

Skills for the future academic library

Wednesday, 28 November 2018



Skills for the intelligent library

Andrew Cox, Stephen Pinfield and Sophie Rutter

See Cox, A.M. , Pinfield, S. and Rutter, S. (2018) The intelligent library: Thought leaders' views on the likely impact of artificial intelligence on academic libraries. *Library Hi Tech*. ISSN 0737-8831

What is AI?

The background features a complex, abstract design of overlapping, semi-transparent blue triangles and polygons. The colors range from light sky blue to deep navy blue. The shapes are layered, creating a sense of depth and movement, particularly on the right side of the frame.

AI

- ▶ “A cluster of technologies and approaches to computing focussed on the ability of computers to make flexible rational decisions in response to unpredictable environmental conditions” Tredinnick (2017: 37)
- ▶ “The bucket” of AI (Smith, 2016:221)
 - ▶ Big data
 - ▶ Analytics
 - ▶ Machine learning
 - ▶ Natural language processing
 - ▶ Data visualisation
 - ▶ Decision logic

Narrow/ weak AI - strong/general AI

- ▶ “For libraries the question is not so much what technology will be affected, but rather what technology, if any, will remain unaffected by AI” Fernandez (2016:22)
- ▶ “AI will transform library services, forever altering the mix of skills and tools needed to serve our users” Arlitsch and Newell (2017: 794).
- ▶ “Wide and deep effects” (JISC intelligent library blog)
- ▶ When and where? Has it already happened, is it happening now or is it the distant future?

Wood and Evans (2017)

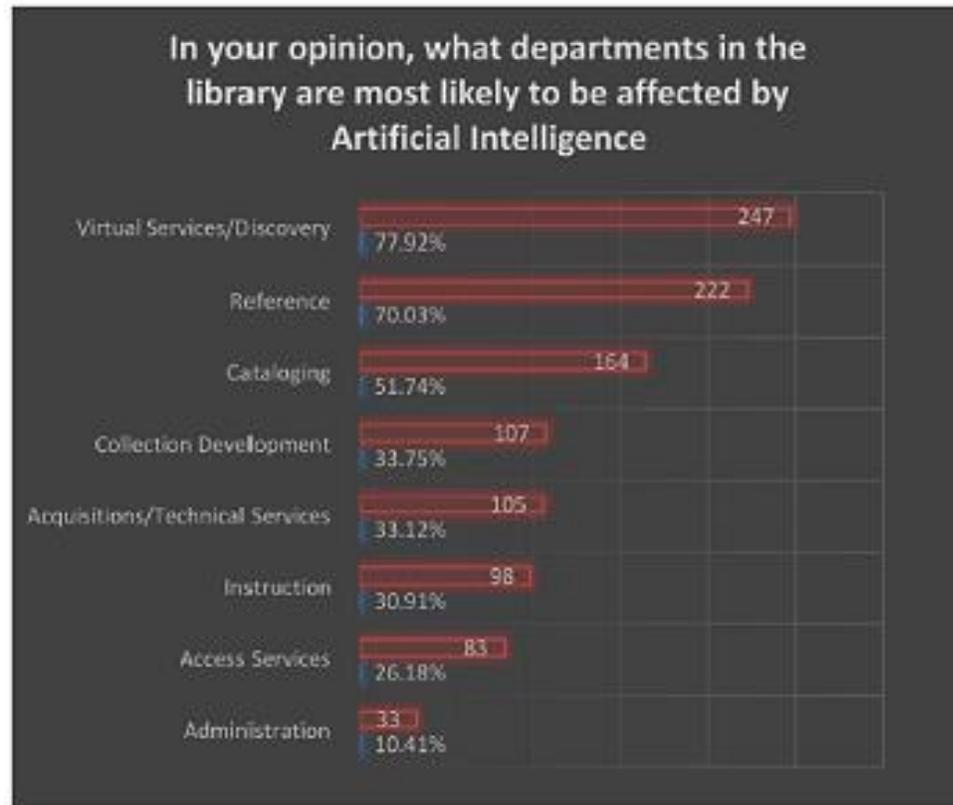


Chart 2: question two (n=317)

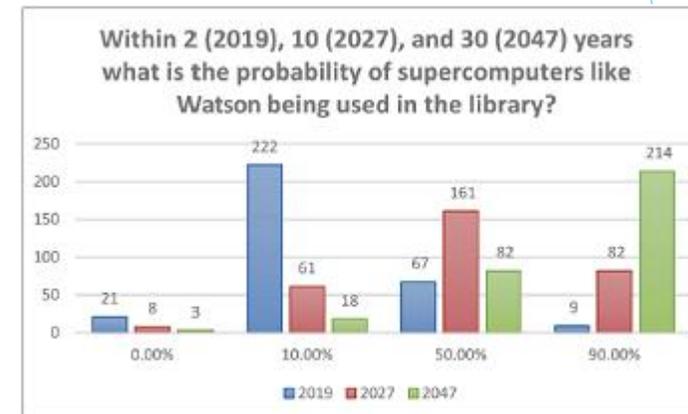
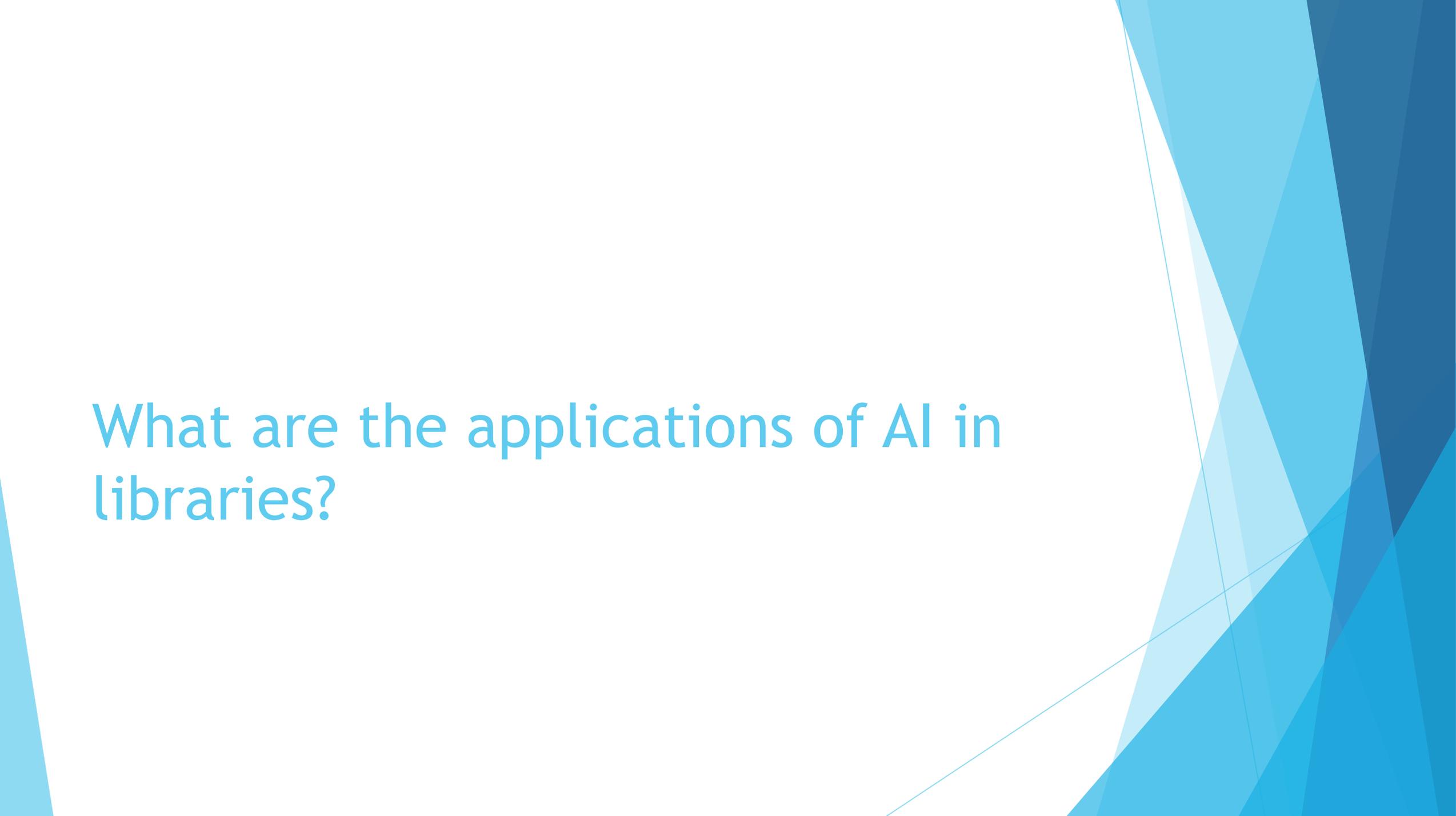


Chart 3: questions three (n=319), four (n=318), and five (n=317)

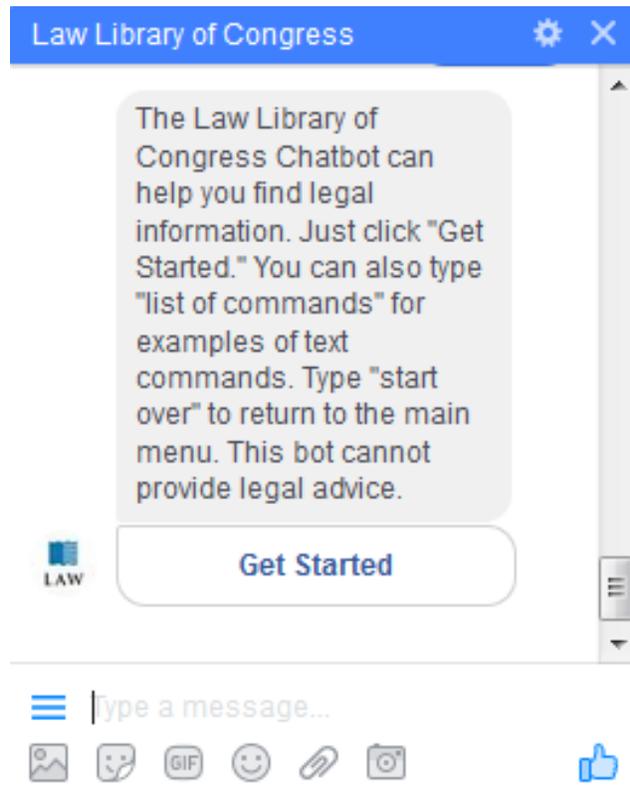
What are the applications of AI in libraries?

The background features abstract, overlapping geometric shapes in various shades of blue, ranging from light sky blue to deep navy blue. These shapes are primarily located on the right side of the slide, creating a modern, digital aesthetic.

Search

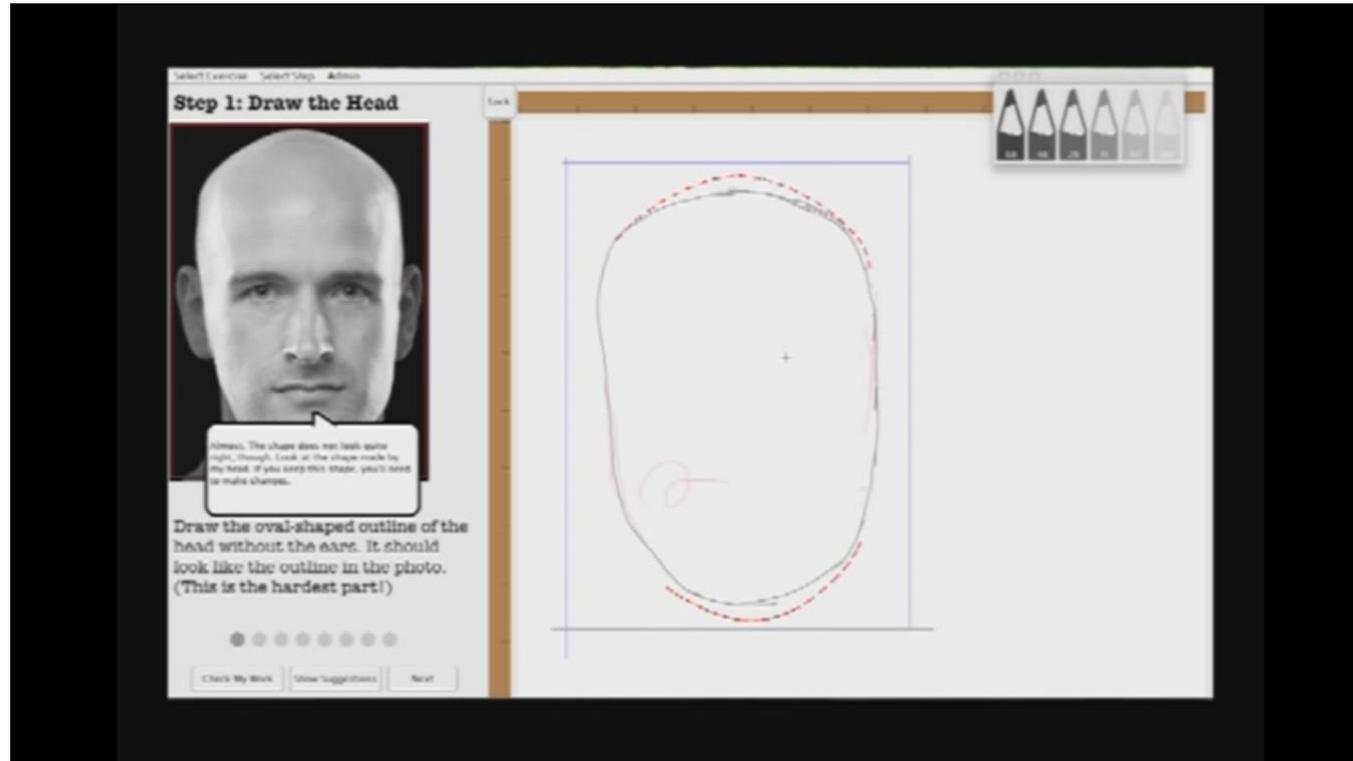
- ▶ Predictive text
- ▶ Intelligent agents
 - ▶ *“I think that will just grow massively in that research data will come to people’s finger tips because of certain searches and algorithms in the background that are finding them stuff that they need.” (Non-library participant)*
 - ▶ *“You could imagine providing a very distinct individual experience for each and every student and researcher based on AI.” (Library commentator)*

Chatbots



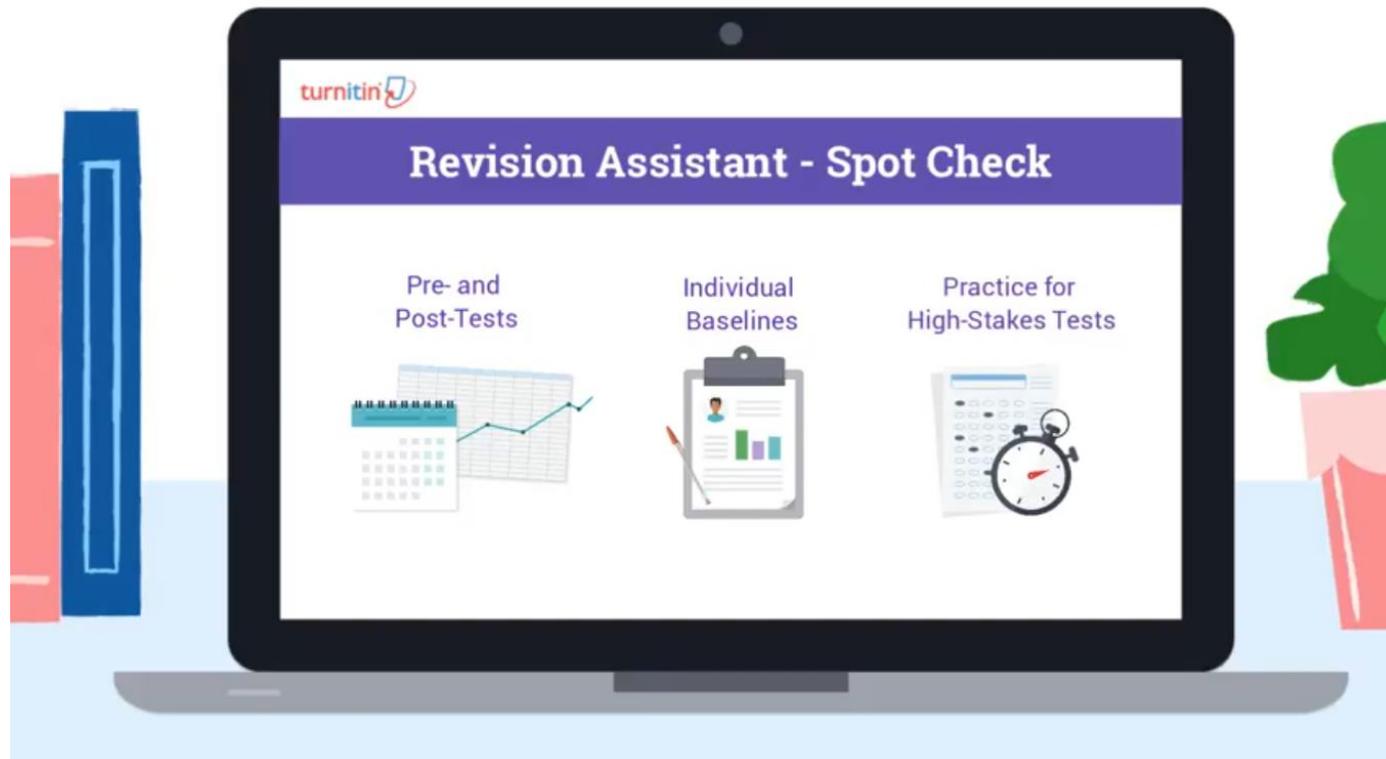
- ▶ Responding to queries... to conducting reference interview
- ▶ 24/7 availability, patience,
- ▶ System limitations, user acceptance

Intelligent tutors



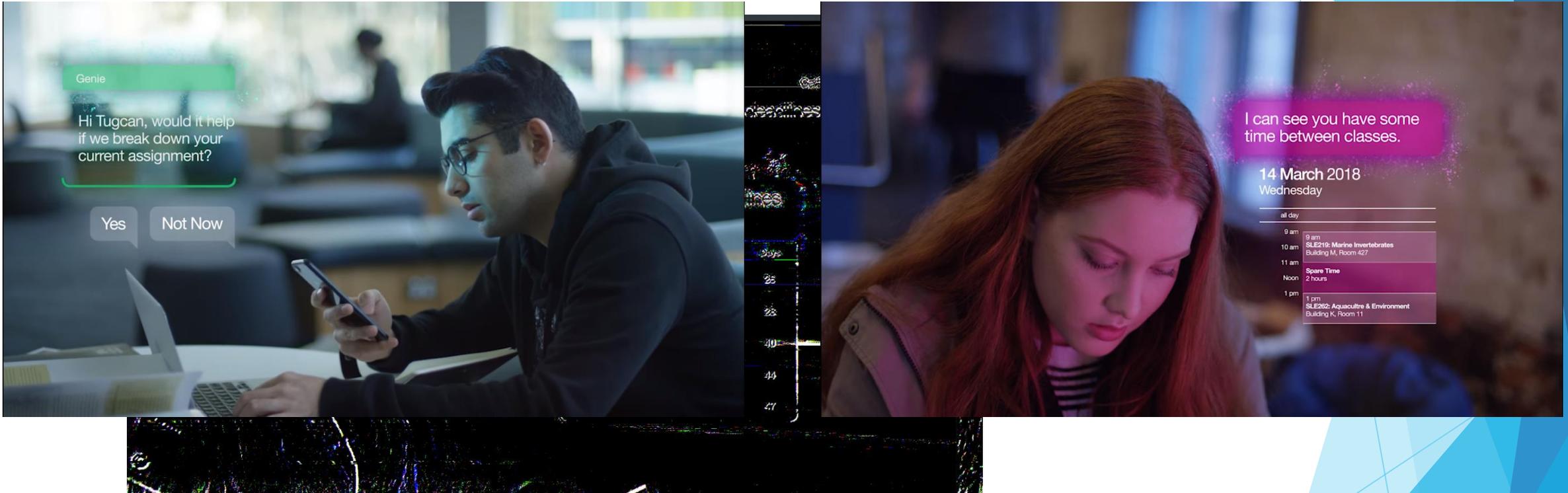
- ▶ <https://www.youtube.com/watch?v=IW7Q1xk7EKY>

Revision assistant (Turnitin)



▶ <https://www.youtube.com/watch?v=exfEbxQHGdc>

Deakin Genie “Always with you, always there for you”



▶ <https://www.youtube.com/watch?v=zsRPuU53E74>

BBB 2016B - Week 11

Time machine (choose week):

11



Registered students 1,098	VLE active students 930 ↑8.1% Previous week	Students at risk for next TMA 136 ↑20.9% Previous week	Last TMA average result 80 ↑0.9% Previous presentation	TMA submissions 792 ↑421.1% Previous week
--	--	---	---	--

10 ▾ Export Hide columns ▾

Student ID	TMA	Justification	Number of votes [Not Submit]	Next TMA prediction	Final result
A0000245	88 ● ● ● ● ●	Forum VLE activity in week 10 >=0, Forum VLE ac...		Submit	Pass
A0001074	98 ● ● ● ● ●	Forum VLE activity in week 10 >=0, Forum VLE ac...		Submit	Pass
A0001886	82 ● ● ● ● ●	questionnaire VLE activity in week 8 >=0, Forum ...		Submit	Pass
A0002323	82 ● ● ● ● ●	Forum VLE activity in week 10 >=0, Homepage V...	<div style="width: 20px; height: 10px; background-color: blue;"></div>	Submit	Pass
A0002528	44 ● ● ● ● ●	no summary VLE activity in week 8, Homepage VL...	<div style="width: 40px; height: 10px; background-color: blue;"></div>	Not submit	At risk

The Smart or Intelligent campus

- ▶ Monitor room usage
- ▶ Provide relevant digital resources based on space
- ▶ Adapting spaces for disability
- ▶ Help you navigate to a free study space
- ▶ Adjust room temperature to optimise learning
- ▶ Nudge you to go and have a coffee break with a discount on a coffee
- ▶ Monitoring well-being through facial recognition
- ▶ Monitor your attendance

Learnometer



Digital scholarship

- ▶ *“AI is going to be super profound on scholarly communication, because it is going to replace quite of lot of what we do with peer review today and I am not just talking so much about the AI will be able to peer review the paper. We will see that for sure: especially checking validity of statistics, checking for coherence between figures and tables. [...] We are going to see a world in which a paper can be published as a preprint, people can comment online, about that paper, and the AI will be able to look at the authority or the credibility of those people what the people have said, and from that pull an initial sort of peer review out right.” (Non-library participant)*
- ▶ *“I think all of these factors will spell the end of journals as a way of communicating science because why should I subscribe to one particular journal or several particular journals that are trying to do their own independent filters when I could just subscribe to a filtering service that is exactly tailored to my interest as a researcher?” (Non-library participant)*

Key issues around AI

The background features abstract, overlapping geometric shapes in various shades of blue, ranging from light sky blue to deep navy blue. These shapes are primarily located on the right side of the slide, creating a modern, tech-oriented aesthetic.

Issues

- ▶ Accuracy and validity
- ▶ Transparency and intelligibility
- ▶ Privacy, dataveillance and self censorship
- ▶ Fairness and ethics
- ▶ *Cost and its implications*
- ▶ Employment and social equality

The job market: utopia and dystopia

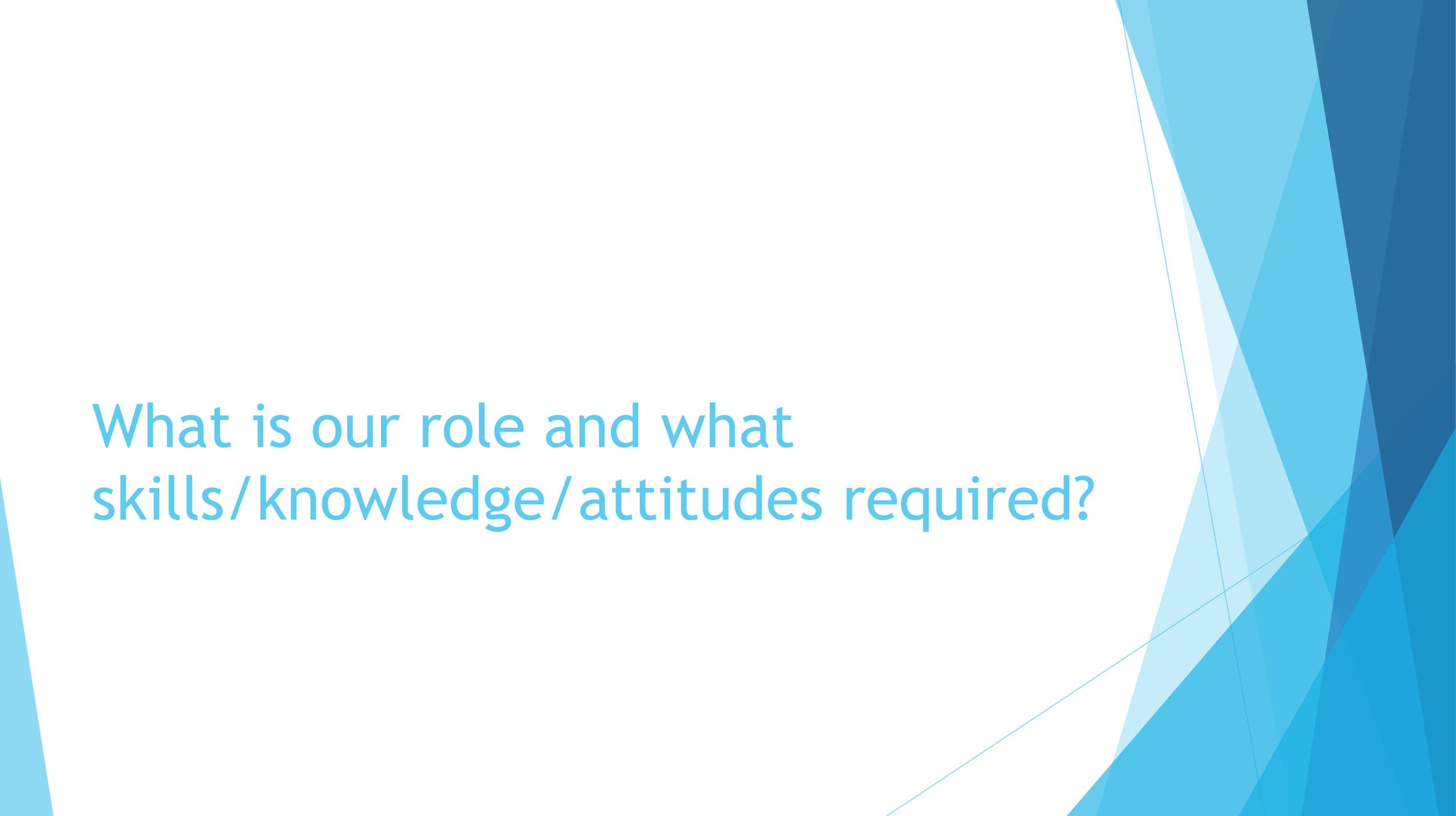
Susceptibility to computerisation	Emerging jobs related to Data and AI
Telemarketeers (99%)	Data scientist
Insurance Claims and Policy Processing Clerks (98%)	AI trainer
Umpires, referees and other sports officials (98%)	AI interaction designer
Booking keeping, accounting and auditing clerks (98%)	Machine learning engineer
Motion picture projectionists (97%)	Intelligence designer
Secretaries and admin assistants (96%)	Data curator
Library assistants (clerical) (95%)	Data evangelist
Cooks, short order (94%)	Digital knowledge manager
Retail salespersons (92%)	Cognitive copywriter
Tour guides and escorts (91%)	Data Journalist
<i>Source: Frey and Osborne (2017)</i>	Source: https://enterpriseproject.com/article/2017/12/8-emerging-ai-jobs-it-pros

The background features a complex, abstract design of overlapping, semi-transparent blue polygons in various shades, ranging from light sky blue to deep navy blue. The shapes are primarily located on the right side of the frame, creating a dynamic, layered effect. The rest of the background is plain white.

What is the Intelligent library?

Eleven issues raised by the paradigm of “the Intelligent Library”...

1. **What a library is, what a collection is and how to search for material.** The library may increasingly be seen as data, accessed through AI, the scope of the collection as framed by the AI;
2. **How established services are delivered,** for example by chatbots and other intelligent agents;
3. **What users expect of libraries:** through expectations learned in other areas;
4. **What information literacy is:** the ability to navigate a new space of AI tools and data, and data literacies, including critical awareness of how to protect one’s own privacy;
5. **Who users are:** some users will be AI tools; human access to content will be remediated through content being summarised and partially analysed for them by machines;
6. **What libraries know about users and so how the library is managed:** because of management decisions based on use data, combined with other learning and research analytics;
7. **How the library works with other internal and external partners and competitors,** especially IT services and new third-party commercial services;
8. **How library services are evaluated:** again through wider and deeper data;
9. **What skills librarians need:** be that for licensing, evaluation of data analysis and visualisation tools or using such tools themselves;
10. **Whether the library community can operate effectively at different levels beyond the institution:** in order to design and deliver services which will serve international communities of scholars and students;
11. **Whether we need librarians** (because of chatbots, automated metadata creation tools etc) **or libraries** (because of alternative intermediaries) at all, at least as currently conceived.

The background features abstract, overlapping geometric shapes in various shades of blue, ranging from light sky blue to deep navy blue. These shapes are primarily located on the right side of the frame, creating a modern, layered effect. The rest of the background is plain white.

What is our role and what
skills/knowledge/attitudes required?

Possible roles

- ▶ Providing content
 - ▶ Procuring content for AI
 - ▶ Data quality control
 - ▶ Procuring AI tools
 - ▶ Data curation, eg of derived data
 - ▶ Designing data infrastructure
 - ▶ Explaining how to navigate the infrastructure
 - ▶ Teaching critical data literacy
 - ▶ Designing AI tools
 - ▶ Data analysis and writing algorithms
- ▶ *“You will have to be very good at understanding the implications of the licences, contracts that they sign with some of these providers. You will need to be very good at understanding what it is that we can do with the derived outputs from these materials as institutions will want to potentially monetize some of those outputs.” (Library commentator)*
 - ▶ *“The curatorial role is absolutely essential... it is more important than ever because there is just more content.” (Non-library participant)*
 - ▶ *“Navigating skills are still needed.” (Library manager)*
 - ▶ *“Shouldn’t we be the bastions of information literacy and information privacy in an AI world?” (Library commentator)*

Strategies to deal with new roles

Package of options

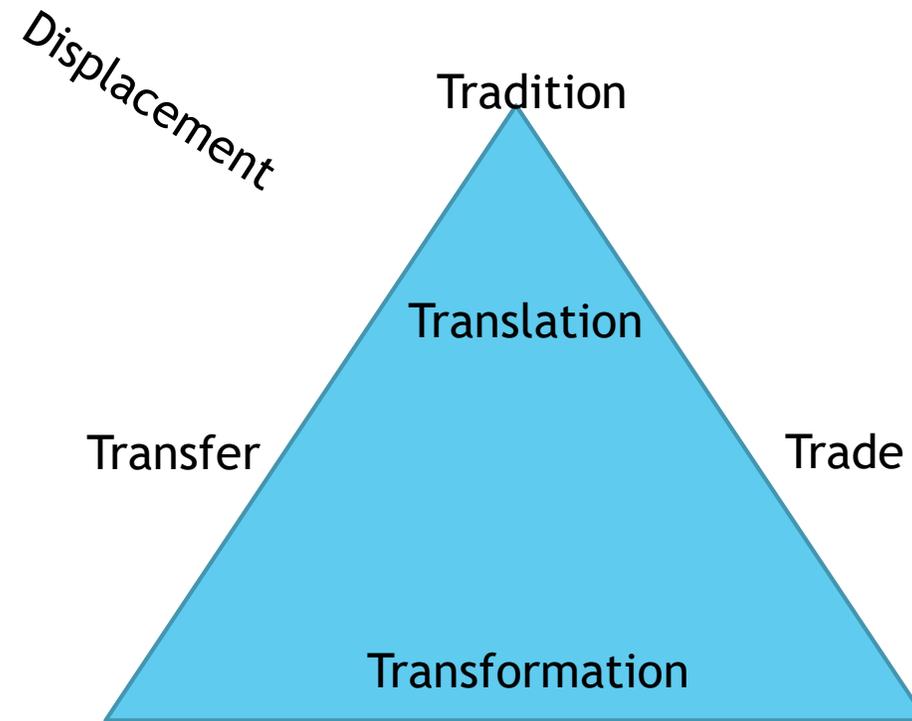
- ▶ Translation
- ▶ Retraining
- ▶ Recruitment
- ▶ Collaboration
- ▶ Technology
- ▶ Outsourcing
- ▶ Displacement

Issues

- ▶ Are staff willing?
- ▶ Are staff capable?
- ▶ Can we offer competitive wages?

- ▶ Inherent in AI
- ▶ What role do we retain?
- ▶ What is the risk?

Responses to new roles



Possible roles

- ▶ Providing content
- ▶ Procuring content for AI
- ▶ Data quality control
- ▶ Procuring AI tools
- ▶ Data curation, eg of derived data
- ▶ Designing data infrastructure
- ▶ Explaining how to navigate the infrastructure
- ▶ Teaching critical data literacy
- ▶ Designing AI tools
- ▶ Data analysis and writing algorithms

3 interlinked clusters of skills

- ▶ Procurement of content and tools as an extension of collection management (a translation of collection management roles)
- ▶ Advice and training (a translation of digital literacy roles)
- ▶ Design of tools and infrastructure (transformational role)

Questions

The background features abstract, overlapping geometric shapes in various shades of blue, ranging from light sky blue to deep navy blue. These shapes are primarily located on the right side of the frame, creating a modern, layered effect against the white background.

Skills for the future academic library

Wednesday, 28 November 2018

