

Research Data Repository and AI Learning Center Proposal 2023

(Enabling Research Data Through AI, AR & An Academic Library Learning Commons Infrastructure)

21st Century University Research faculty and graduate students possess plentiful research data from experiments and research. Even within data-centric disciplines, many researchers struggle to realize insights possible for research data through new AI and technology possibilities. Most are not versed in current AI literacies, augmented or mixed media VR methods or even earlier data visualization. This project seeks to redress these imbalances, democratizing and enabling a university's researchers through a Research Data Discovery repository & AI Learning Center.

Introduction

This proposal builds core computational resources of data research repository, surrounding ecosystem and 'human expert' resource 'help' capacity through a physical learning center in Mitchell Academic Research Library, Mississippi State University. The center will enable the State's R1 University's researchers and innovators for the Southern Region to promote data discovery, innovation and create a new paradigm best practices model for university researchers with their data in the US.

This project is divided into three phases:

- 1) Building a an Open Data Research Depository for open online, sensitive and big data.
- 2) Building an interdisciplinary center around the enabling power of learning, AI and Immersion Technologies (Mixed Media VR, Data Visualization, viz wall).
- 3) Building a connected open source research software infrastructure ecosystem surrounding this research data repository for faculty research data, open science discovery¹ and collaborative possibilities.

Phase 1: Open Data Research Repository

This project begins with building a research data repository to enable research faculty data for open science, Federal grant compliance², digital archiving and global collaborative possibilities. Project partners include the University' Supercomputing enter and Computer Science Department to work out both 'big data' storage and retrieval possibilities but also more complex challenges that both sensitive data (medical etc.).

Phase 2: 21st Century Technology Enabled Learning and Research Spaces

This second phase of this project creates a 21st Interdisciplinary Learning Space for Research Faculty, Graduate Students and their Data to learn through the exposition of global current best practice examples of Research Data Visualization, AI and Augmented reality and enabling AI reseource help from human experts in AI, Computer Science and XR technologies.

The center will enable interdisciplinary possibilities for social networking and realization of projects from

raw data to AI enabled applications to mixed media data driven VR realities. Commingling of faculty through the center in the third space of interdisciplinary ideas of the library opens research from disparate areas of the university to enable new collaboration, creativity and economic possibilities in the 21st century.

Phase Three: Online Data Research Ecosystem

The final phase of this project enhances the online data research ecosystem for further enabling faculty research data through the creation of computational and human resource capacity and enabling mechanisms of a digitization lab, user interface software for research projects and open academic journal systems to create a digital online ecosystem network that enables faculty and graduate students with their graduate and Ph.D. research data for next level innovation and possibilities.

Further Bullet Points

- Interdisciplinary possibilities for an R1 Academic Research Library Learning commons enables equitable access for researchers with digital and algorithmic literacy (AI) competencies and 'help infrastructures' to enable insight, discovery, economic development, and the progress of knowledge in the 21st century.
- Through the marriage of novel AI and augmented reality technologies and academic data centric research, center., exploration of new target applications of AI methods and paradigms for discoveries can occur. New synthesis for exploration and interdisciplinary possibilities among core science and engineering, research humanities, social science and social networking can be better promoted through the academic library's traditional 'third space' of academia to enable to possibilities and development for the 21st century.
- Even within hard core Engineering and Computer Science, many researchers are unfamiliar with the currently pragmatic and easy methodologies of the various possibilities for AI and Augmented (Mixed Media Reality and Data Visualization Technologies). This project redresses these imbalances towards a more inclusive, democratic, and open data enabled university research community.

¹ UNESCO. Recommendations on Open Science. 2021. Paris: General Conference. 41/C.Resolution 24.

<https://www.unesco.org/en/natural-sciences/open-science> Final Report:

<https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en> United Nations, 2021.

² Marcum C and Donohue, R. *New Guidance to Ensure Federally Funded Research Data Equitably Benefits America*. Office of Science and Technology Policy: Washington DC, The White House. 2022.

<https://www.whitehouse.gov/ostp/news-updates/2022/05/26/new-guidance-to-ensure-federally-funded-research-data-equitably-benefits-all-of-america/>