticipate the potential harms of AI, and therefore protect institutions from potential litigation. There are about [3100 academic libraries](#) in the U.S.

Complementing and building upon existing theory, scholarship, and practice

This grant proposal addresses the following problem: How can we use AI in libraries and archives while minimizing harm and upholding professional values such as diversity, equity, social responsibility, and supporting the public good?

Existing tools and case studies for responsible AI

Some case studies of lessons learned with AI projects have been published in other sectors [4,5,35–38]. Other sectors and disciplines have also developed a variety of different toolkits [39–41], frameworks [42], and reporting guidelines [43] to support ethical AI. An extensive list of AI frameworks, guidelines, and tools from AI Ethicist [44] highlights the discipline-dependent nature of AI ethics tools. Each tool responds to specific use cases, values, and user concerns in different disciplines.

The project team is not aware of existing AI ethical-decision-making tools in the library and information science (LIS) discipline. However, *Responsible AI* deliverables will be informed by LIS-related tools that support data and technology ethics—for example, Data Ethics Canvas [45], Data Ethics Decision Aid [46], and Envisioning Cards [47].

This project takes into account these existing resources, and also responds to a pressing need to create a set of deliverables that are tailored specifically to the context of libraries and archives. Practicing responsible AI in libraries and archives is dependent on our professional values, the specific needs of our users, and library and archives-specific use cases.

The solutions proposed by *Responsible AI* will guide practitioners to support ethical applications of AI in libraries and archives. The deliverables of this project will be a suite of resources: (1) an environmental scan of the AI landscape in libraries, (2) case studies exploring ethical considerations in AI projects, (3) an ethically-relevant harms analysis tool, and (4) a handbook. These resources will help practitioners consider ethical implications of AI projects in libraries and archives, thereby aligning with our professional values and avoiding harm to our communities. The project begins with the premise that AI is already in use in libraries, and that its use will continue to grow. The project then builds from that starting point. *Responsible AI* will connect with work in other sectors and tailor this work to the specific context of libraries and archives. By bringing together a wide range of project personnel (see below), we amplify our shared strengths and create pathways to help our wider practitioner community consider the potential harms of AI. The deliverables of Responsible AI are practical resources that support ethical use of AI, in alignment with professional values, for the betterment of society.

Project Work Plan

Project team participation is indicated by initials in the "Activities" column. For team details, see page 9.

Phase	Dates	Activities	Deliverables & dissemination
Phase 1. Environmental Scan	Aug 2022- Feb 2023	● Website review - SM, HSK ● Survey - SM, HSK ● CfP for case studies—ethical challenges of AI projects. - DR, YS	● Scan of AI ethical challenges in libraries ● Journal article ● Conference presentations
Phase 2. Case studies & beneficiary	Mar 2023- Sep 2023	● Case study receipt and review - JC, DR, YS	● Published case studies ● Conference presentations ● Listserv announcements

workshops		• Virtual workshops with primary beneficiaries library and archives users - SY, BS, HSK	
Phase 3a. Target group work-shops, harms analysis tool development	Oct 2023-Mar 2024	• Synthesize data from Phases 1 and 2 - SM, DR • Virtual participatory workshops with target group—librarians and archivists - SY, YS, BS, HSK	• Version 1 of the ethically-relevant harms analysis tool
Phase 3b. Ethically-relevant Harms Analysis Tool Assessment and Validation	Apr 2024-Oct 2024	• Expert testing of ethically-relevant harms analysis tool v1: community experts and case study authors - JC, SY, HSK • Expert testing at Learn@DLF - SM, SY	• Version 2 of the ethically-relevant harms analysis tool • Learn@DLF workshop • Conference presentations
Phase 4. Final Ethically-relevant Harms Analysis Tool and Handbook	Nov 2024-July 2025	• Revisions of the ethically-relevant harms analysis tool - SM, DR, JC • Handbook with overview of all grant deliverables, instructions for using the ethically-relevant harms analysis tool, examples of applying the tool. - SM, YS, HSK	• Final version of the ethically-relevant harms analysis tool • Handbook • Workshops • Webinars • Conference presentations

Visual Summary of Project Phases: From Problem to Solution
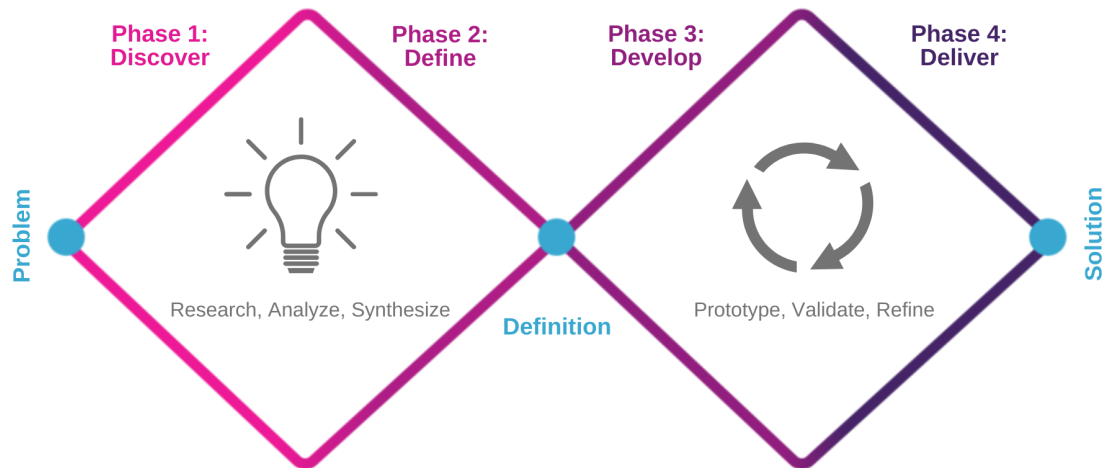
Figure 1. The "double diamond" approach is commonly used in design projects [48]. Possibilities expand during Phase 1, then narrow to a problem definition in Phase 2. During Phase 3, possibilities for solutions expand again, before narrowing to a single set of deliverables in Phase 4. Figure adapted from [49].

Activities, Deliverables, and Dissemination for each Project Phase
Phase 1: Discover. Environmental Scan. AY1, August 2022-February 2023.
During the first phase of the project, the team will conduct an environmental scan via an extensive website review (expanding on a recent preliminary scan [50]) and a widely-distributed survey (taking into account the Ground Truths survey [51]). The goal of the scan is to gather information about current applications of AI tools and processes, so as to learn what risks and potential harms occur when using AI in

libraries and archives. The environmental scan complements similar efforts in Europe [30]. A survey will go out directly to the institutions identified during the website review, and will also be distributed via major library and archives listservs. The survey will ask questions about AI in practice, aiming to understand current and planned implementations of AI, particularly focusing on what ethical concerns or ethical lessons learned arose during or after the implementation process. During this phase, we will also put out a call to the libraries and archives community to write case studies highlighting ethical challenges of specific AI projects (described further in Phase 2 below). This call will be linked from the survey and disseminated via community listservs and newsletters.

Phase 1. Dissemination of project findings

Results of the environmental scan will be published as a journal article in 2023/2024 (research data published in Dryad), and shared as conference presentations in 2023. Dissemination of the survey itself will also serve as a communication venue; the survey will provide information about the forthcoming work of the *Responsible AI* project.

Phase 2: Define. Case studies & beneficiary workshops. AY1, March-September 2023.
Case studies

We will receive and review 5-10 case studies that were recruited during Phase 1—both from survey respondents and via a call for proposals. Case studies will use a standardized structure to support comparability and identify relevant ethical concerns (e.g. background, project details, potential ethically-relevant harms, ethical challenges, ethical lessons learned). Case studies will also be used in Phase 3b to validate the ethically-relevant harms analysis tool. Case study authors will be compensated for their time.

Participatory workshops with primary beneficiaries—library and archives users

Our project will incorporate methods from inclusive and participatory design that directly engage the concerns of users and stakeholders of AI in libraries and archives. Participatory design is an approach to technological development that incorporates users as participants in the design process in order to better understand and meet their needs [52]. Recently, researchers and practitioners across disciplines have drawn on participatory design methods for the development of socially responsible AI [53–55]. This approach has the benefit of mitigating some of the ethical issues resulting from a power imbalance between AI developers and users, with a resulting increase of transparency and trust among AI developers and users of the ethically-relevant harms analysis tool being developed [56,57]. Participatory workshops will be conducted with library and archives users in Phase 2, and with librarians and archivists in Phase 3a (see page 6).

Virtual participatory workshops in Phase 2 will be conducted with library/archives users who are affected by AI tools. We plan to facilitate 5 workshops that each include 3–5 library and archives users. The users will be recruited from the home institutions of the project team. This approach will allow us to gather feedback from diverse institutional and geographical populations. Co-PD Scott Young, who has expertise in participatory methods, will lead the participants in activities designed to create space for library users to raise questions and concerns about the use of AI in libraries from their unique perspective as end-users.

Phase 2. Dissemination of project findings

By engaging the community as case study authors, we hope to extend the reach of our work. The case studies will also be published in MSU's open access repository and shared via conference presentations and announcements on community listservs.

Phase 3a: Develop. Ethically-relevant harms analysis tool. AY2, October 2023-March 2024.
Overview

During Phase 3, we will use the data from Phase 1 and 2 and collect new data to design a tool that will help practitioners consider potential ethically-relevant harms during the planning and implementation of AI projects. The tool will be informed by the needs and concerns surfaced during Phase 1 and 2—(1) of the

target group—practitioners implementing AI tools, and (2) of the beneficiaries —users who may be harmed by these tools. The ethically-relevant harms analysis tool aims to guide practitioners through the process of weighing potential harms to users against potential benefits.

Our proposed ethically-relevant harms analysis tool will support practitioners embarking on AI projects, walking them through the potential benefits and harms by posing such questions as: How might this AI project affect the lives of different library stakeholders (e.g. workers, users, administrators)? How will the project affect libraries, archives, and society in the short and long term? What consequences could result if this particular AI implementation became common practice? How does this AI project align or misalign with our professional values?

Participatory workshops with target group—librarians and archivists

To prototype an initial version of the ethically-relevant harms analysis tool, we will continue the participatory approach begun in Phase 2 (p. 5). In this second round of workshops, the project team will engage the grant's target group—librarians and archivists—through a series of virtual participatory design workshops. Librarians and archivists will have a say in the values and harms that are of particular concern to them, as well as how to operationalize the data from Phase 1 and Phase 2 in the form of a functioning tool. We anticipate facilitating a series of 5 small workshops, with 3–5 participants in each workshop. The workshop will include practitioners from a variety of backgrounds; potential participants include practitioners such as IDEA Institute Fellow Tienya Smith (chatbot development at Queens Public Library), LEADING Fellow Hiva Kadivar (U North Carolina, text and data mining at UC San Diego), Caitlin Robles (text and data mining at MIT), Harish Maringanti (image analysis at U of Utah), and Kate Zwaard (Computing Cultural Heritage in the Cloud, Library of Congress). Co-PD Scott Young, who has expertise in participatory methods, will lead the participants in activities to help envision the ethically-relevant harms analysis tool as it would be used in various contexts, in order to develop a tool that will be research-based and practically useful. Participants will co-create a range of ideas for how the final tool could take shape. The workshop will conclude with a collaborative selection process that leads ultimately to the final tool design, as informed by the research of the project and the participants of the workshop. As project leads, our aim is to be flexible and to let the research and the participants lead the way in creating a tool that responds to real needs and can result in real-world impact.

Related Tools

In anticipating the final design of the ethically-relevant harms analysis tool, we will draw inspiration from related tools that operate in the space of ethical technology. For example, the Envisioning Cards from the University of Washington Information School (Figure 1) serve as a useful point of reference for demonstrating the general type of tool that we are imagining [47].
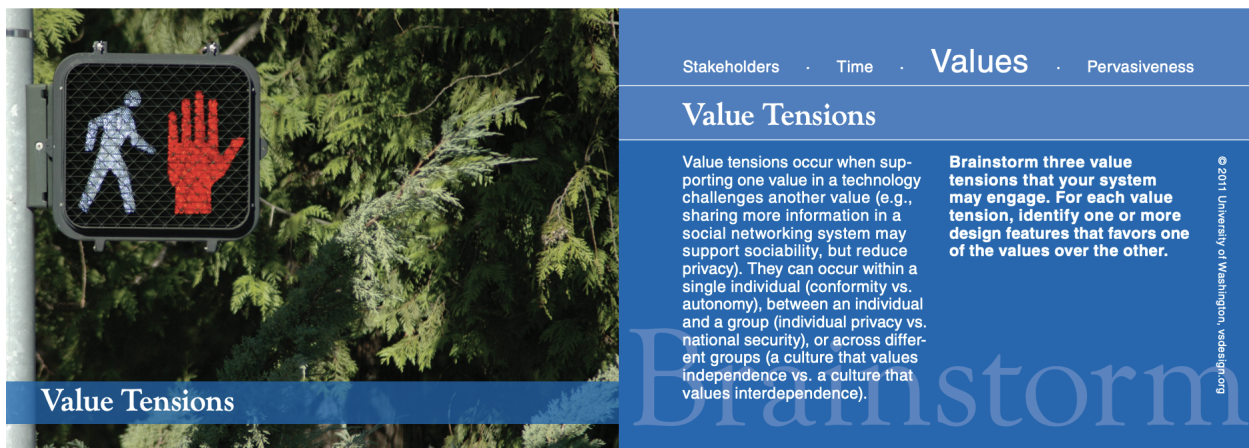

Figure 2. The Value Tensions card from the Envisioning Cards tool, created by Value Sensitive Design Lab at the University of Washington Information School. This image represents a leading example of card-based ethical technology tools.

Tools for responsible practice often share a basic three-part structure: 1) relevant principles or values for the topic, 2) practices or actions that can help achieve those values, 3) reflective prompts or operational indicators for the practices. We include this image of the Envisioning Cards to show an example from the universe of related tools. We intend for our own tool development to remain open-ended so as to be adaptable based on the data we gather from our stakeholders. At the same time, the design of the ethically-relevant harms analysis tool will be informed by related tools that function similarly and provide different models for how such a tool can come to life.

Phase 3a. Dissemination of project findings

We will specifically request input for ethically-relevant harms analysis tool refinement from community experts whose viewpoints will be especially helpful (e.g., Global Indigenous Data Alliance, Colored Conventions Project, Data for Black Lives, DLF Cultural Assessment Working Group, and DLF Digital Content Reuse Assessment Framework Toolkit Team (D-CRAFT)—letters of support from D-CRAFT leadership are included. These community experts will be provided with an honorarium for their work. We will also present the findings at FAccT and CSVconf in Spring 2024.

Phase 3b: Develop. Tool assessment and validation. AY2-AY3, April 2024-October 2024.
<u>Tool validation, April-August 2024.</u> Draft versions of the ethically-relevant harms analysis tool will be distributed for validation. Validation will be conducted by community experts, including the authors of the case studies from Phase 2. The case study authors will go back to their case study example, using the tool to walk through the same project, and make notes about how the tool succeeds or needs improvement. Other community experts will use the tool during the planning process for an AI project; they will then provide structured feedback to improve the tool, including feedback on usability and content.

<u>Final tool revision, August 2024-January 2025.</u> Data from the community expert testing will be analyzed and used to revise and improve the tool, resulting in a final version of the tool.

<u>Tool visual design, Spring 2025.</u> We will work with a graphic designer to create a visual design for the tool and identify a printer to produce physical copies of the tool. The tool will also be freely available online.

Phase 3b. Dissemination of project findings

Outreach in 2024 will focus the ethically-relevant harms analysis tool in progress. We will attend the FAccT Conference, CSV conf, DLF Forum, and CNI membership meeting to present the environmental scan, case studies, and the progress of the tool. At Learn@DLF, we will present a participatory workshop to validate version 2 of the tool. We will also publicize the tool at IEEE Big Data Computational Archival Science, and Academic Data Science Alliance.

Phase 4: Deliver. Final tool and handbook. AY3, November 2024-July 2025.
In this phase, we will produce a handbook that will be released as a companion to the ethically-relevant harms analysis tool. The handbook will introduce fundamental issues, summarize the state of the field and the results of the environmental scan, and provide documentation to facilitate the use of the tool—including the case studies from Phase 2 that have been used to validate the tool, and will now function as examples of how to use the tool.

Phase 4. Communication and dissemination plan

Final deliverables will be presented at conferences in 2025—including NISO Plus and CNI. We also plan to host workshops about putting the ethically-relevant harms analysis tool into practice; potential workshop venues include OCLC Works in Progress webinar series, DLF Data and Digital Scholarship working group, and an IIIF Archives Community Group virtual meeting.

Diversity Plan

AI can generate harms that disproportionately impact people from minoritized communities. It is therefore imperative that these communities be core to our work. A key challenge of AI is bias among developers and in training data. Given the cultural homogeneity of the libraries and archives profession

and the long history of patriarchy and colonialism in collection building, it is critical that AI projects challenge that history and help build a more equitable future. The deliverables of this project aim to support diversity, equity, and inclusion by supporting careful consideration of potential bias and harm (especially to vulnerable or minoritized communities) that could result from AI projects in libraries and archives.

To support minoritized community perspectives on this project, the project team will convene an Advisory Board that includes members from libraries, archives, and initiatives that center and amplify the voices of BIPOC, LGBTQIA+, and other minoritized communities. The Advisory Board will provide asynchronous feedback on the key deliverables of the grant: environmental scan, case studies, ethically-relevant harms analysis tool, and assessment strategies. The Advisory Board will also meet synchronously twice yearly for the duration of the project to ensure that a diversity of perspectives are considered. Mark Matienzo - Stanford (technologist, archival software application developer, UX, human rights archives); Dorothy Berry - Harvard (archives, African American special collections, overlooked & erased histories); Bohyun Kim - U Michigan (AI researcher, AUL for IT); Stephanie Russo Carroll - U Arizona (co-founder of Indigenous Data Sovereignty Network); and Thomas Padilla - Center for Research Libraries (collections as data, responsible AI) have agreed to serve on the Board, should the project be funded. Board members will be compensated for their time and expertise.

Additionally, during the development, refinement, and validation of the ethically-relevant harms analysis tool, we will specifically reach out to community experts whose backgrounds and viewpoints will be especially helpful (e.g., Global Indigenous Data Alliance, Colored Conventions Project, Data for Black Lives, DLF Cultural Assessment Working Group, DLF Digital Content Reuse Assessment Framework Toolkit Team).

The Advisory Board and the community experts will be provided with honoraria for their work.

Project Results
Intended results, and how will they address the problem
This project contributes to development of consistent practices for the ethical use of AI in libraries. Our project is based on the premise that AI applications in libraries and archives help improve services, increase the accuracy and reach of collections, and support new uses of library and archival resources. However, as outlined above, using AI in libraries without considering how these projects interact with our values could harm the communities we aim to support. *Responsible AI* provides strategies for methodical consideration of potential harms of AI projects, with a goal of supporting decision-making. Responsible AI deliverables will help practitioners consider ethical implications as they embark on AI projects that support increased impact and new uses of library resources. *Responsible AI* provides new data, new resources, and new strategies that will prepare our profession for the methodical consideration of potential harms of AI projects.

Adaptable, generalizable, and usable by other institutions and communities
We expect that this project will reach hundreds of librarians and archivists in the first year through the survey and case studies, and then continue to impact our field as we produce and disseminate the ethically-relevant harms analysis tool. With clear guidance on how to analyze the ethically-relevant harms of AI projects, librarians and archivists can feel more comfortable planning for and implementing AI, while ensuring adherence to our values and responsible consideration of our communities. The tool can reach an even broader audience—practitioners in a range of contexts (including museums and public libraries) could potentially use the tool; teachers and students in high school and college could use the tool in the classroom to consider the implications of AI in practice; university administrators and other leaders can use the tool to weigh harms and benefits when deciding whether to adopt AI in libraries, archives, universities, and the public sector; and university instructors can employ the tool with graduate students for training in research ethics relevant to the use of archival materials. The handbook (created during

Phase 5 of the Project Plan) will include suggestions for using the ethically-relevant harms analysis tool in a variety of different contexts, to encourage broad use of the tool.

Sustaining the benefits of the project

Strategic partnerships with influential library and archives organizations such as ALA's Core Division, CLIR/DLF, and OCLC will support broad dissemination of deliverables, and encourage community participation throughout the project timeline. Letters of support from CLIR/DLF, OCLC, and ALA Core are included with this proposal. Additional communication and dissemination plans are included at each step in the Project Design section above. Several members of our team are also closely connected with DLF working groups. These working groups are home to active, justice-oriented communities of scholars and practitioners. Co-PD Shorish and Co-PD Young are past co-conveners of the DLF Privacy and Ethics of Technology working group; PD Mannheimer and Co-PD Clark are current co-conveners of the DLF Data and Digital Scholarship working group, and Co-PD Scates Kettler has worked closely with the DLF Cultural Assessment working group. Mannheimer will leverage the DLF working group community to support use and dissemination for the ethically-relevant harms analysis tool, and will invite these communities to participate in an annual review and revision of the tool for at least 3 years after the grant ends.

Conclusion

As our field continues to adopt AI, we anticipate that *Responsible AI* deliverables can act as a first step toward supporting broader policies throughout the library and archives profession to support responsible AI. As we begin to ethically and responsibly operationalize AI in libraries and archives, we hope that libraries and archives can provide models that resonate beyond the profession, embodying Zwaard's belief that "through the slow and careful adoption of tech, the library can be a leader" [34].

Project Team

Summary of Project Team

The members of the project team are technologists, librarians, archivists, and ethicists with experience in many sub-areas related to responsible AI in libraries and archives. Our team has expertise building AI tools, conducting computational data analysis, leading technology implementation, implementing preservation efforts for new technologies, and teaching about AI-related concepts such as algorithms and social media. Because AI systems are informed by datasets that represent people, data ethics and privacy are deeply connected to AI; our team has experience conducting ethical analyses, creating ethical frameworks, creating privacy policies, and writing about data ethics and privacy. The team also has experience conducting social science research, leading grants, and managing projects.

Project Director

- **Sara Mannheimer** has experience teaching and and conducting computational data analysis using the R programming language. She is a PhD candidate at Humboldt University in Berlin, with expertise in quantitative and qualitative social science research methods, as well as applied ethics [58,59], She is affiliated faculty in the MSU Center for Science, Technology, Ethics, and Society. She has experience leading large projects, including acting as project manager for the MSU Dataset Search and acting as PD and co-PD on two previous IMLS grants [60,61].

Co-Project Directors

- **Jason Clark** is a technologist and software application developer (PHP and Python) whose work focuses on innovations in library software, including AI applications such as speech-to-search and anticipatory design search [62]. Clark was PD of the IMLS-funded *Algorithmic Awareness* project [10], which created teaching resources to support understanding of the practical and ethical implications of algorithms, including algorithms for AI.
- **Doralyn Rossmann** is a technologist and IT leader. Rossmann manages IT systems and software development at MSU Library, and serves on MSU's Senior Information Technology Leadership

Team. She has expertise in writing privacy policies and management of user data in libraries. Her research focuses on social network data ethics [63] and augmented and virtual realities [64,65].

- **Hannah Scates Kettler** work focuses on creating and highlighting intervention points in library work that invite critical assessment of approach and outcomes. Through her work in the [DLF Cultural Assessment Working Group](), she has co-developed intervention points for selection and appraisal of digital collection creation and preservation and instills those concepts at the local level. She has worked on the development [community driven 3D data preservation]() standards, shepherding digital collections as data models which focus on ethical use and reuse through her involvement in the IMLS-funded *[Collections as Data: Always Already Computational]()* project and leadership in the Mellon-funded *[Collections as Data: Part to Whole]()* projects.
- **Bonnie Sheehey** is an ethicist in the MSU Department of History and Philosophy. Sheehey focuses on the social, ethical, and political implications of technology. She has published on issues of racial bias and injustice in current technologies deployed in a variety of criminal justice practices in the U.S. context. Sheehey is affiliated faculty in the MSU [Center for Science, Technology, Ethics, and Society]().
- **Yasmeen Shorish**'s work focuses on data ethics and privacy. With expertise in data librarianship and scholarly communications, Yasmeen has a unique perspective on how data products and computing intersect with the scholarly record. She has presented and led workshops on the threats posed by digital surveillance on privacy and society. She is involved with the [Academic Data Science Alliance](), serving on the 2020 Leadership Summit Program Committee and contributing to several special interest groups (SIGs)—including the Diversity, Equity, and Inclusion SIG and Ethics in the Curriculum. She has also investigated issues related to data discoverability in her leadership on the IMLS-funded [OA in the Open]() and ethical means of computational analysis of library collections in her involvement with the Mellon-funded *[Collections as Data: Part to Whole]()* project.
- **Scott Young** is a library service designer and has experience facilitating multi-day participatory design workshops similar to that being proposed above. He served as PD of the IMLS-funded *National Forum on Web Privacy and Web Analytics* (co-PDs Mannheimer and Clark) [61], which featured a 2.5-day forum that functioned as a participatory design workshop in support of privacy-oriented library services. His research focuses on applying library values through the lens of practical ethics. Young is affiliated faculty in the MSU [Center for Science, Technology, Ethics, and Society]().

Phase	Activity	2022 Aug	Sep	Oct	Nov	Dec	2023 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Phase 1. Environmental Scan, Aug 2022 - Feb 2023	Create project website	■																			
	Environmental scan - website review		■	■																	
	Advisory Board 1			■																	
	Survey (incl. call for case studies)				■	■	■	■													
	Cfp for case studies - to listservs				■	■															
	Code4Lib 2023							■													
Phase 2. Case studies & beneficiary workshops, Mar 2023 - Sep 2023	RDAP 2023								■												
	Review and revision of case studies								■	■	■	■									
	Virtual beneficiary workshops												■	■							
	JCDL 2023													■							
	Write/submit envir. scan article												■	■							
	Advisory Board 2														■						
Phase 3a. Target group workshops, Ethically-relevant Harms Analysis Tool Development Oct 2023 - Mar 2024	Synthesize data from Phases 1 and 2														■						
	Virtual target group workshops															■	■	■			
	Core Forum 2023															■					
	AI4Lam 2023																	■			
	Develop Tool v1																		■	■	
	Advisory Board 3																			■	
	FaccT Conference 2024																				■
Phase 3b. Tool Assessment and Validation, Apr 2024 - Jan 2025	Expert testing of Tool v1																				
	CSVconf 2024																				
	Advisory Board 4																				
	Expert testing at Learn@DLF																				
Phase 4. Final Tool and Handbook, Feb 2025 - July 2025	Revise, develop Tool v2																				
	Academic Data Science Alliance 2024																				
	IEEE Big Data - Comp Arch Sci 2024																				
	Develop handbook																				
	NISO Plus 2025																				
	Advisory Board 5																				
	Release final tool and handbook																				
	Outreach/promo for tool & handbook																				
	CNI Spring Meeting 2025																				
	OCLC Works in Progress webinar																				
	IIIF Archives Comm. Grp virtual mtg																				

Phase	Activity	2024									2025						
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Phase 1. Environmental Scan, Aug 2022 - Feb 2023	Create project website																
	Environmental scan - website review																
	Advisory Board 1																
	Survey (incl. call for case studies)																
	Cfp for case studies - to listservs																
	Code4Lib 2023																
Phase 2. Case studies & beneficiary workshops, Mar 2023 - Sep 2023	RDAP 2023																
	Review and revision of case studies																
	Virtual beneficiary workshops																
	JCDL 2023																
	Write/submit envir. scan article																
	Advisory Board 2																
Phase 3a. Target group workshops, Ethically-relevant Harms Analysis Tool Development Oct 2023 - Mar 2024	Synthesize data from Phases 1 and 2																
	Virtual target group workshops																
	Core Forum 2023																
	AI4Lam 2023																
	Develop Tool v1																
	Advisory Board 3																
	FaccT Conference 2024																
Phase 3b. Tool Assessment and Validation, Apr 2024 - Jan 2025	Expert testing of Tool v1	█	█	█	█												
	CSVconf 2024		█														
	Advisory Board 4						█										
	Expert testing at Learn@DLF							█									
Phase 4. Final Tool and Handbook, Feb 2025 - July 2025	Revise, develop Tool v2								█	█	█						
	Academic Data Science Alliance 2024									█							
	IEEE Big Data - Comp Arch Sci 2024										█						
	Develop handbook											█	█				
	NISO Plus 2025																
	Advisory Board 5																
	Release final tool and handbook												█				
	Outreach/promo for tool & handbook												█	█	█	█	█
	CNI Spring Meeting 2025												█				
	OCLC Works in Progress webinar														█		
	IIIF Archives Comm. Grp virtual mtg															█	

Digital Products Plan

Type: What types of digital products will you create?
Project resources will include a website, environmental scan results, case studies, ethically-relevant harms analysis tool, handbook, conference presentations, and peer reviewed publications. These resources will be distributed and archived as HTML and PDF documents. Survey data will be collected using the Montana State University (MSU) license of Qualtrics, then exported in CSV format. The ethically-relevant harms analysis tool will be distributed in physical form (a card deck or canvas), and will also be made freely available online in either PDF, PNG, or JPG format. Standard web services and word processing software will be used to create project resources, including Google Docs and Microsoft Word. All project documents will be saved and shared using non-proprietary, openly-documented file formats.

Availability: How will you make your digital products openly available (as appropriate)?
All project resources will be openly available via the project website and archived in MSU ScholarWorks upon grant completion. MSU ScholarWorks uses Dublin Core metadata and is optimized for findability by commercial search engines. Academic articles will be published in fully open access journals, and a version will be posted in MSU ScholarWorks for additional findability and access. Deidentified survey data will be archived in Dryad Digital Repository, the cost of which is sponsored by MSU's institutional membership Dryad. Data in Dryad will include a readme and in-depth descriptive metadata. Research data will additionally be cataloged in MSU Dataset Search to promote findability by commercial search engines.

Access: What rights will you assert over your digital products, and what limitations, if any, will you place on their use? Will your products implicate privacy concerns or cultural sensitivities, and if so, how will you address them?
In order to maximize dissemination and reuse of project resources, all project resources will be assigned a Creative Commons License CC BY 4.0. The project team is committed to making all materials and resources available free of payment and access restrictions according to the terms of the CC BY 4.0 license. Resources will be made available through the project website, hosted by Montana State University. Project resources will archived in MSU's Institutional Repository, MSU ScholarWorks. The design and content of the website itself will also be licensed CC BY 4.0. Survey data archived in Dryad will be committed to the public domain using a CC Zero designation.

Sustainability: How will you ensure the sustainability of your digital products?
MSU ScholarWorks and Dryad Digital Repository will be used for long-term archiving and access for project deliverables. MSU ScholarWorks also provides DOIs for persistent access, and the

MSU ScholarWorks [preservation policy](#) commits to long-term preservation and access for all content. Dryad Digital Repository provides DOIs and ensures the long-term preservation of research data through its [digital preservation policy](#). Several members of our project team are closely connected with DLF working groups. These working groups are home to active, justice-oriented communities of scholars and practitioners. PD Mannheimer will leverage the DLF working group community to support use and dissemination for the ethically-relevant harms analysis tool, and will invite these communities to participate in an annual review and revision of the tool for at least 3 years after the grant ends.

Organizational Profile:

Organizational Description:

On February 16, 1893, the Montana State Legislature passed an act creating the Agricultural College of the State of Montana as the state's land-grant college. By the 1920s, the institution's preferred name was Montana State College and so it remained until July 1, 1965, when, in recognition of the enormous advances in the College's commitment to scientific and humanistic research, the thirty-ninth legislative assembly of the state of Montana changed its name to Montana State University (MSU).

The Mission of MSU is to educate students, create knowledge and art, and serve communities by integrating learning, discovery, and engagement.

MSU provides a diverse learning environment in which the entire university community is engaged in supporting student success and the exploration, discovery, and dissemination of new knowledge in a collegial environment. Furthermore, MSU is recognized as a Carnegie I research intensive university.

MSU has an enrollment of 16,703 students. Of these, 12,992 (78%) attended full time and 3,711 (22%) attended part time. Students attending MSU in fall of 2017 came from all 56 counties in Montana, 50 U.S. states, and 72 foreign countries. MSU offers baccalaureate degrees in 60 fields with many different options, graduate certificates in 19 fields, master's degrees in 62 fields, and doctoral degrees in 34 fields.

MSU has granted 120,174 certificates and degrees in its 124 year history (1893-2017). MSU has awarded 217 non degree certificates, 348 Certificates of Applied Science, 41 Professional degrees, 200 Associates of Applied Science, 110 Associate's, 99,867 Bachelor's, 17,135 Master's, 8 Specialist degrees, and 2,248 Doctorates.

MSU is part of the Montana University System (MUS). The governance and administration of the MUS is vested with the Board of Regents, which has full power, responsibility, and authority to supervise, coordinate, manage and control the MUS, and supervise and coordinate other public educational institutions assigned by law.

Founded in 1894, the MSU Library is the academic library of MSU. The MSU Library provides information, education, and services in support of the university's teaching, research, and outreach mission, and is committed to excellence in collections, outreach, and service. Our mission is to support and advance teaching, learning, and research for Montana State University and the people of Montana by providing access to information and knowledge.

To advance this mission, the MSU Library has committed itself to:
- Advancing digital scholarship;
- Creating broader access to primary source collections;
- Developing services to support researchers;
- Implementing statewide discovery technologies; and
- Coordinating statewide collection development for broader access.

The MSU Library is housed in the Renne Library building. There are 20 Library faculty, and 33 staff to serve the needs of the campus and beyond. The collection consists of 883,844 owned or leased volumes and 18,680 serials, the majority of which are electronic.