IDEA (Innovation, Disruption, Enquiry, Access) Institute on Artificial Intelligence

The University of Tennessee, Knoxville, as project leader, is submitting this proposal to the Laura Bush 21st Century Librarian Program, in collaboration with two Co-PIs, for the IDEA (Innovation, Disruption, Enquiry, Access) Institute on Artificial Intelligence (AI), a one-week intensive, interactive, evidence-based and applications-oriented professional development program, open to library and information professionals. The Institute will create two cohorts of leaders (15 IMLS-funded and 5 self-funded Fellows per year; 40 total) with the knowledge and skills to innovate, apply, and evaluate AI in library and information environments. Requested budget $225,393 + cost shared amount $23,695.

1. Statement of need: AI applications such as voice computing/technology (e.g., Alexa, Siri, and Google Assistant) have become part of everyday use in homes and the workplace and are making their way into libraries. Recently, Loida Garcia-Febo, ALA past President, urged librarians to "include AI in our professional agenda and in our national conversation."[1] Librarians are implementing AI in a variety of ways: formulating questions and evaluating responses by conversational assistants, as well as developing and generating metadata for collections. MIT Libraries, for example, are reconceiving library collections as data that can be used to train Machine learning algorithms,[2] and Stanford University Libraries are leading with their AI research and applications.[3] AI is ranked as one of the top-three trends in libraries and librarianship[4] and has been explored in-depth in a 2019 *Library Technology Reports.*[5] In 2018, the University of Rhode Island led the way by locating its new AI Lab in a university library.[6] In 2019, the ACRL conference had a panel on AI impact in libraries and the LITA Conference hosted a talk on the topic. While these one-time and short sessions familiarize practitioners with AI, they are not intended for deepening the understanding of the application of AI in libraries and lack a framework for planning and implementing AI solutions. The IDEA Institute responds to the gap by providing in-depth and intensive training on AI using the User Experience Life Cycle (UX) Life Cycle framework, which includes planning, gathering user requirements, structuring requirements, implementing, and evaluating user-centered AI solutions.

2. Relevance to IMLS project category: The IDEA Institute advances IMLS Project Category 1: Lifelong Learning. The Institute provides its Fellows much needed continuous learning in emerging technologies to stay at the forefront of technological developments and lead innovation. The IDEA Fellows will build their capacity in AI knowledge and application and transfer their knowledge in four ways: (1) gain AI knowledge to augment their expertise to redesign and create effective library and information processes, (2) apply UX Life Cycle framework to plan and implement an AI solution for their library or information context, (3) grow as AI leaders by introducing and creating awareness of AI library applications through demos, presentations, workshops, and resource guides at their institutions, and (4) disseminate their AI knowledge and applications to the library and information community.

3. Project team: PI: Dania Bilal, Ph.D. (Professor, School of Information Sciences, University of Tennessee, Knoxville) has expertise in information retrieval, human-computer interaction, Web mining, and information systems design and implementation. **Co-PIs:** Clara M. Chu, Ph.D. (Mortenson Distinguished Professor and Director, Mortenson Center for International Library Programs, University of Illinois at Urbana-Champaign) studies the information needs of and access by culturally diverse communities in a globalized and technological society, and introduces emerging technologies to connect and empower communities locally and worldwide; Soo Young Rieh, Ph.D. (Professor and Associate Dean for Education, School of Information, University of Texas, Austin) conducts research on human information behavior to design learning-centric search systems that support critical thinking and creativity. **Confirmed Partners**: Association for Information Science and Technology (ASIS&T) and ALA's Center for the Future of Libraries will participate in promotion and recruitment, and provide conference programming space. **Advisory Board**: The four leading AI experts on the Advisory Board will serve as instructors and play a key role in the planning, content development and delivery of the Institute.

[1] https://americanlibrariesmagazine.org/2019/03/01/exploring-ai/
[2] https://www.insidehighered.com/news/2018/01/17/rhode-island-hopes-putting-artificial-intelligence-lab-library-will-expand-ais-reach
[3] https://library.stanford.edu/projects/artificial-intelligence/events/library-ai-conversations
[4] http://www.ala.org/tools/future/trends
[5] https://journals.ala.org/index.php/ltr/issue/view/709
[6] https://web.uri.edu/engineering/ai-lab-to-be-accessible-to-all-uri-students/

4.Work Plan:
(1) Curriculum Development (September 2020 – February 2021) The IDEA Institute curriculum will: (1) Introduce AI, issues, and challenges; (2) Review and evaluate AI solutions for libraries (e.g., Microsoft Cognitive Development Toolkit and Keras Deep Learning Library), including algorithms to mitigate the existence of bias; (3) Apply the UX Life Cycle framework for an AI solution in local library context; and (4) Reflect on AI impact, values, and ethical concerns.
 (2) Recruitment of first cohort of IDEA Fellows (October 2020–April 2021): Develop application materials and process, and national recruitment plan and materials; and engage our partners, ethnic affiliates, ALA and other organizations in recruitment. The 1st cohort of 15 IMLS-funded and 5 self-funded IDEA Fellows will be recruited and selected in a competitive process in Spring 2021. Experience with programming languages is required. The Fellows will represent diverse socio-demographic backgrounds, types of positions, types of libraries, and capacities of implementing AI in their workplace. Each IMLS-funded Fellow will have all their Institute expenses covered (program fee, housing, meals), except for transportation.
(3) Piloting the 1st IDEA Institute at the University of Tennessee, Knoxville (June 2021): The week-long Institute (Saturday-Friday) will include lectures by AI experts, hands-on exercises, critique of AI applications, and a graduation showcase opened to the local library and information community. Five local AI experts from diverse sectors will be invited to two Expert Networking sessions to connect with the Fellows.
(4) AI in Libraries Workshop at the ASIS&T Annual Conference (October 2021) **and AI in Libraries Session at ALA national conferences** (2022): Working with our partners, all IDEA Fellows will be invited to present their AI applications & knowledge at an ASIS&T workshop and a session at an ALA annual conference.
(5) Program Evaluation (May 2021–December 2021): The PIs will conduct formative and summative evaluations to ensure and assess the success of this project using pre-Institute and post-Institute surveys as well as focus groups with participants half a year from the completion of the Institute.
(6) The 2nd IDEA Institute at the University of Texas at Austin (January 2022–August 2022): The PIs will incorporate the evaluation results from the 1st Institute for delivery of the 2nd one. The 2nd cohort of 15 IMLS-funded and 5 self-funded Fellows will be recruited and selected. The 2nd Institute will be delivered and evaluated. The 2nd cohort of Fellows will be also invited to an ASIS&T workshop and an ALA session.
(7) Dissemination of Project Content and Results (June 2021–August 2022): All IDEA Institute materials will be made available on the Institute website. The PIs will provide mentoring to help the Fellows present their work at professional conferences and/or publish in journals. The PIs will present results from the evaluation studies at LIS conferences and publish in journals. The Fellows will introduce and create awareness of AI in libraries through demos, presentations, workshops, and resource guides at their institutions.
5. Diversity Plan: Co-PI Clara Chu, a leading expert in diversity will lead the three-prong diversity plan: (1) engage the ethnic affiliates of ALA & ALA Office for Diversity, Literacy and Outreach Services in promotion and recruitment; (2) involve AI experts who are of diverse backgrounds and/or experts in diversity & inclusion in the planning, content development and delivery; and (3) examine AI applications for bias-free algorithms.
6. Projected Goal and Outcomes: The Fellows will achieve five learning outcomes: (1) Understand the impact of AI technologies for user services, library collections, and other workflows; (2) Plan, design, implement, and evaluate AI solutions/applications in library practice using the UX framework; (3) Evaluate AI products for cost-effective library and information workflows and services; (4) Develop information literacy programs and resource guides about AI use in libraries; and (5) Promote AI in libraries & information environments.
7. National Impact and Sustainability: The IDEA Institute will fill a current gap in LIS education and training on AI and the leadership needed in libraries to engage AI to create more effective operations, smarter search systems, and data analytics to enhance discovery, learning, recommending and decision-making. Technology is causing disruption and the IDEA Fellows will be able to lead in developing innovation as well as guide and train other library and information professionals. The content of the Institute will be sustained through the dissemination of the IDEA Institute curriculum that will influence the development of AI content in the LIS curricula, and spark the development of AI specialists in the library workforce.
8. Estimate budget ($249,088): Direct Costs (PI salary $6,478, Graduate Research Assistant summer salary $1,950, Fringe Benefits, $1,546, Travel $39,078, Participant Support $54,360, Supplies $7,500, Publication $500, Networking Event $900, Sub-Awards $63,747) + **Indirect Costs** ($49,334) + **Cost Share** ($23,695).