

**EVENTOS**  
XVIII JORNADAS CRAI  
UNIVERSIDAD DE ALICANTE

|  
**2023**



**Futures for university libraries:  
A view from MIT**

# Futures for university libraries

A view from MIT

Chris Bourg, Director of Libraries

@mchris4duke

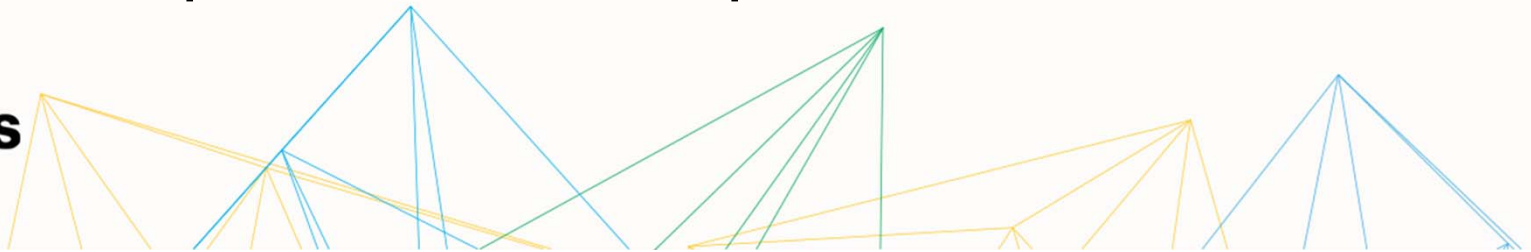
MIT  
Libraries

The background of the slide features a complex network of thin, overlapping lines in three colors: light blue, light green, and light yellow. These lines form various geometric shapes, including triangles and polygons, creating a sense of interconnectedness and movement. The lines are scattered across the lower half of the slide, with some extending towards the right edge.

# Talk outline

- Context setting
- Future of libraries
- Covid-19 impacts on vision & strategy
- MIT Libraries' forays into future
- Some speculations and provocations

**MIT  
Libraries**

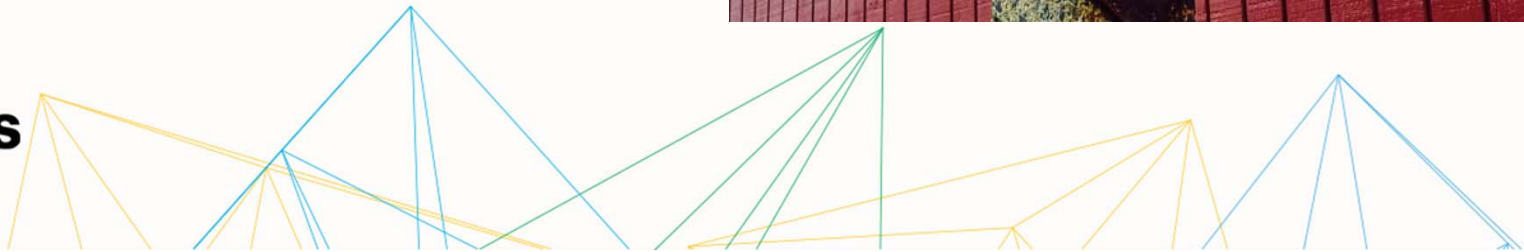


# First ... some context

- My bias and experiences
- Goal: Spark ideas and conversation



**MIT  
Libraries**

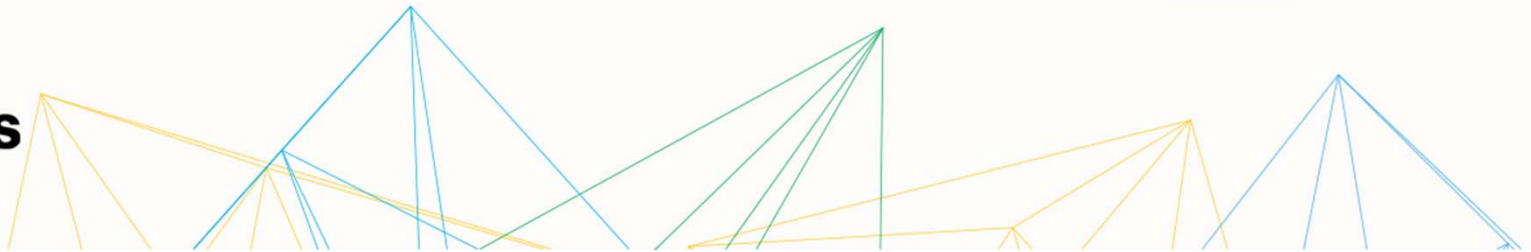


# About MIT

- Highly ranked, research intensive
- Engineering, science and technology
- Long history of open



**MIT  
Libraries**

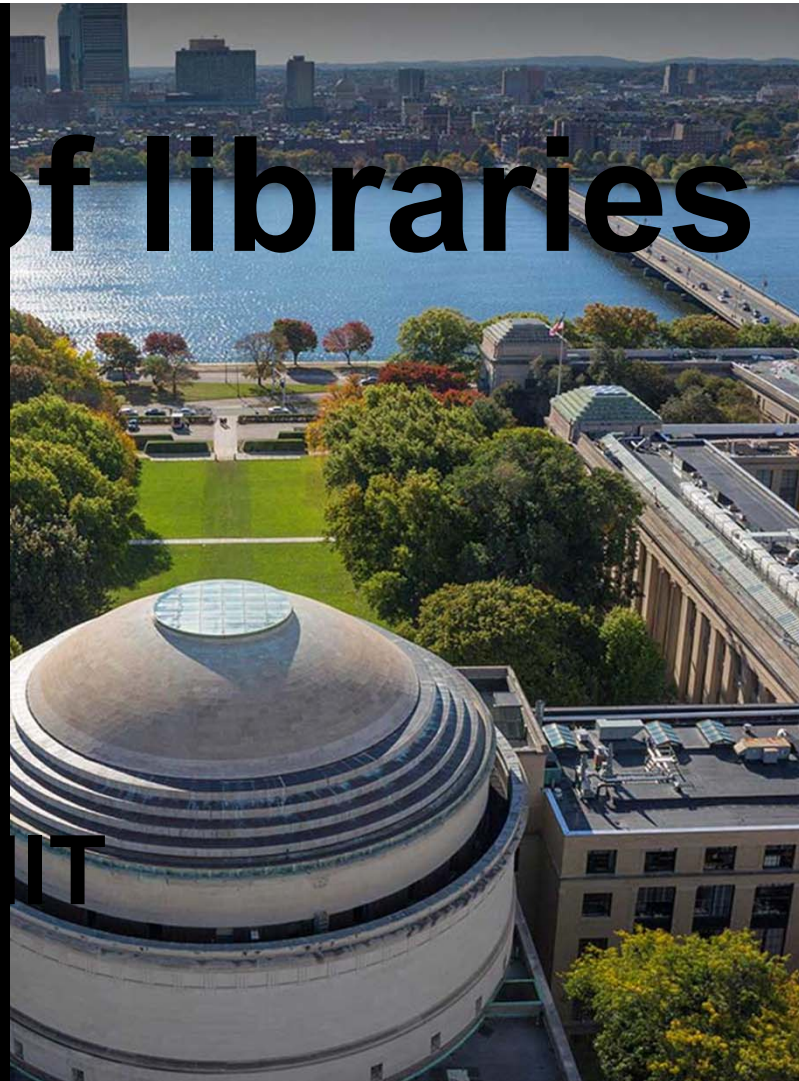


# Future of Libraries: View from ChatGPT

- **Digital Transformation**
- **Advanced Technologies**
- Virtual and Augmented Reality
- **Open Access and Open Science**
- Collaboration Spaces
- Personalized Services
- Global Access
- Lifelong Learning
- Preservation and Curation



AI generated image of  
“University Library in 2050”



of libraries

IT

# Digital Transformation



Print ....



... to Digital

# Computational transformation

Scarce, restricted, static ..... Open, abundant, dynamic

**PLACE**

- Physical

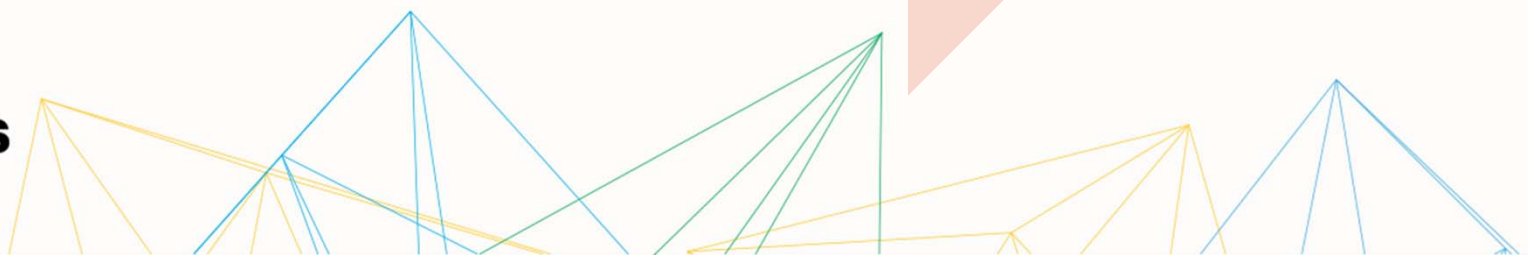
**SERVICE**

- Physical
- Digital

**PLATFORM**

- Physical
- Digital
- Computational

**MIT  
Libraries**



# Covid-19

#News #Coronavirus

## Colleges Ask Students to Leave Campuses

A roundup of how the coronavirus continues to wreak havoc on higher education.

By [Elizabeth Redden](#) // March 11, 2020



The Tech

[Subscribe to our newsletter](#)

NEWS

## *Financial impact of MIT's COVID-19 response already \$50 million*

MIT pauses hiring except essential personnel

By [Rujul Gandhi](#) | Apr. 15, 2020

**MIT  
Libraries**



# A newly urgent mission

***“This crisis demands an accelerated transformation of our library into a platform for the creation, discovery, use, dissemination, and preservation of knowledge that is fully open and equitably accessible.***

From MIT Libraries Vision: A New Urgency, May 6 2020

[libraries.mit.edu/about/vision/new-urgency/](https://libraries.mit.edu/about/vision/new-urgency/)

**MIT  
Libraries**



# Some Strategic Principles

- Digital first
- Essential core of physical resources
- Open and equitable scholarship
- Support for data and computation

**MIT  
Libraries**



# Digital First + Essential Core

- What is essential and why?

*Imagine a future where all print  
is distinctive*

**MIT  
Libraries**





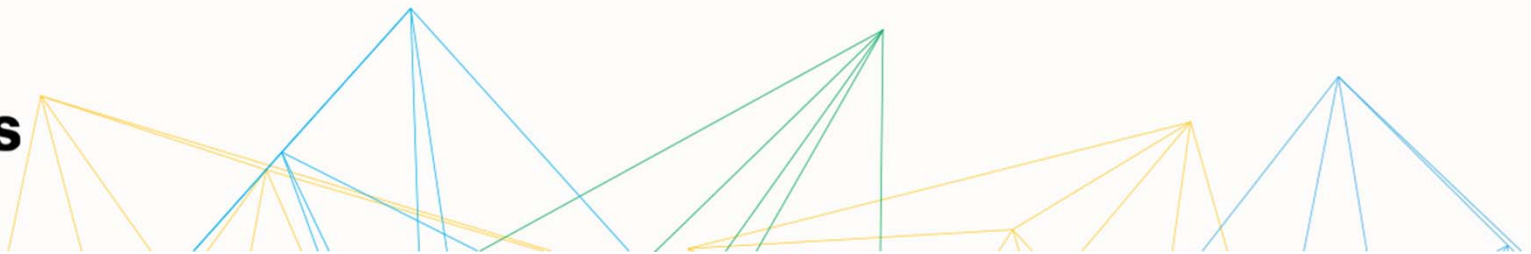
# Digital First

- 96% of collections spend is digital
- 82% of book spend is e-books
- Use of collections (FY22)
  - > 10 million digital uses
  - 85,000 print circulations

# Why Digital First ...

*enables open, equitable, and  
computational*

**MIT  
Libraries**

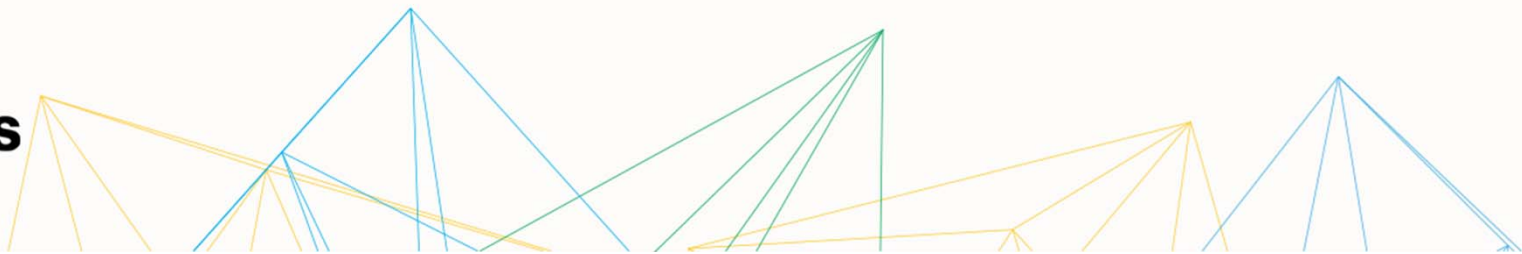


# Open & Equitable

“We are relentless in our pursuit of a more open and equitable scholarly landscape that prioritizes inclusion and reduces the marginalization of scholars and scholarship from disadvantaged communities.”



**MIT  
Libraries**



# Research Impact & Knowledge

- 93 ( #r i#d f x o | #d u w f d i v #r s h q
- P I W # I u d p h z r u n #
  - 43 #f r q w d f w
  - £ #5733 #R D #d u w f d i v
- Q r #I o w h y h u #M x q h #5353 #0 B

**MIT  
Libraries**

April 2023 | DSpace@MIT

## Open Access Downloads

**269,403**

Downloads this month

**23,360,754**

Downloads since OA policy began

**50,476**

Articles in the OA collection

# R shq#dgg#Htxwdeon#Vfkrøuwkls

- R shq#G dwd#S ul}h
- R shq#P rqrjwsk#Exqg
- FUHR V =#F hqwhu#iru#J hvhdufk#rq#  
Htxwdeon#dgg#R shq#Vfkrøuwkls



**MIT  
Libraries**



# CREOS:

## Center for Research on Open and Equitable Scholarship

- Library based research center
- Focus on:
  - Incentives and barriers
  - Impacts
  - Economic models
- Library researchers, visiting scholar, postdocs, students

**MIT  
Libraries**



# Collective Action: HELIOS and Ivy Plus

- HELIOS = 90+ universities
  - Coordinate on best practices
- Ivy Plus = 13 elite universities
  - Leverage influence



**MIT  
Libraries**



# White House OSTP memo

- Eliminates embargo
- Includes data

*“... highlight the dangers of allowing the interests of commercial publishers to dictate the paths available ...”*

- Ivy Plus Libraries letter to OSTP

**MIT  
Libraries**



# Data + computational

- Data management planning
- Key principle of MIT Framework
- Text and data mining support

MIT  
Libraries

**cm** CHEMISTRY OF MATERIALS Article  
Cite This: Chem. Mater. XXXX, XXX, XXX-XXX pubs.acs.org/cm

### Materials Synthesis Insights from Scientific Literature via Text Extraction and Machine Learning

Edward Kim,<sup>†</sup> Kevin Huang,<sup>†</sup> Adam Saunders,<sup>‡</sup> Andrew McCallum,<sup>‡</sup> Gerbrand Ceder,<sup>§</sup> and Elsa Olivetti<sup>\*,†</sup>

<sup>†</sup>Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, United States  
<sup>‡</sup>Computer Science Department, University of Massachusetts Amherst, Amherst, Massachusetts 01003, United States  
<sup>§</sup>Materials Science and Engineering, University of California Berkeley, Berkeley, California 94720, United States

[Supporting Information](#)

**ABSTRACT:** In the past several years, Materials Genome Initiative (MGI) efforts have produced myriad examples of computationally designed materials in the fields of energy storage, catalysis, thermoelectrics, and hydrogen storage as well as large data resources that are used to screen for potentially transformative compounds. The bottleneck in high-throughput materials design has thus shifted to materials synthesis, which motivates our development of a methodology to automatically compile materials synthesis parameters across tens of thousands of scholarly publications using natural language processing techniques. To demonstrate our framework's capabilities, we examine the synthesis conditions for various metal oxides across more than 12 thousand manuscripts. We then apply machine learning methods to predict the critical parameters needed to synthesize titania nanotubes via hydrothermal methods and verify this result against known mechanisms. Finally, we demonstrate the capacity for transfer learning by using machine learning models to predict synthesis outcomes on materials systems not included in the training set and thereby outperform heuristic strategies.

<b>1</b> SYNTHESIS Articles	<b>2</b> SYNTHESIS Database	<b>3</b> SYNTHESIS Insights
-----------------------------------	-----------------------------------	-----------------------------------

# Library as data

*“...a repository of knowledge  
and data that can be exploited  
and analyzed by humans,  
machines, and algorithms...”*



## Digital Humanities Workshop: A Generous Interface for the Discoverability of Text Collections - Jeffrey Shen

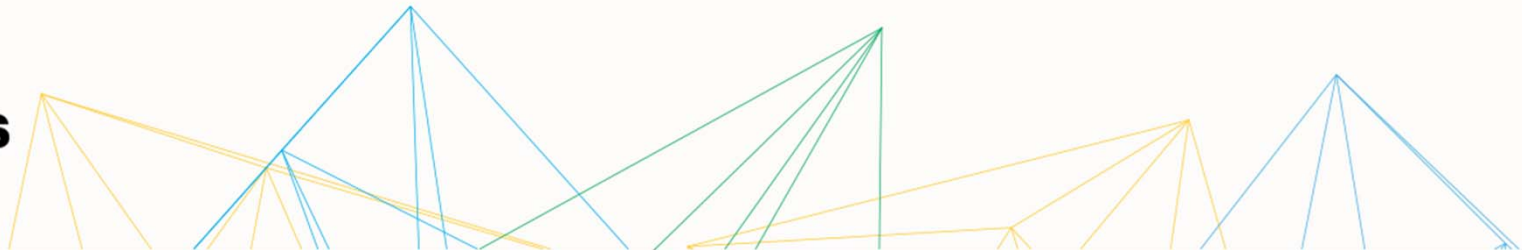
🕒 Tuesday, April 04, 2023 at 5:00pm to 6:00pm

📍 The Nexus, Hayden Library, 14S-130

---

**Jeffrey Shen** (Graduate Research Assistant at the Digital Humanities Lab & Master's in Engineering student, MIT) presents "A Generous Interface for the Discoverability of Text Collections," Tuesday, April 4, 5-6pm, in The Nexus.

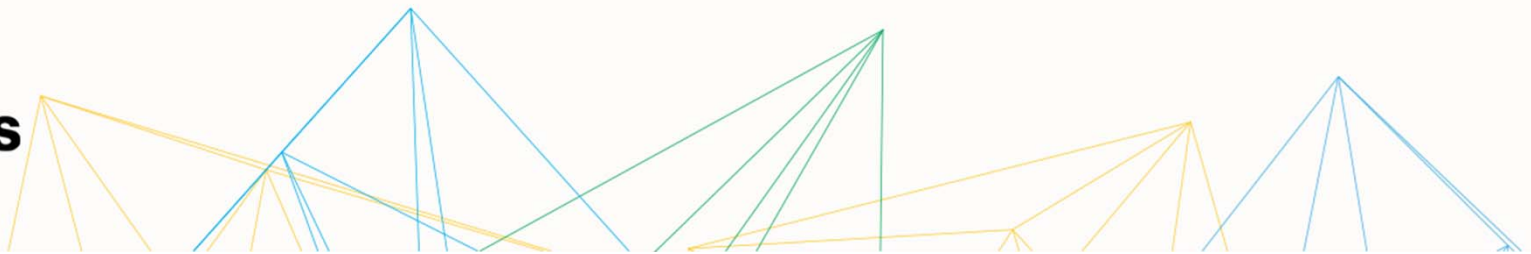
**MIT  
Libraries**

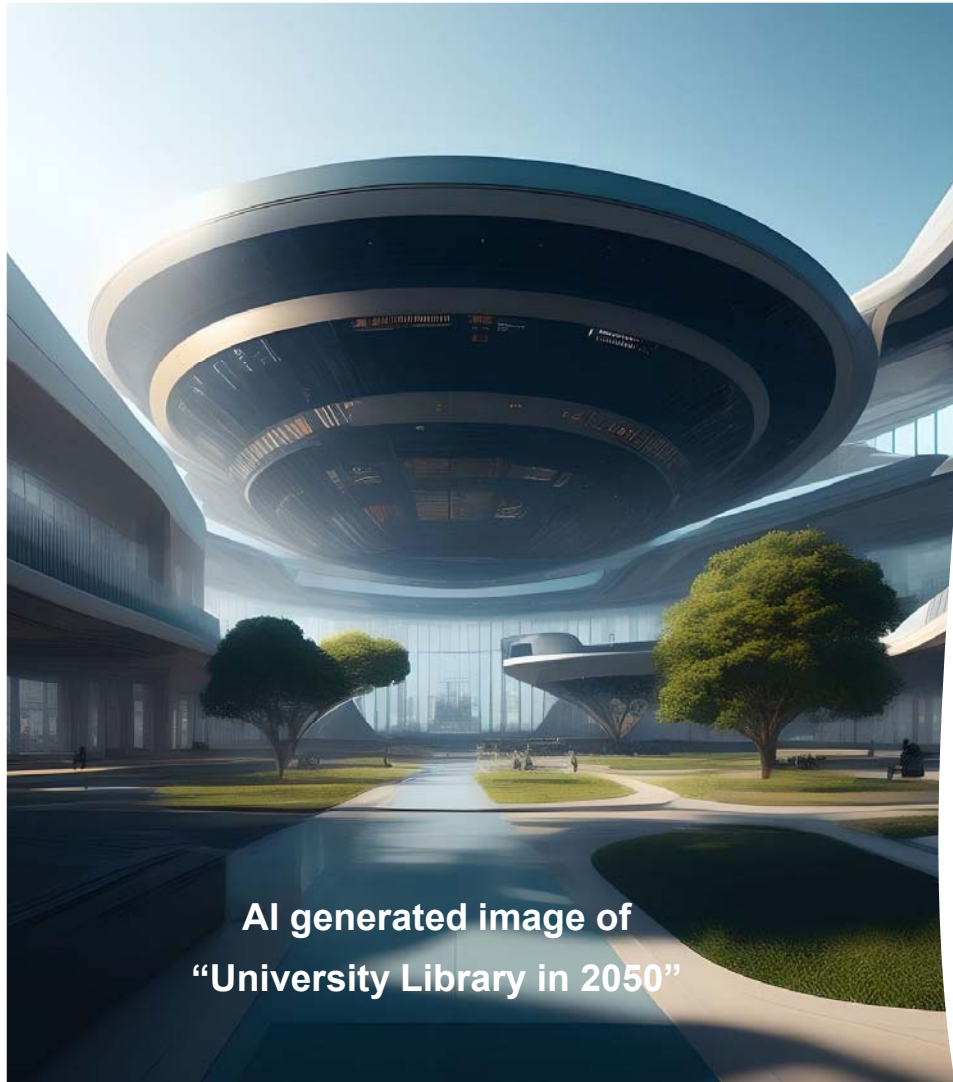


# Libraries in an AI future

- Address bias and ethical issues
- Access to tools, training, data
- Advocacy and education on responsible use of AI
- Leverage AI/ML in own work

**MIT  
Libraries**





AI generated image of  
“University Library in 2050”

## Imagine an open and equitable network of libraries ...

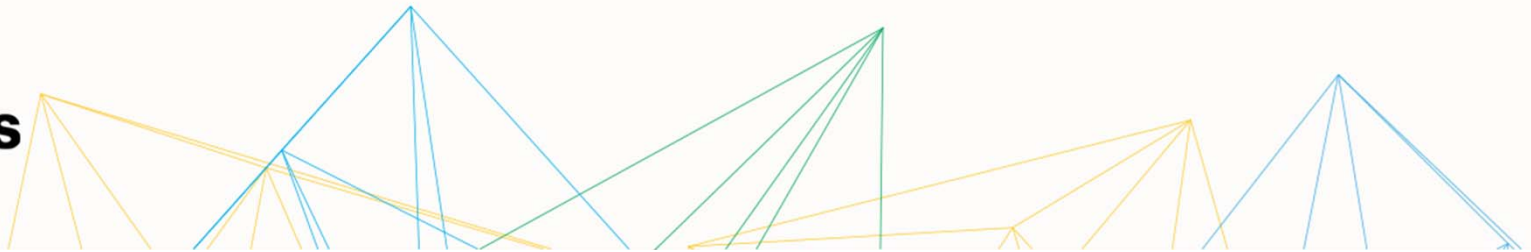
Where anyone, anywhere can access and contribute to the knowledge, tools, and expertise needed to meet global challenges and solve local problems

# Speculations and provocations

What is the role of university libraries in:

- Ensuring open scholarship is also equitable?
- Leveraging and promoting responsible use of AI?
- How will libraries be ranked in the future?
- What skills & expertise will library staff need?

**MIT  
Libraries**



Thank you!

2 MIT Library staff, heading to work at Hayden Library

