

2024
**Research
Analytics
Summit**
Building Capacity, Empowering Skill Transfer,
and Energizing a Growing Community

Discussion Session

The Role of AI in Research

Robert Pilgrim, rpilgrim@uark.edu

Check out my blog



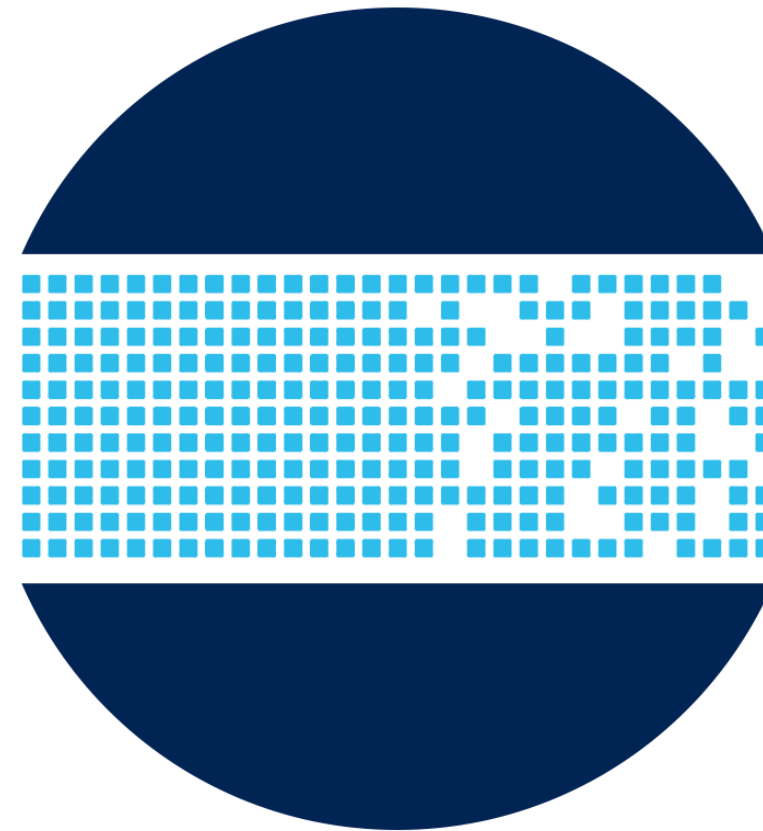
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The Role of AI in Research

- A. How can AI contribute to institutional research development?
- B. Identify internal and external collaborators?
- C. Matching Strategic Research Themes with Potential Funders
- D. Can AI Increase the Yield on Proposals

*Example ChatGPT prompts on last slide



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<https://researchanalytics.substack.com/>

My Background | Spare Time

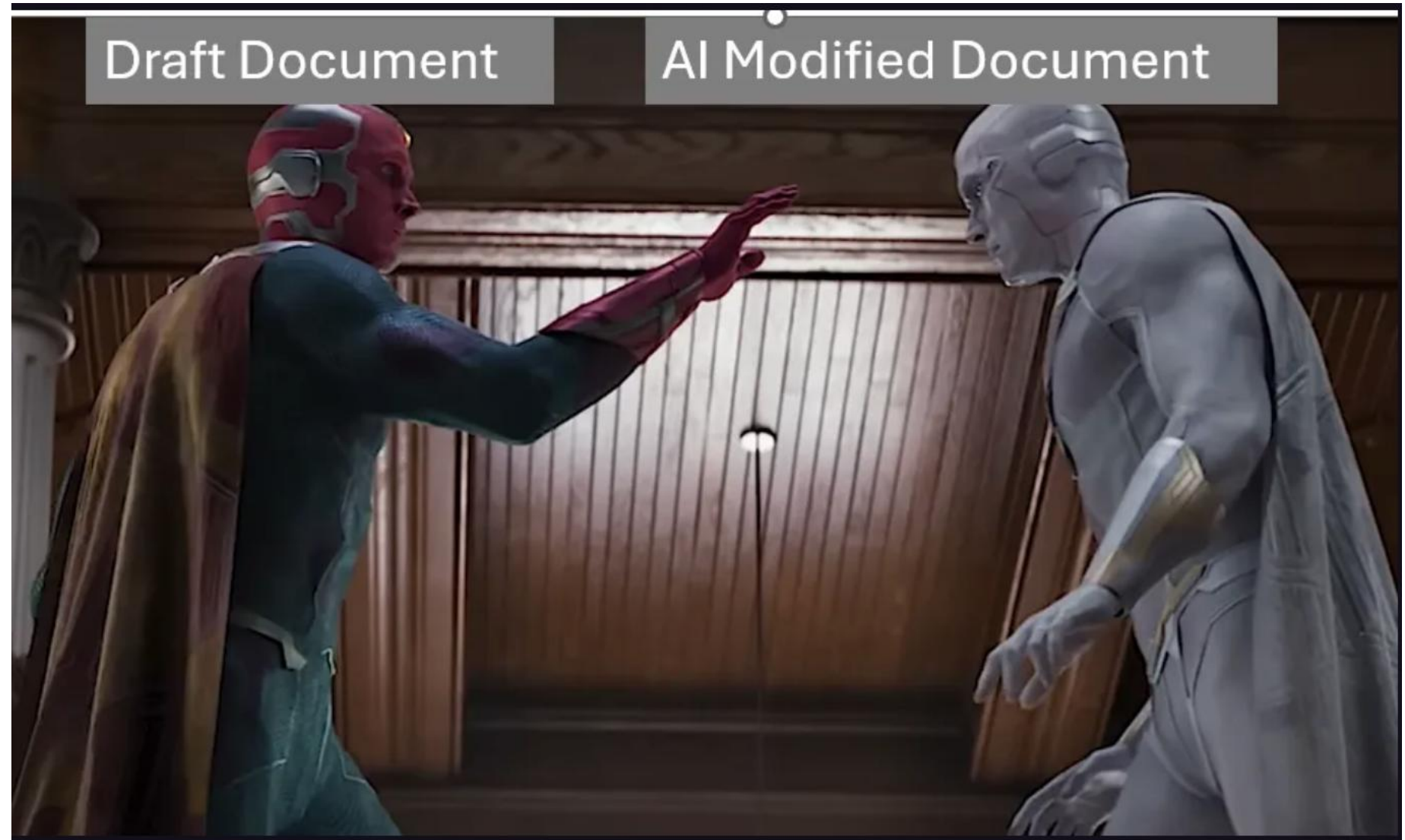
- In my “Spare” time over last 15months
 - Hundreds of hours in “Prompt Engineering”
 - What is prompt engineering?
 - ChatGPT, Claude | Chat Bots
 - Stack-AI | Build AI based web apps
 - Team-GPT | Build a prompt library
 - Speechify Studio, elevenlabs | Text to Speech
 - Invideo.ai | Text to Video
 - Mid Journey | Text to images

Overview

- This is a low-level discussion
- Who is using AI either in or out of work
 - What are you using it for
- Are you paying out of your own pocket for any AI platforms
- Ship of Theseus Paradox
- Thoughts on using an AI for proposal development

When does text stop being original

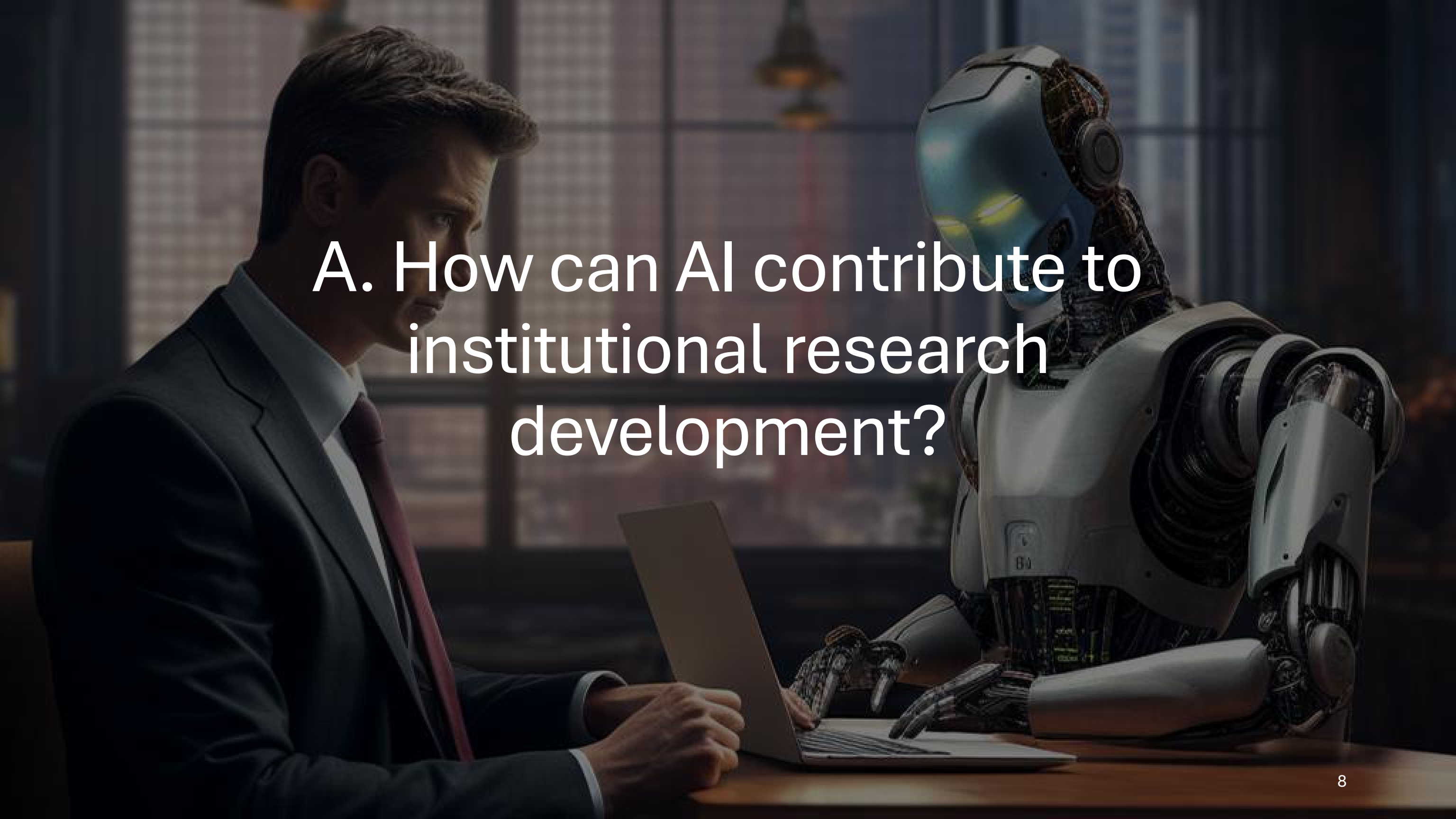
The Ship of Theseus is a philosophical paradox that explores identity. Imagine a ship where every part is replaced over time. Is it still the same ship? If all the original parts are used to build a new ship, which one is the real Ship of Theseus? This thought experiment raises complex questions about the nature of identity and change.



Personal Assistant



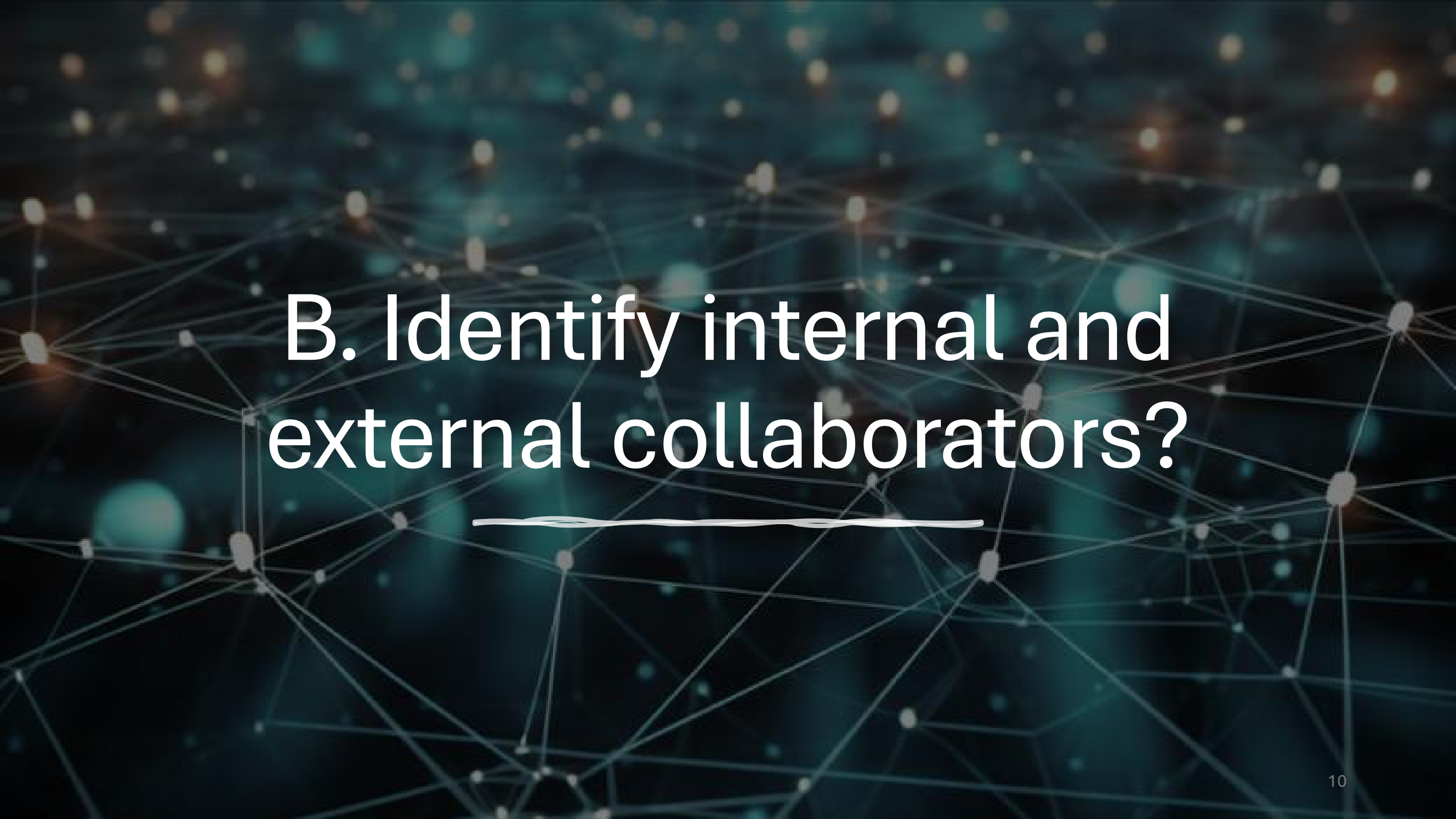
Thoughts on Using AI to
help write proposals?

A man in a dark suit and red tie is seated at a wooden desk, looking intently at a laptop. To his right, a humanoid robot with a blue and white metallic body is also working on the laptop. The robot's head has glowing yellow eyes. The background shows a large window with a view of a city skyline at dusk or night. The overall lighting is dim, with warm tones from the desk and the robot's lights.

A. How can AI contribute to institutional research development?

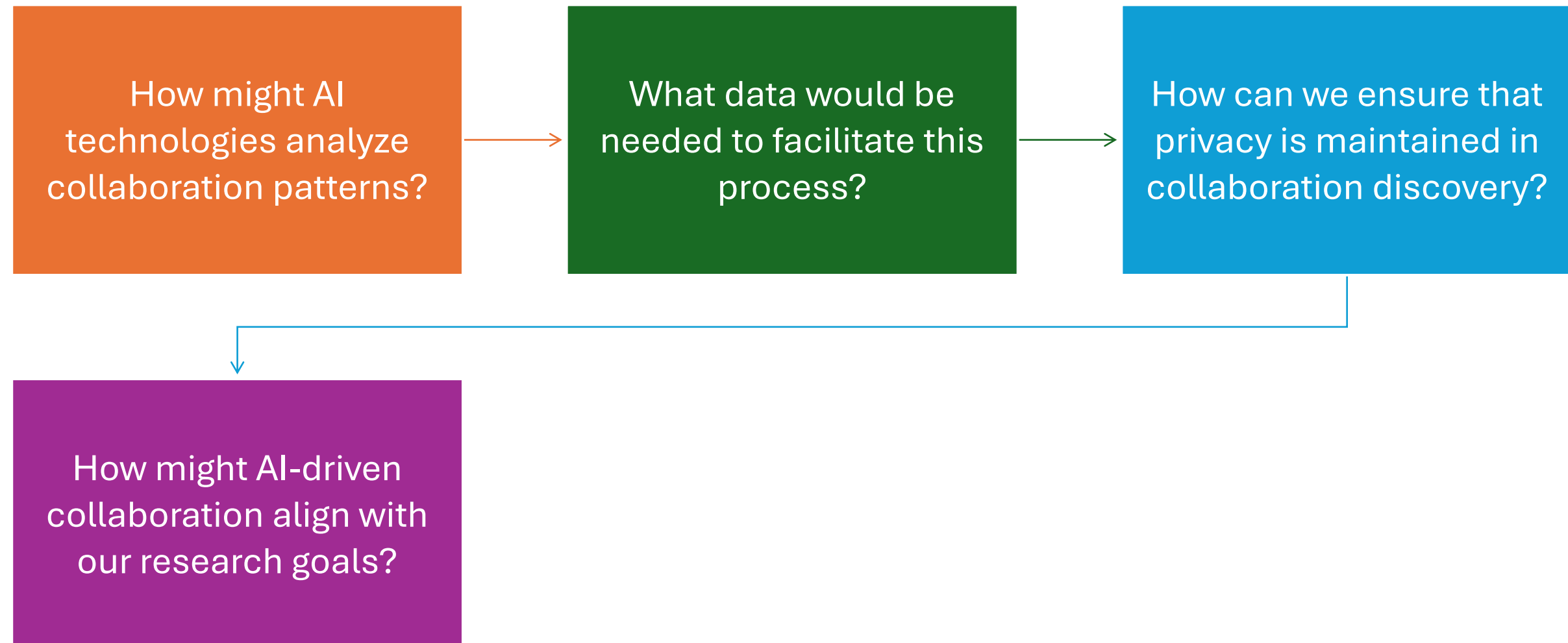
A. How can AI contribute to institutional research development?

- What are people doing now?
- What is on the roadmap?
- Initial steps to integrate AI into our existing research processes?
- How can we measure the success of AI in enhancing our research capabilities, and what benchmarks or key performance indicators should we consider to evaluate the effectiveness of AI integration?



B. Identify internal and
external collaborators?

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The background of the slide is a complex, abstract network visualization. It features a dense web of nodes, represented by small circles in various colors including blue, teal, green, yellow, orange, and red. These nodes are interconnected by a multitude of thin, light-colored lines, creating a complex, interconnected structure that resembles a molecular model or a data network. The overall aesthetic is high-tech and scientific, with a dark, almost black, background that makes the colorful nodes and lines stand out.

C. Matching Strategic Research Themes with Potential Funders

C. Matching Strategic Research Themes with Potential Funders



How could AI algorithms analyze and identify relevant funding opportunities?



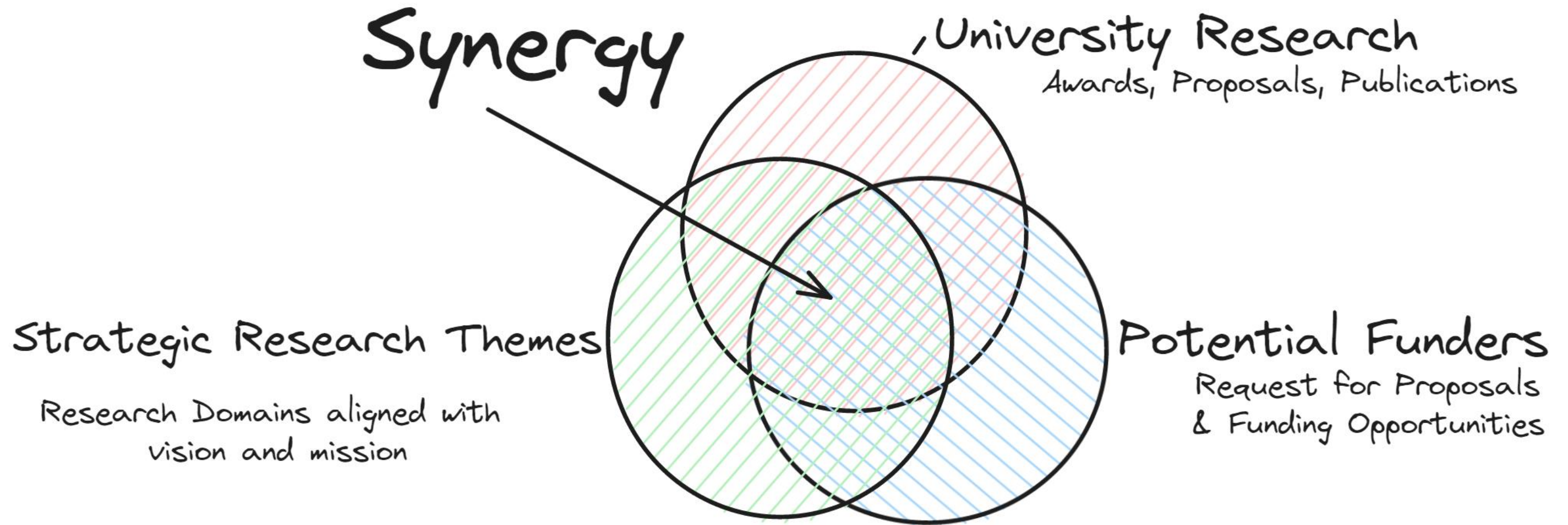
How might we train an AI system to understand our research themes?



What ethical considerations should guide AI's role in this process?

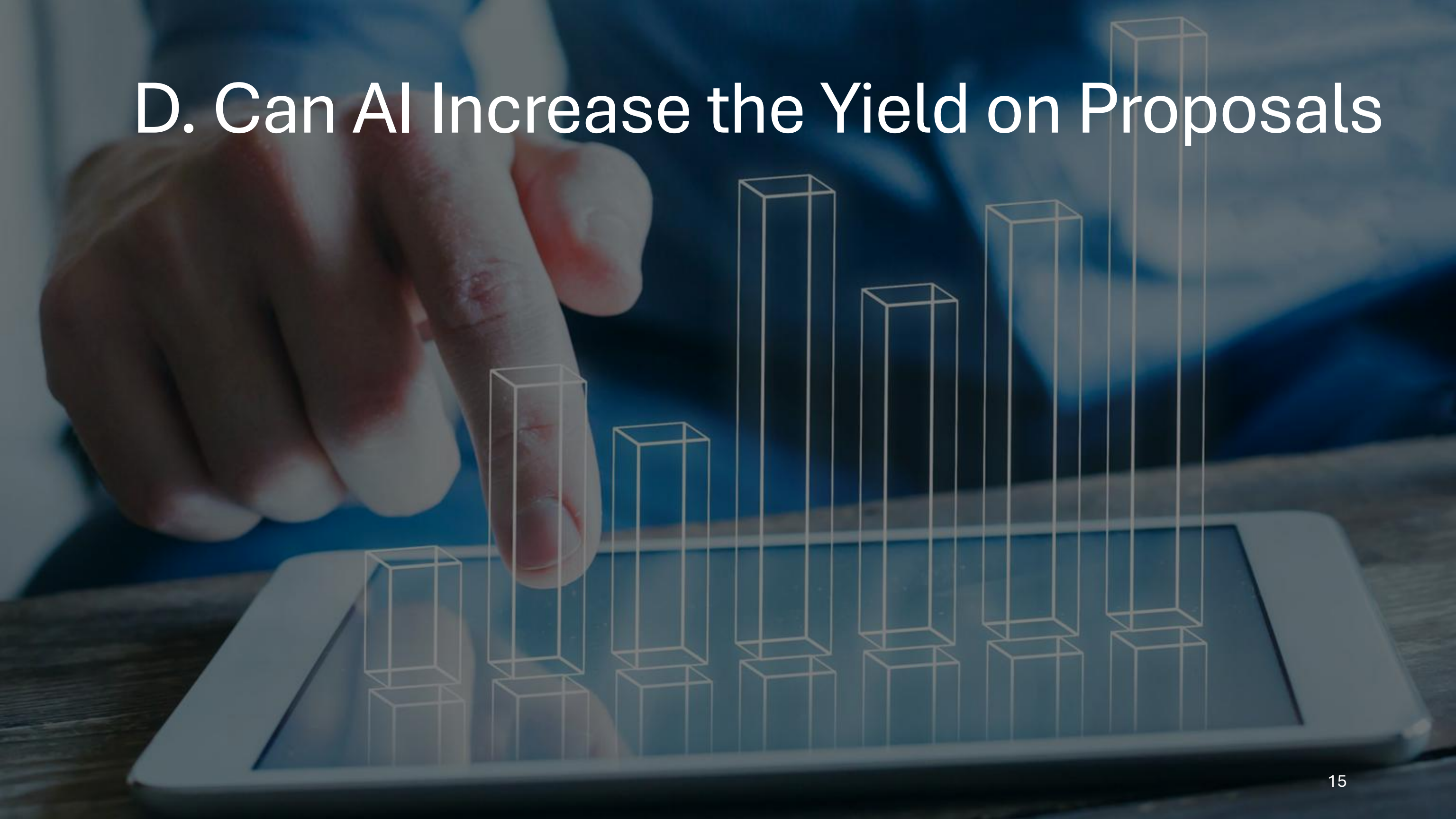


How do we evaluate the success of such matching?



Levering AI to do more than just keyword analysis

D. Can AI Increase the Yield on Proposals



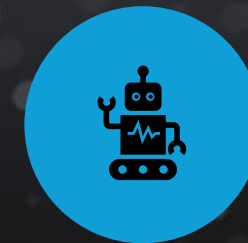
D. Can AI Increase the Yield on Proposals



How might AI contribute to enhancing proposal quality?



Can AI-driven analytics identify trends in successful proposals?



What data should be used to train AI for proposal enhancement?



How do we ensure that the human touch remains in AI-assisted proposals?



What are the risks and how might they be mitigated?

Applications

Writing Assistance

- Review and improve proposal drafts by checking grammar, style, and clarity.

Literature Search Assistance

- Identify relevant research articles, journals, and publications

Tailoring Proposals

- Assist in aligning the language and emphasis of the proposal with a specific funder's priorities.

Multidisciplinary Collaboration

- Provide information on different fields to aid in integrating diverse perspectives.

Accessibility

- Help in translating technical jargon into more accessible language.

Mock Reviews

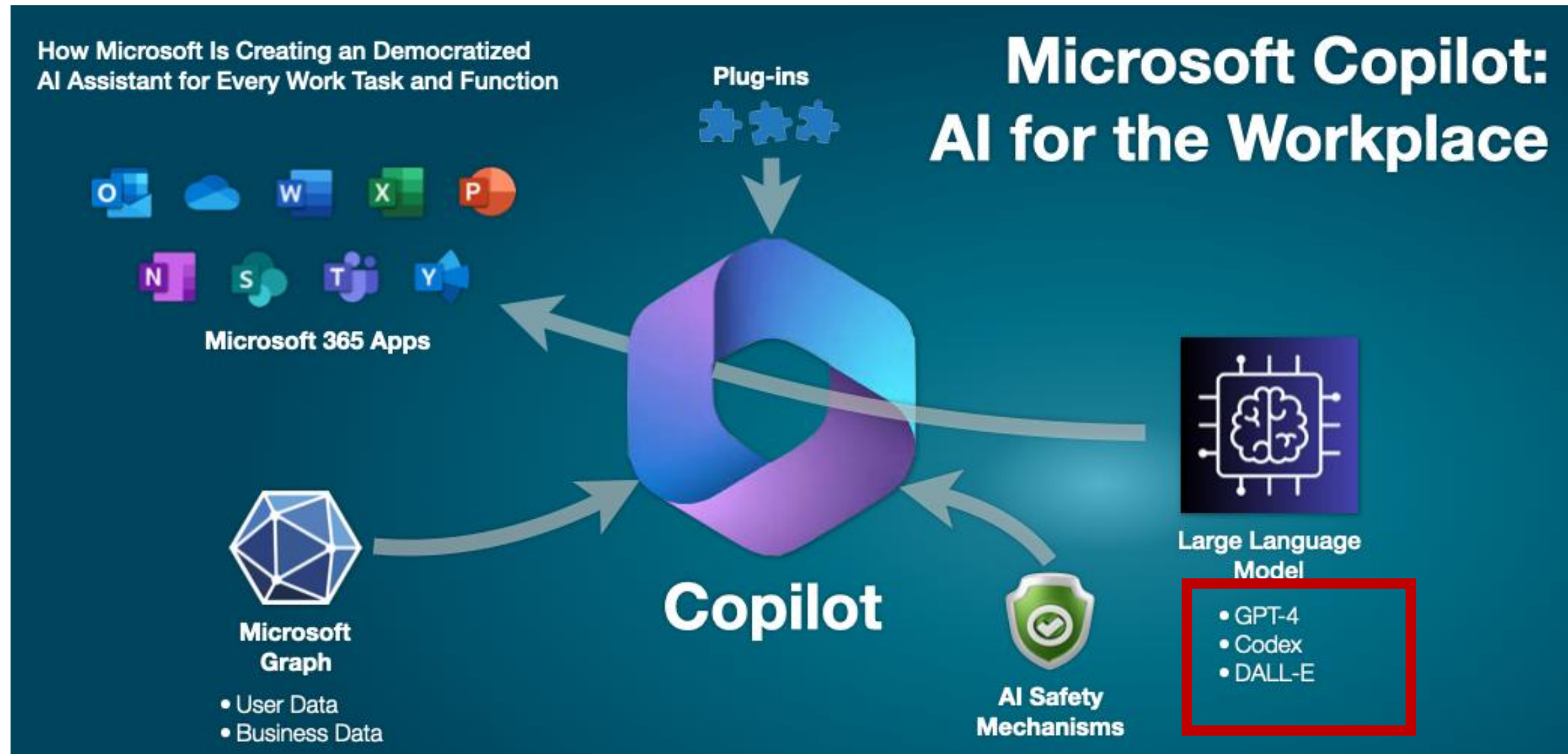
- Create a series of questions or evaluation criteria for conducting a “mock review” of the proposal

Staying Up-to-Date

- Assist in synthesizing information from various funding agencies and keeping informed about updates.

Soon Every Microsoft Product will have AI Built in

- Every researcher will be using Chat GPT4 to improve their proposals



What would a sponsored research version of this look like?



GPTs are GPTs: An Early Look at the Labor Market Impact
Potential of Large Language Models

Tyna Eloundou¹, Sam Manning^{1,2}, Pamela Mishkin*¹, and Daniel Rock³

¹OpenAI

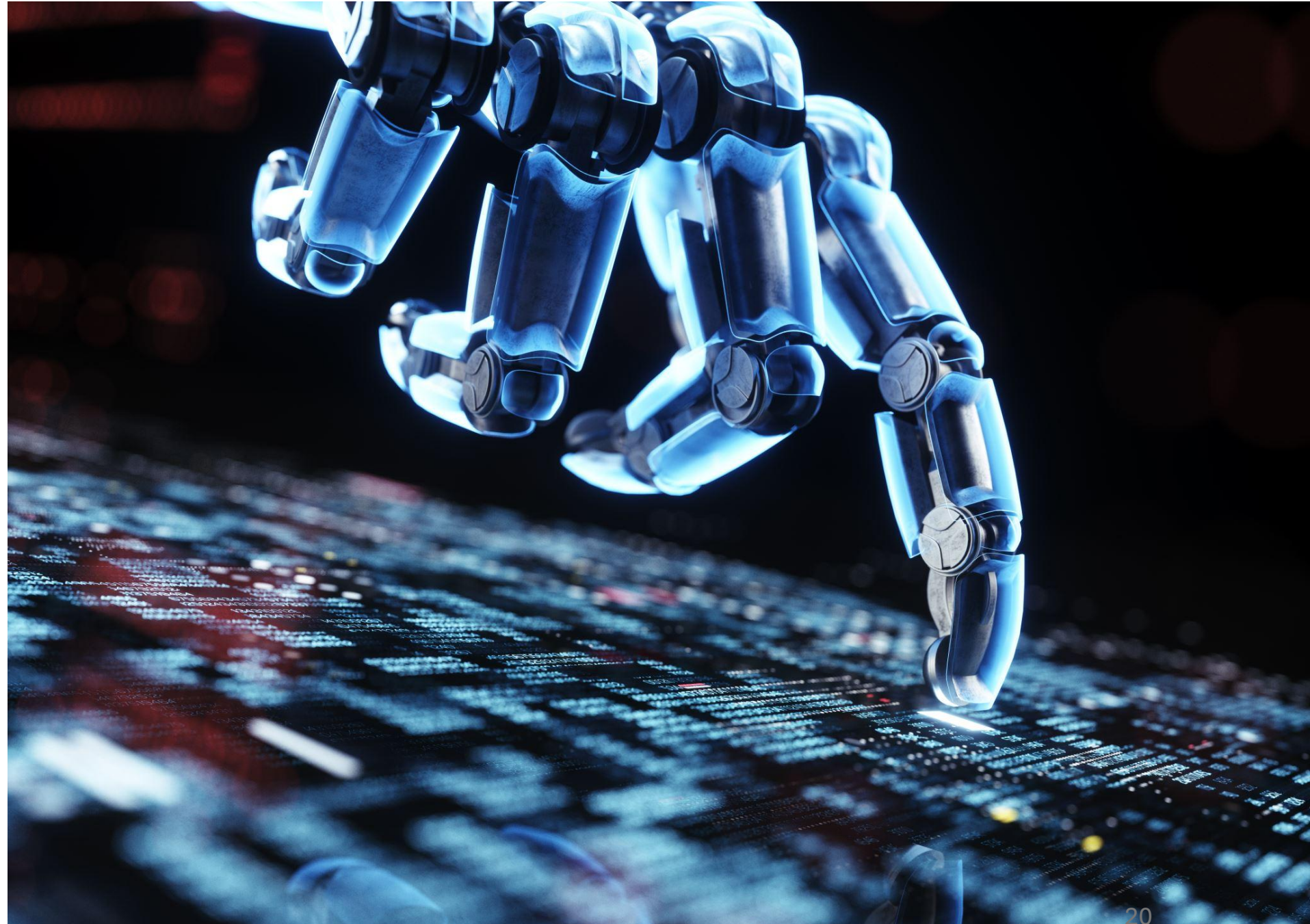
²OpenResearch

³University of Pennsylvania

March 27, 2023

Just another Piece of Technology?

- NO!
- It is one of the biggest disrupters of our time due to the speed it is advancing.



Just another Piece of Technology?



Not Leveraging AI

12 Months Ago



Leveraging AI (Now)
Dial-Up Internet!

Today



Leveraging AI
Fiber-optic internet speed

Near Future

Open AI Research Study on Job Market

- 80% of the American workforce belonged to an occupation where at least 10% of their tasks can be done (or aided) by AI.
- One-fifth of the workforce belonged to an occupation where 50% of work tasks would be impacted by artificial intelligence.

WORKING PAPER

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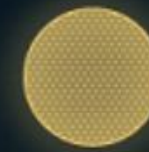
³University of Pennsylvania

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What makes **your** job exposed to GPT?

Exposure: potential economic impact

● Low Exposure



High Exposure



Low wages



Jobs requiring low formal education



Manufacturing



Jobs requiring many hours of on-the-job training



Agriculture



Critical thinking Skills



Mining



Science skills



High wages



Writing



Programming



Information processing



Work that requires college degree or higher



Minimal on-the-job training



Routine & repetitive work

High exposure means 50% or more of that job will be done, or aided by AI

Study on AI Impact on US Workforce in the Near Future

WORKING PAPER

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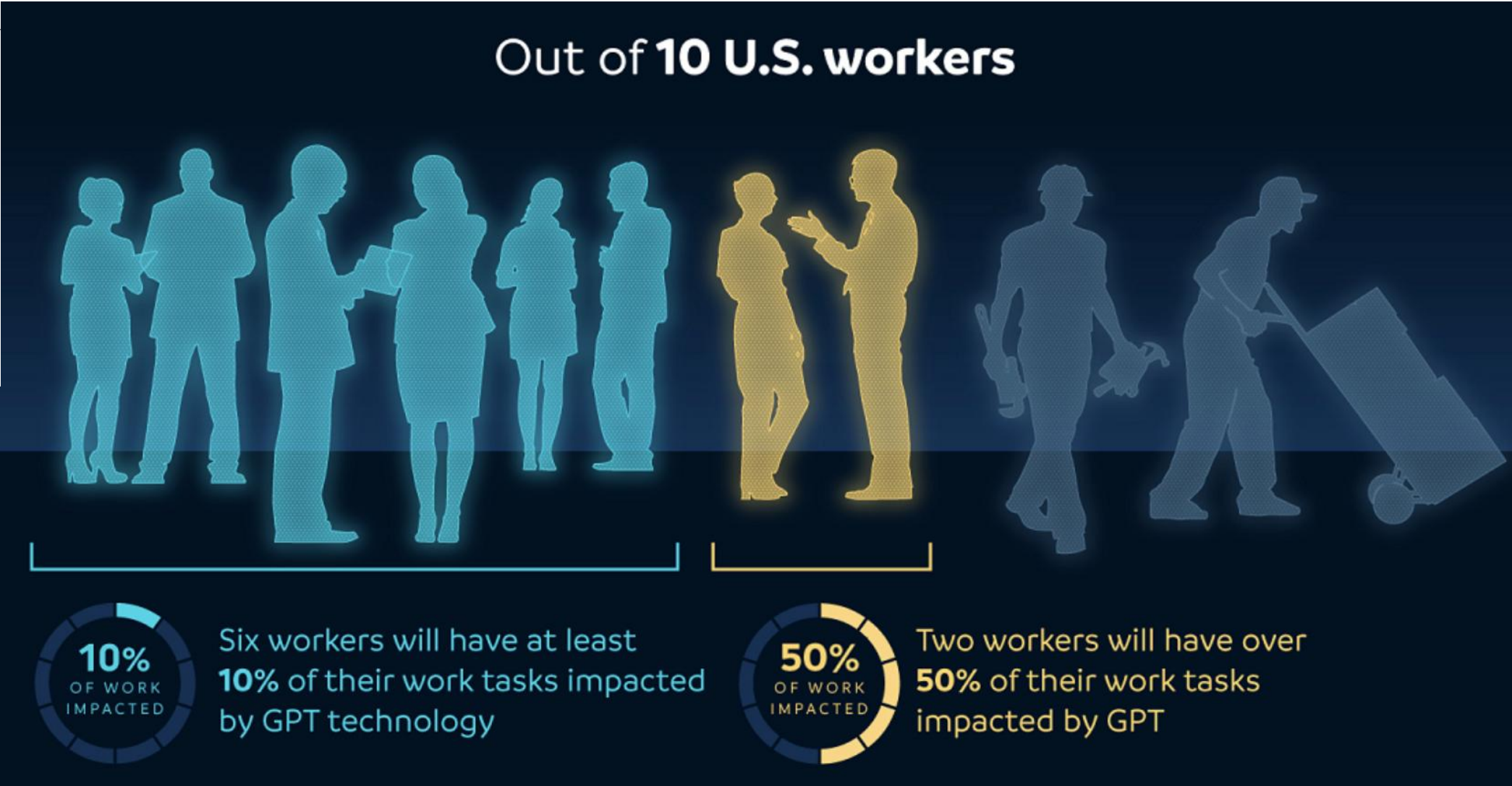
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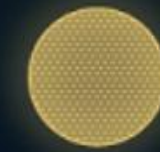
March 27, 2023



What **jobs** are exposed to GPT?

● Low Exposure

- Athletes
- Automotive Repairers
- Cement Masons
- Cooks
- Pile Driver Operators
- Stonemasons
- Tire Repairers and Changers
- Dishwashers
- Carpenter Helpers



● High Exposure

- Interpreters + Translators
- Survey Researchers
- Writers and Authors
- Public Relations Specialists
- Tax Preparers
- Mathematicians
- Blockchain Engineers
- Proofreaders and Copy Markers
- Accountants and Auditors

High expose means 50% or more of that job will be done, or aided by AI

OpenAI's Recommendation for Government Focus



Prepare for
economic
disruption



Reform education
policy



Reform worker
training policy



Reform safety
net programs

Study Results on Job Market Impact of AI

- <https://www.visualcapitalist.com/cp/which-jobs-artificial-intelligence-gpt-impact/>



High expose means 50% or more of that job will be done, or aided by AI

Image Generation

- Karate Cat
- Spiderman as a pig
- Realistic, drawing, girl
- A female worker sat opposite an AI robot, both on a laptop
- Wide angled selfie surfboarding in space with a spacesuit



Demo ChatGPT Prompt

I am attending a 2 day executive leadership summit on the role of AI and its impact on sponsored research. The audience will be senior leadership with basic knowledge of the topic, we want to have thought provoking questions that allow for in depth discussion

Write me a short story inspired from the movie “Hunger Games” except I want you to make it with a cat theme, replace humans with cats and use cat like names and references

I want to apply for a proposal to NSF I have a background an undergraduate in Astrophysics with a Ph.D. in Space science, I want to team up with a research from the field of educational statistic, what could we, with our combined skillsets be most suited for, and why?

[Real Proposal to play with](#)

[bunce_nsf_proposal_2011_rejected.pdf \(wordpress.com\)](#)

from here [Sample NSF Proposals | John Bunce \(wordpress.com\)](#)