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Generative AI – A Force for Positive Disruption

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AI and YOU

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When your hear the words "generative AI," what is the first thing that comes to your mind?

AI and YOU

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Have you used UMGPT or any other generative AI tools? What excites you the most about AI or Generative AI?

(If anything)

AI and YOU

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What <u>concerns</u> you the most about AI or Generative AI?

(If anything)

Generative
Artificial Intelligence
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History of AI

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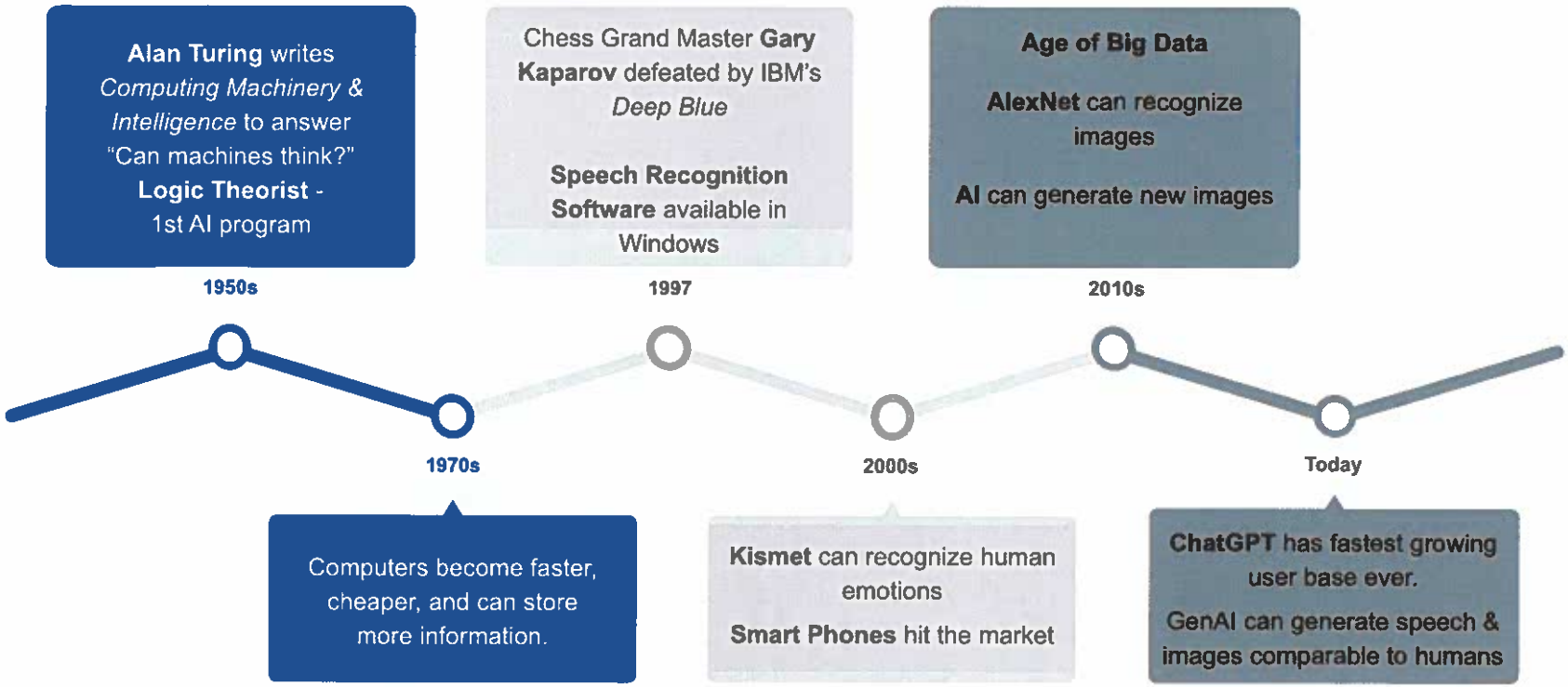

GenAI in 2023 and beyond

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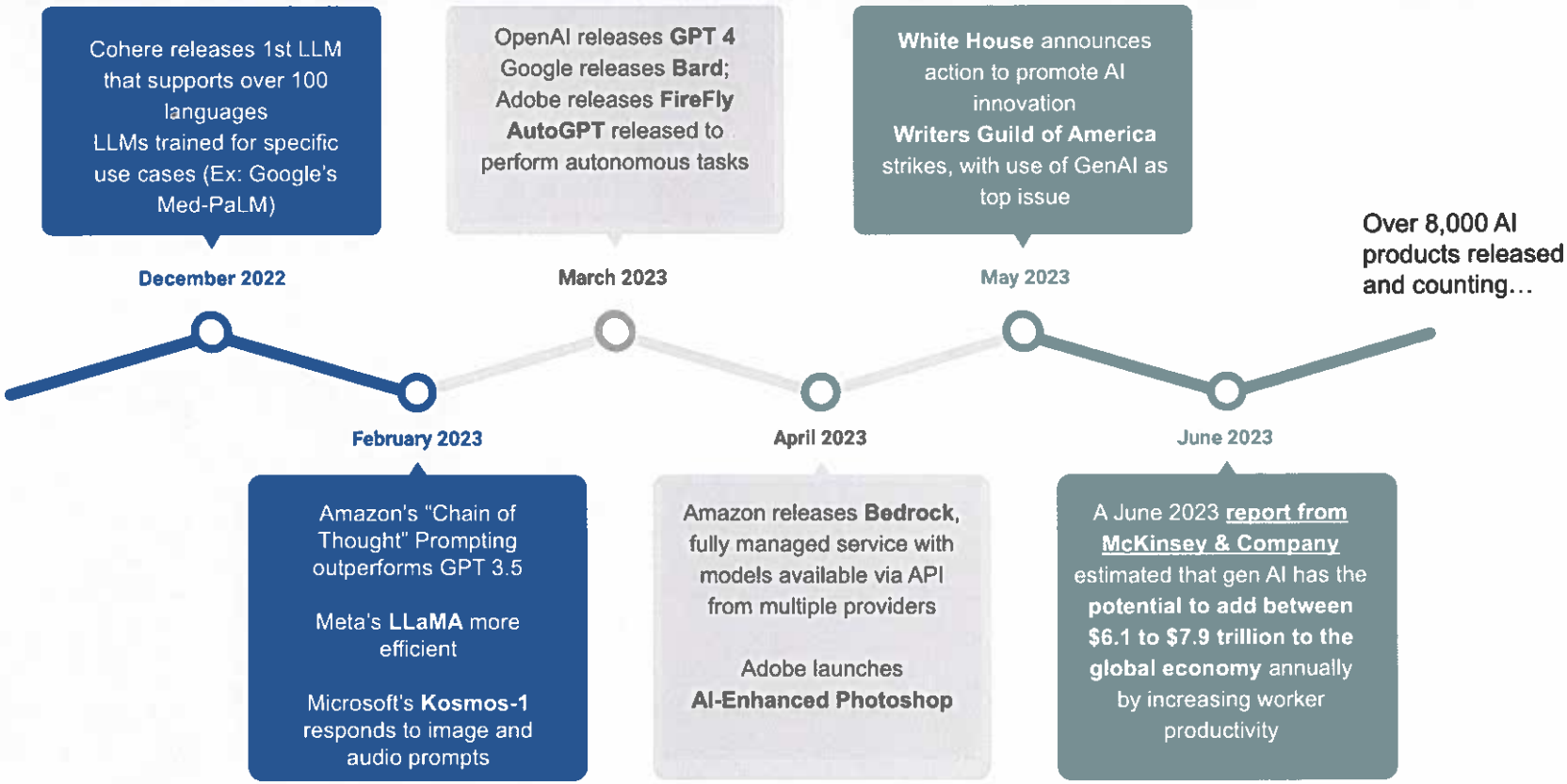

EXERCISE: What Comes Next?

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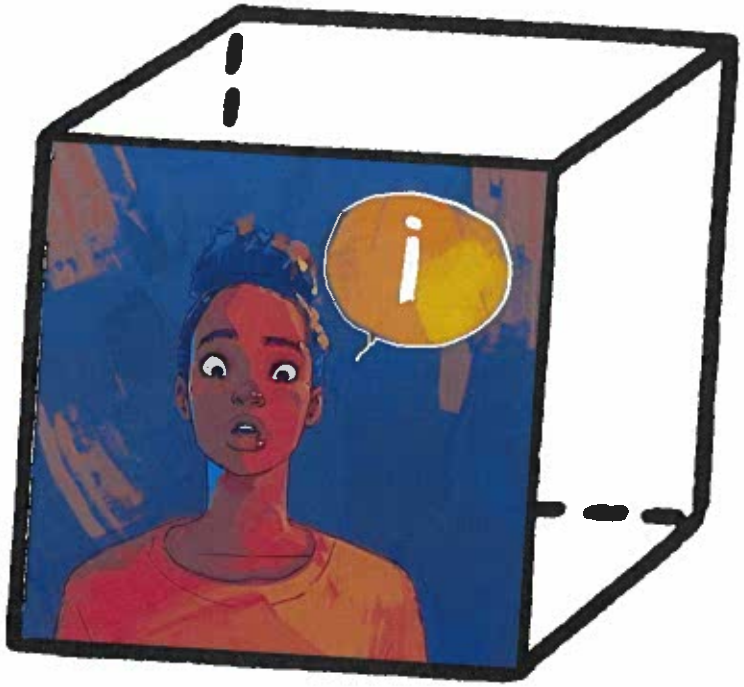

Complete this sentence:

"I _____."

EXERCISE: What Comes Next?

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Complete this sentence:

"I am _____."

What context should we use?

EXERCISE: What Comes Next?

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Complete this sentence:

"I AM GOING _____."

More parameters have been added. What's the context now?

Does the question now have a different meaning?

EXERCISE: What Comes Next?

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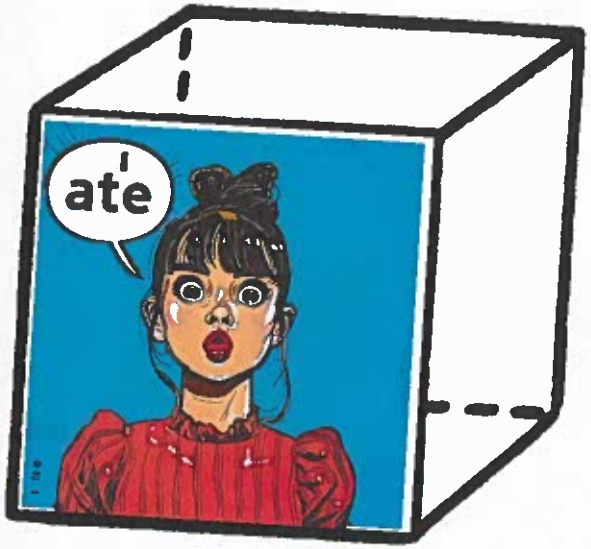


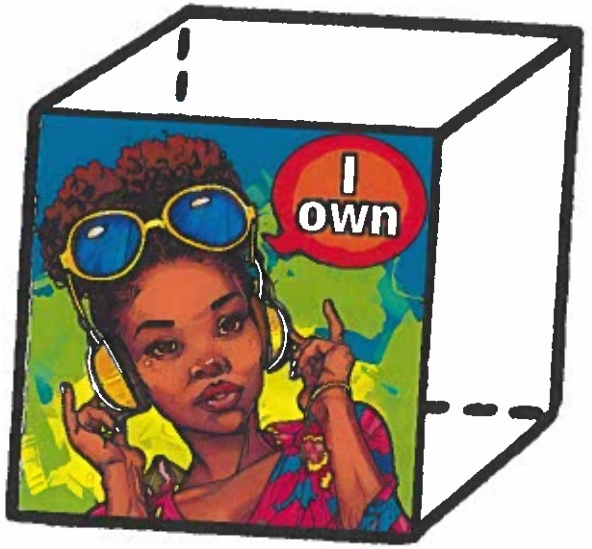
Take two more prompts.

"I ate ____."

"I own ____."

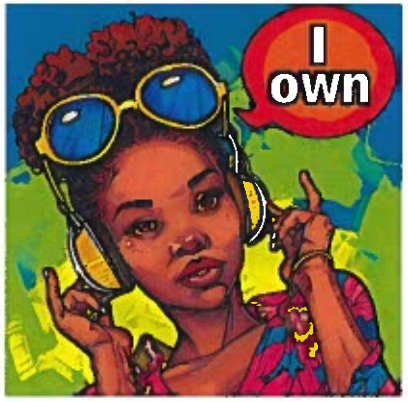
How does the context change when you answer them with...

"An apple"?



EXERCISE: What Comes Next?

“I ate an apple.”



“I own an Apple.”

CONGRATULATIONS

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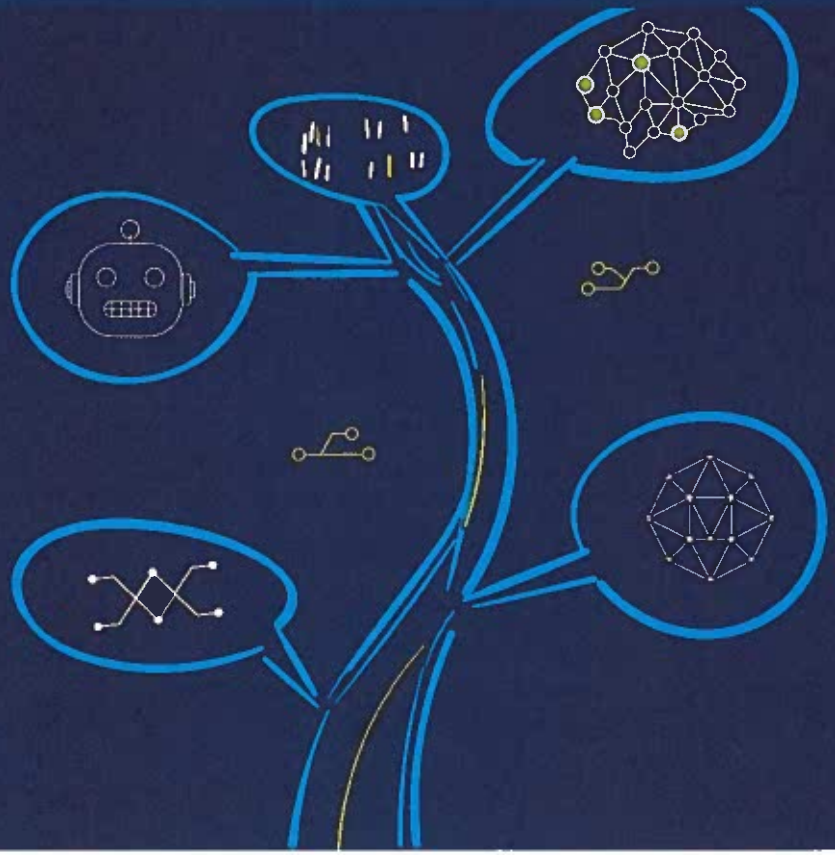
You did the work of a language model!

Context is key.



What else in your life does this?

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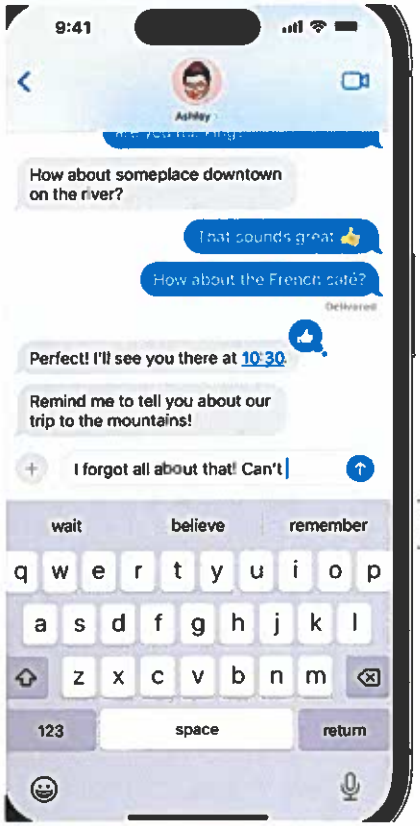

Predictive text; tap a suggestion to apply.

Predictive text on your smartphone.

When we text, our phones use the history of our past conversations to predict what word we might want to use next.

Other Technologies That "Learn" What You Like

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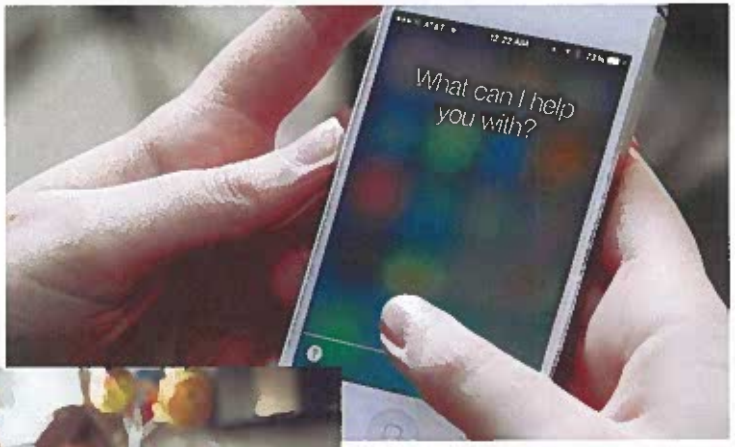

Predictive Text vs. GenAI

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With its limited memory, your smartphone might learn 50-100 words you like to use regularly.

What happens when you train something with billions of words and a vast memory?

That's a large language model.

That's what you use to train generative AI

How does generative AI create content?

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Through **training.**

GenAI has been trained with huge amounts of data to essentially **complete your sentence.**

It is using past training to finish what it ***thinks*** you want from your prompt.

That's what a language model does.

Why is Context So Important to GenAI?

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Think of how you completed those sentences.

GenAI can only complete sentences based on the data it has been trained on.

If you only train it on data from North America, it only knows how to complete those sentences in ONE WAY.

That's where AI bias comes from.

Training Makes All the Difference

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- → Context
- → Scope
- → Ethics
- → Diversity
- → Data quality

Disruption

AI will have an enormous impact on how we teach, learn, create new knowledge, operate, and provide patient care.

According to a July 2023 McKinsey report, by 2030 "activities that account for up to 30 percent of hours currently worked across the US economy could be automated – a trend accelerated by generative AI."

The ability to use Natural Language to analyze data will create new opportunities.

Disruption- Automotive

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- Create intelligent 3D models off of rudimentary sketches to accelerate process from idea to design [ReadWrite]
- GenAI used to create simulations to test a vehicle's response to various driving conditions, testing edge cases and improving safety [AWS Blog]
- GenAI is being used to suggest new molecules to test & design better batteries, reducing carbon emissions [Fast Company]

Disruption - Healthcare

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AI chatbot outperforms human doctors in responding to patient questions

BY JULIA MUELLER - 05/01/23 4:00 PM ET

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AI Now Diagnoses Disease Better Than Your Doctor, Study Finds

Peer-reviewed study says you'll soon consult Dr. Bot for a second opinion

David Leibowitz · Follow
Published in Towards Data Science · 7 min read · Sep 29, 2020

Adaptyv Bio Revolutionizes Protein Engineering Using Generative AI

Updated on April 14, 2023
By Daniel Martin

Disruption – Healthcare

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The first fully A.I.-generated drug enters clinical trials in human patients

'UBLISHED THU, JUN 29 2023•2:45 PM EDT | UPDATED THU, JUN 29 2023•3:51 PM EDT

Hayden Field
@HAYDENFIELD

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The wounds of war: AI leads arms race for burn assessment

Predictive analytics and artificial intelligence are pioneering new approaches to clinical wound care assessment.

Catherine Longworth | February 24, 2023

CIO JOURNAL

Anthem Looks to Fuel AI Efforts With Petabytes of Synthetic Data

Health insurance company is working with Google Cloud to generate 1.5 to 2 petabytes of synthetic data aimed at detecting fraud, delivering personalized service to members

By Isabelle Bousquette Follow

May 17, 2022 6:00 am ET

RESEARCH, PATIENT CARE, PRESS RELEASES | JUNE 7, 2023

New 'AI Doctor' Predicts Hospital Readmission & Other Health Outcomes

Disruption - Education

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KHARI JOHNSON BUSINESS SEP 15, 2023 7:00 AM

Teachers Are Going All In on Generative AI

Surveys suggest teachers use generative AI more than students, to create lesson plans or more interesting word problems. Educators say it can save valuable time but must be used carefully.

Intelligent.com Survey Reveals 1 in 3 College Students Used ChatGPT For Schoolwork During 2022-23 Academic Year

NEWS PROVIDED BY
Intelligent.com
30 May, 2023, 17:00 ET

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How AI can accelerate students' holistic development and make teaching more fulfilling

May 1, 2023

The Hill

Why media literacy is key to tackling AI-powered misinformation

With elections in the United States, United Kingdom, India, Taiwan, the European parliament and more than a dozen other European,...

Jul 23, 2023

Disruption - Legal Industry

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A.I. Is Coming for Lawyers, Again

Previous advances in A.I. inspired predictions that the law was the lucrative profession most likely to suffer job losses. It didn't happen. Is this time different?

BBC

Home News Sport Business Innovation Culture Travel Earth Video Live

Can AI cut humans out of contract negotiations?

6th November 2023, 07:06 EST

Share

These lawyers used ChatGPT to save time. They got fired and fined.

Artificial intelligence is changing how law is practiced, but not always for the better

By Pranshu Verma and Will Oremus

Updated November 16, 2023 at 10:39 a.m. EST | Published November 16, 2023 at 6:00 a.m. EST

Disruption - Marketing & Communications

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A Blessing and a Boogeyman: Advertisers Warily Embrace A.I.

Many ads are easier to make with the fast-improving technology. It also poses a threat to an industry already in flux.

Forbes

INNOVATION • ENTERPRISE TECH

Rise Of AI Also Raises Demand For Creative Skills

Joe McKendrick Senior Contributor
I track how technology innovations move markets and careers

Follow

How AI Can Augment Human Creativity with Efficiency

Generative AI platforms are revolutionizing the PR industry by automating the job's most tedious tasks, allowing PR professionals to work more efficiently and effectively. And as long as it's supervised by humans, AI implementation can lead to more compelling PR campaigns, with AI performing the majority of the work and humans adding the final touches to achieve the most optimal results.

Disruption - Social Work

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Is it right to use AI to identify children at risk of harm?

Machine learning is being used to help protect children, but it raises ethical questions

National standards for machine learning in social care needed to protect against misuse, urges review

New report combines social work and artificial intelligence to address racial bias in housing for people experiencing homelessness

Disruption - Engineering

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Gartner Says More Than 50% of Software Engineering Leader Roles Will Explicitly Require Oversight of Generative AI by 2025

Engineers enthusiastic about AI but lack the skills to exploit technology's potential claims report

AEROSPACE
MANUFACTURING and DESIGN

The good, the bad, and the awful of AI in aerospace

Firms must strike the right balance in adopting artificial intelligence (AI) to maximize benefits and minimize risks.

Disruption - Free Speech

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ACLU warns of free-speech risks in FEC oversight of AI-generated election ads

Greg Lukianoff testifies before Congress on 'chilling threat' to free speech posed by AI regulation

Harvard professor Lawrence Lessig on why AI and social media are causing a free speech crisis for the internet

Disruption - Free Speech

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Potential Positives:

- Real-time removal of hate speech and violent images from social platforms
- AI facilitates communication across languages
- Speech recognition and natural language processing can enhance accessibility

Potential Negatives:

- AI bias in content moderation
- Overuse of AI surveillance online
- Proliferation of deepfakes

Disruption - Literature, Science, & the Arts

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Researchers from MIT have identified "four primary areas for the societal impact of generative AI"

- Shifts in Culture & Aesthetics
- Legal Dimensions of Authorship
- The Labor Economics of Creative Work
- Impacts on the Media Ecosystem

"...generative AI is not the harbinger of art's demise, but rather is a new medium with its own distinct affordances."

---

artnet news A.I. Art Experts Dismiss Fears That the Technology Will Destroy Humanity. But It Could Make Culture Really Boring

AI and Art

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Higher Education

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What approach was used at the University of Michigan's towards Generative AI?

Our Vision

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"Generative AI (GenAI) is disrupting all aspects of society, from teaching and learning to art and design to engineering innovation."

Generative Artificial Intelligence Committee Report
July 2023

Our collective vision is to provide "just in time" generative AI tools to support and augment the innovative work our U-M community does each day.

U-M GPT

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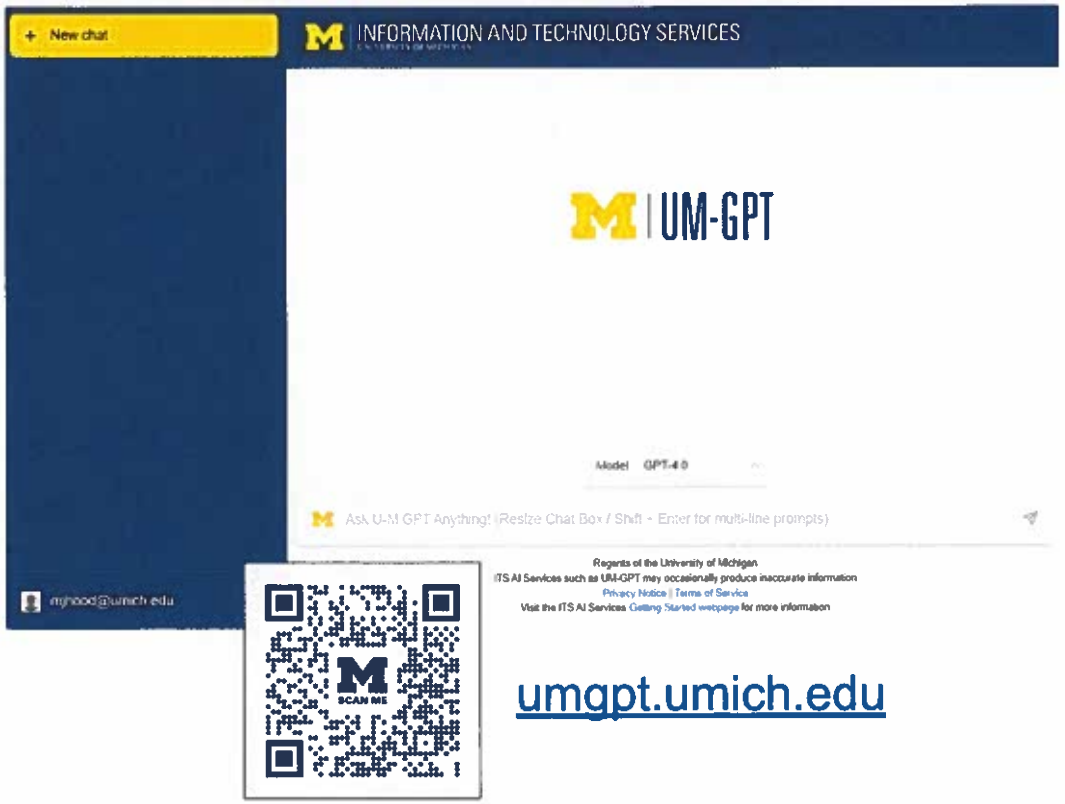
- Provided at no cost.
- Interactions with U-M GPT will remain confidential in line with privacy notice and IA and U-M policies.
- Fully accessible and works with assistive technology.



umgpt.umich.edu

Maizey

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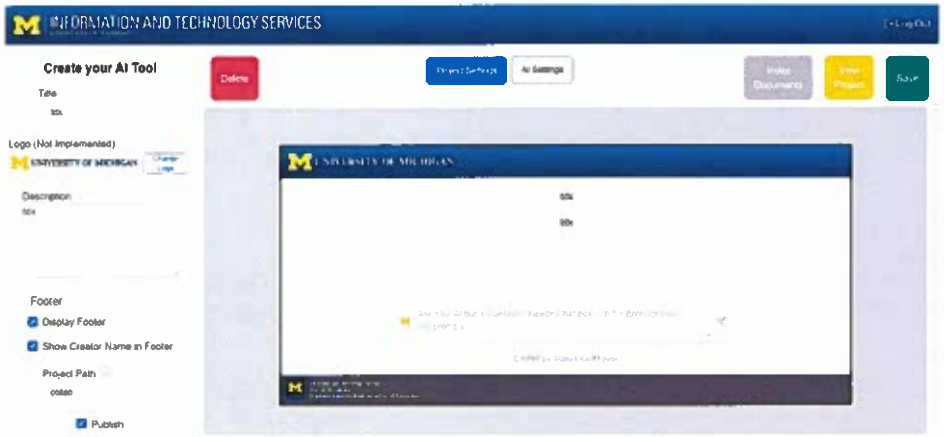
- Build your own version of U-M GPT that is trained on a custom dataset & shared with specific audiences
- Supports data from:
  - Google Drive
  - Public websites
  - Lecture Capture
  - Canvas
  - *Coming this Fall:* Dropbox, Zoom, Slack
- Monthly billing based on usage
- Point & click - no coding required!



SCAN ME

umgpt.umich.edu/maizey

U-M GPT Toolkit

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- Advanced AI practitioners are able to utilize ITS infrastructure to build, train, and host their models in a secure and scalable platform.
- Provides ready access to compute with predefined spending safeguards

GenAI at the University of Michigan

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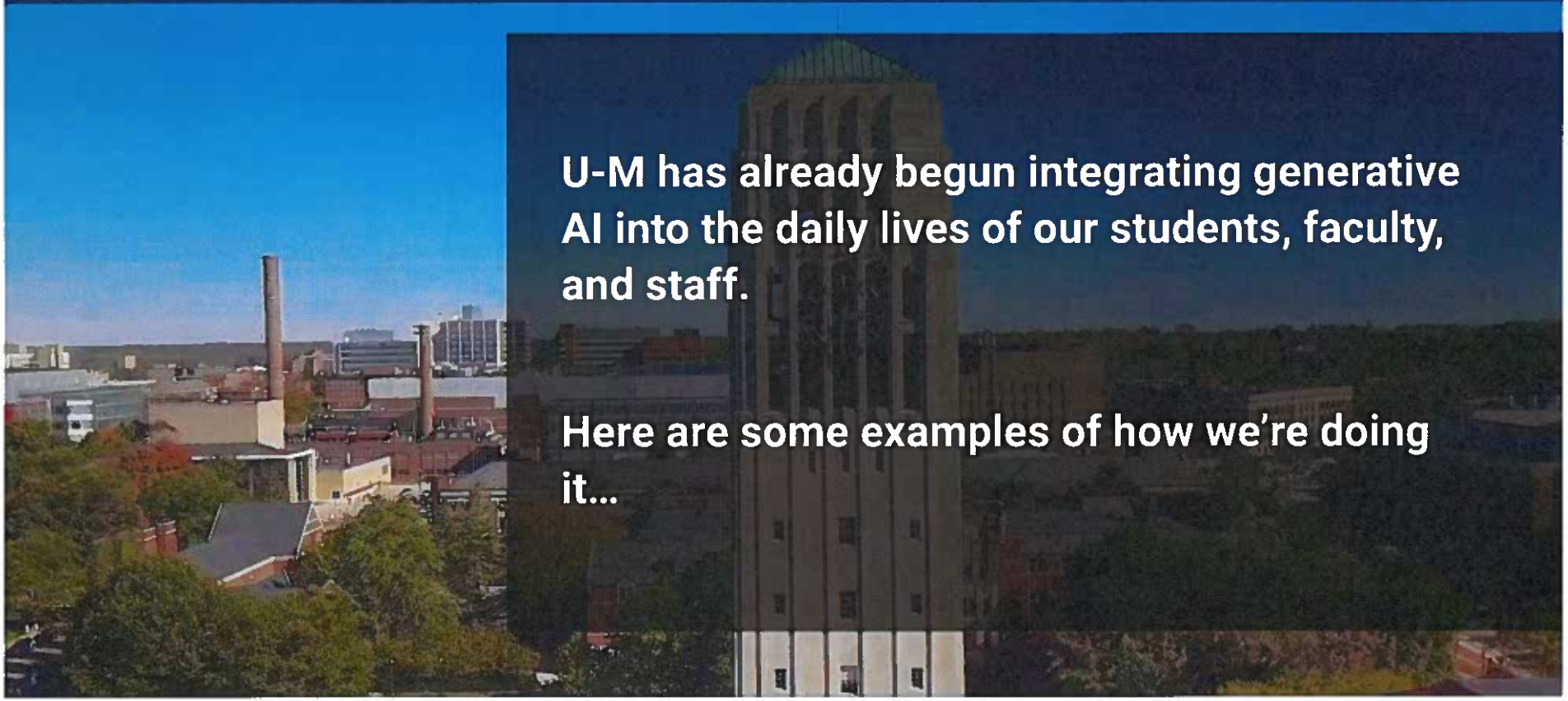

U-M has already begun integrating generative AI into the daily lives of our students, faculty, and staff.

Here are some examples of how we're doing it...

U-M AI Use Case: Class Tutors

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U-M Ross School of Business faculty members built a 24/7 AI tutor for their courses, informed by past course data, which is currently serving more than 1,000 students.

U-M AI Use Case: Student Advisors

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LSA Maizey AI Advising

Welcome to our new artificial intelligence (AI) "chatbot" - LSA Maizey AI Advising. LSA Maizey is like having a 24/7 smart sidekick for college life. Need quick info about requirements, campus events, or study tips? It's got you covered anytime, day or night. This pilot program was designed to provide broad supplemental academic advising support and resources for LSA students. Newnan advisors can support you in adapting general information to your specific situation.

The U-M College of Literature, Science, and the Arts (LSA) used U-M Maizey to create LSA Maizey AI Advising, a 24/7 AI chatbot they call a "smart sidekick for college life."

U-M AI Use Case: Resume Review

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ITS Administration used Maizey to create an AI-powered resume tool to allow them to rank and compare hundreds of resumes at a time.

U-M AI Use Case: Tech Help Call Summaries

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The U-M Service Center is using GenAI to write instant summaries of calls to their Tech Help line, saving hundreds of hours of employee time each month.

U-M AI Use Case: Student Club Finder

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ITS built a chatbot for U-M's Student Life organization to help students more easily (and accurately) explore the more than 1,500 student organizations at the university.

U-M AI Use Case: Book Recommendations

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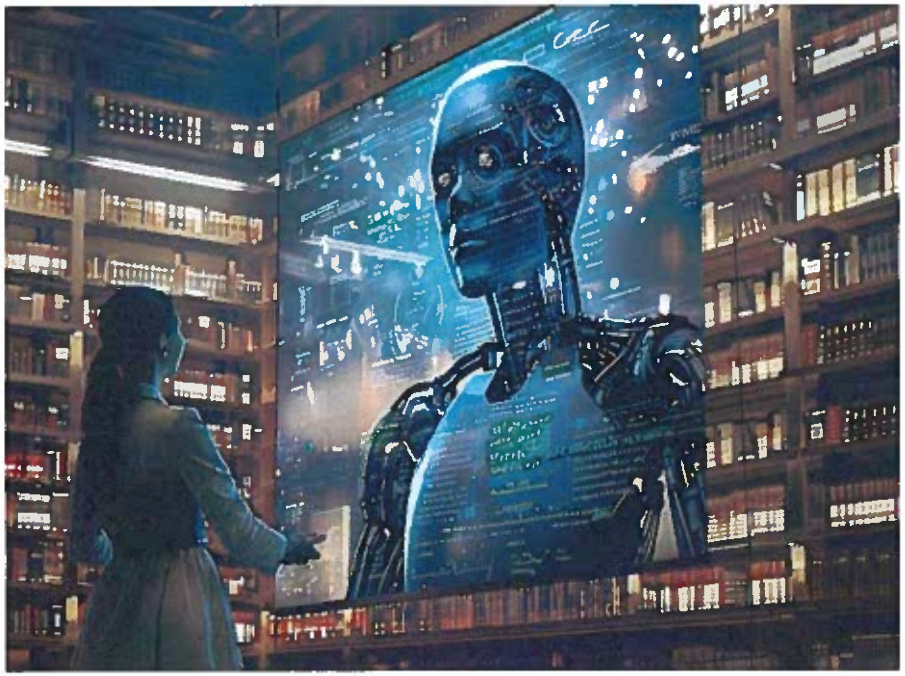

The U-M Library launched a project to use U-M Maizey AI to create a natural-language book recommendation service.

U-M AI Use Case: Classroom Prototype Design

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Kas Kasravi from the U-M College of Engineering and Computer Science said, "I've used U-M GPT and Maizey in several engineering classes. In a prototype design class, involving programming, U-M GPT helped the students raise the level of abstraction from syntax to logic. This helped incorporate systems thinking within design thinking."

U-M AI Use Case: Robotics Training

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At the University of Michigan-Dearborn, Andrew Ealovega and the Intelligent Systems Club have harnessed U-M GPT to demystify complex software for new members, creating a specialized GPT instance for mobile robotics.

U-M AI Use Case: Teaching with U-M GPT

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I research how humans behave by observing the things we say what we do, and who we are. My research combines linguistic analysis and network science together to understand behavior in its natural social context. I collaborate with colleagues from areas such as Psychology, Linguistics, Digital Humanities, and Sociology to improve our theories using data-driven insights and methodologies.

Prospective students: I am recruiting PhD students in Fall 2024 to work on Natural Language Processing through CSE (apply here). Competitive applicants should have significant experience with NLP methods; a strong interest (or coursework) in social psychology or experience with experiments and causal inference are helpful too.

David Jurgens, Associate Professor in the School of Information and Department of Computer Science & Engineering, is teaching a new class on "How to Use AI Effectively" using U-M GPT.

"The U-M GenAI platform is a fantastic equalizer for helping all students learn how to use these tools and accelerate their learning.

U-M AI Use Case: Museum Classification

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A LSA research group has built a tool that the U-M Herbarium uses to automate the transcription of museum specimen labels.

U-M AI Use Case: Policy Review & Access

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SPG U-M Standard Practice Guide

ITS has developed a Maizey trained on the vast body of U-M Standard Practice Guides (SPGs) which can be used to ask plain text questions to identify existing policies.

Looking Ahead

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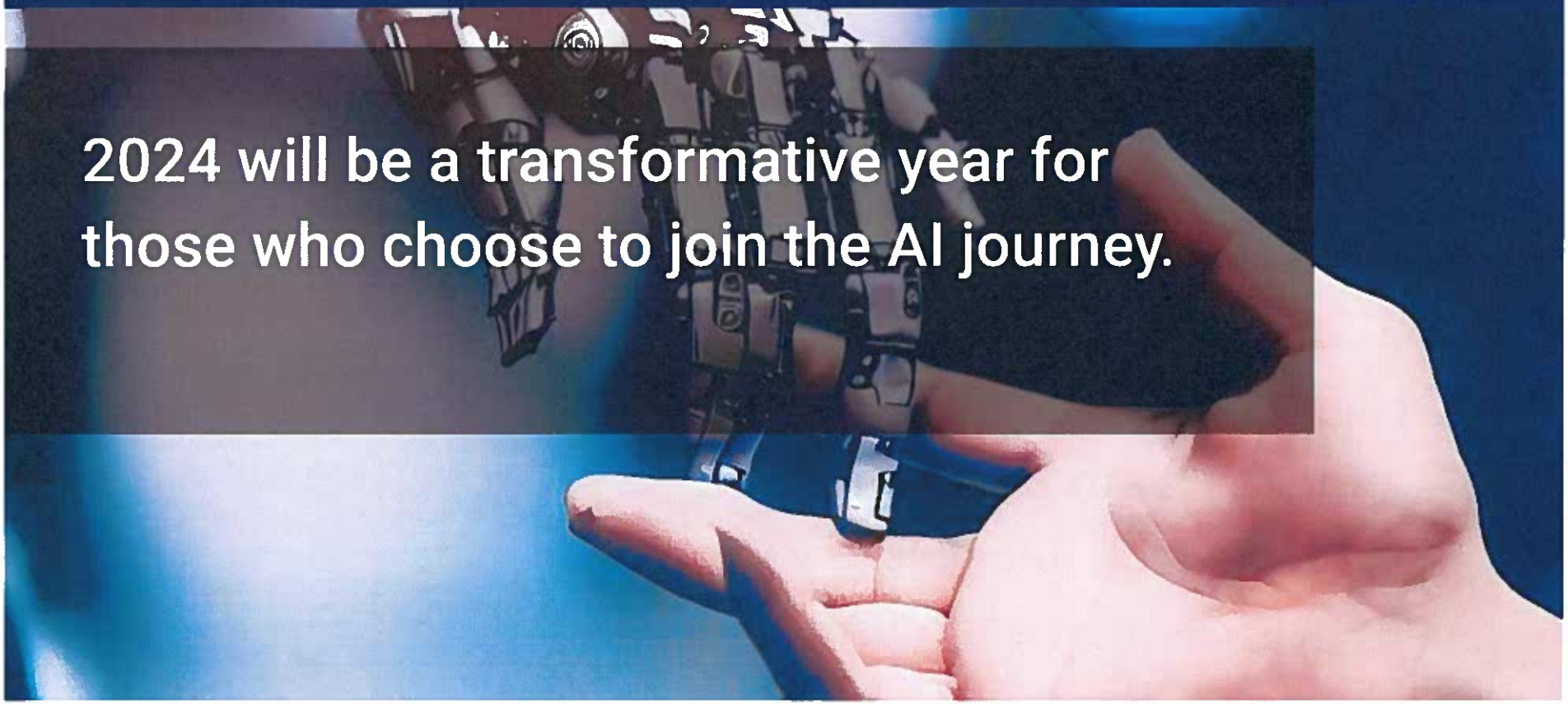

The Wave of Discipline-Specific AI

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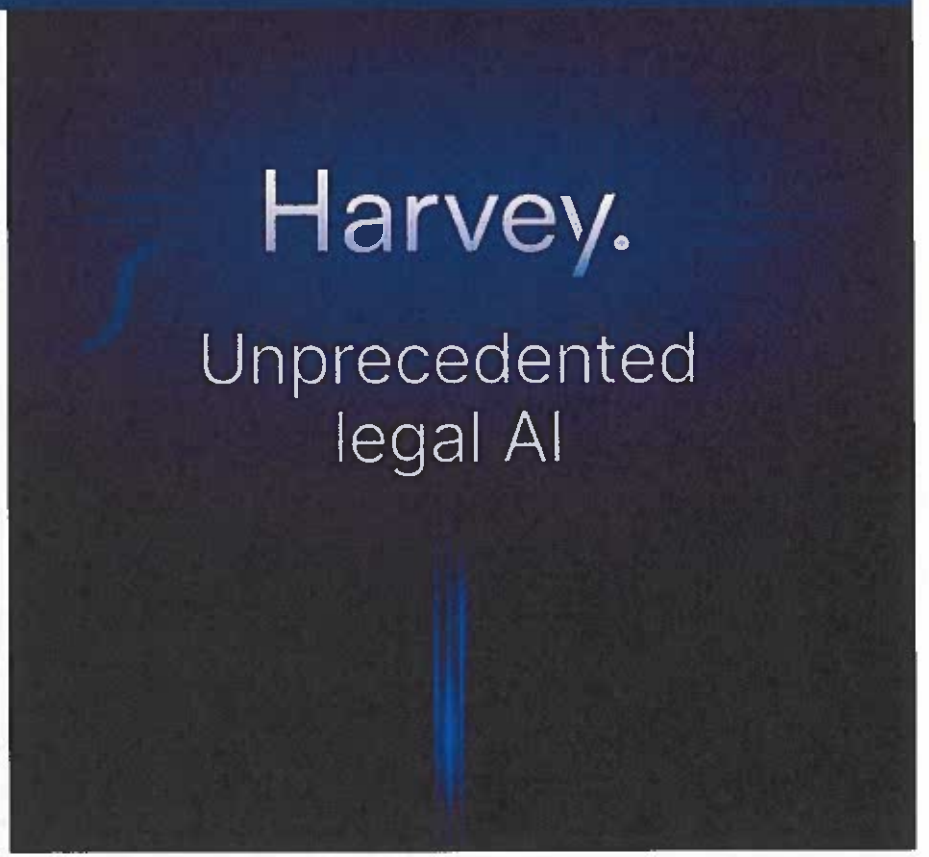
Many new discipline specific Generative AI models are being introduced:

- Legal – Harvey AI and Robin AI
- Health care – Neko Health, Glass Health
- Finance – Bloomberg GPT
- Skin care – skinGPT

They will all likely use retrieval-augmented generation (RAG).



Are We Ready to Unbundle Education?

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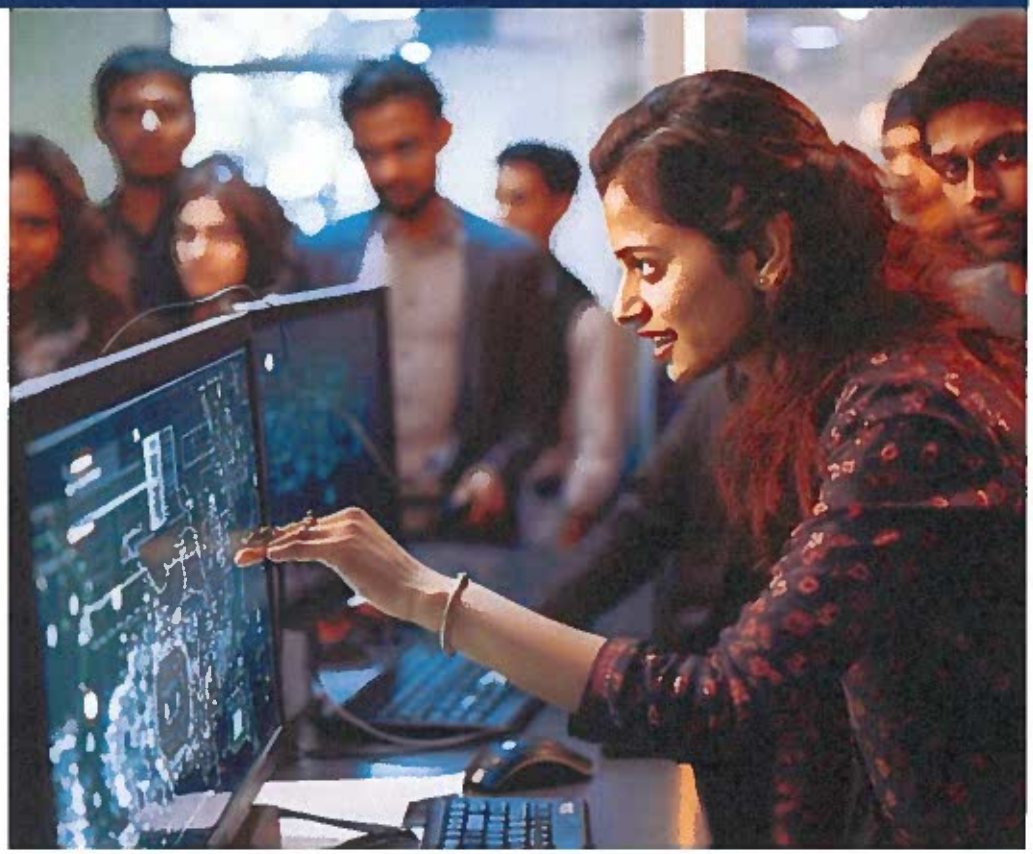
We have a huge opportunity in personalized education using AI.

But, according to the *Harvard Business Review,* for AI to make personalized higher ed a reality, "big data would be needed in order to train it" (HBR).



AI Challenges

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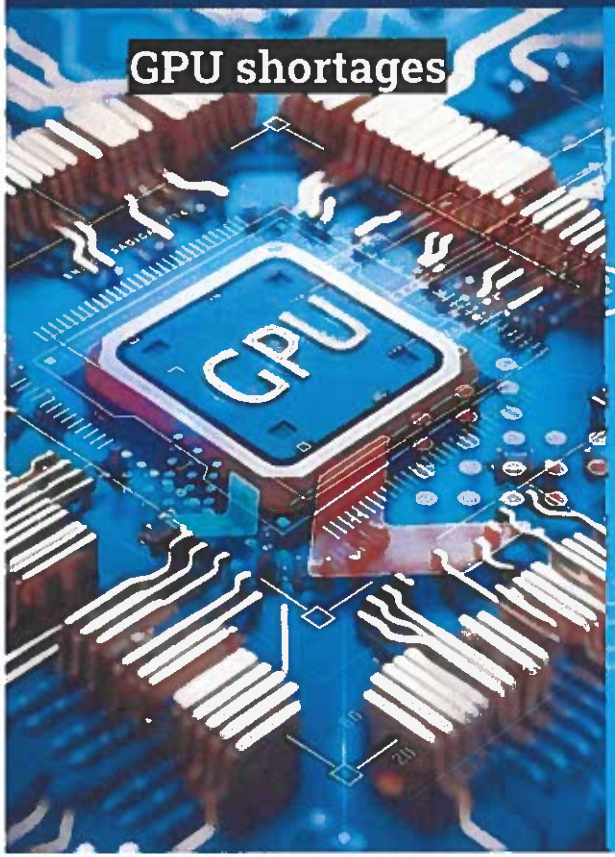

The Future of AI and Accessibility

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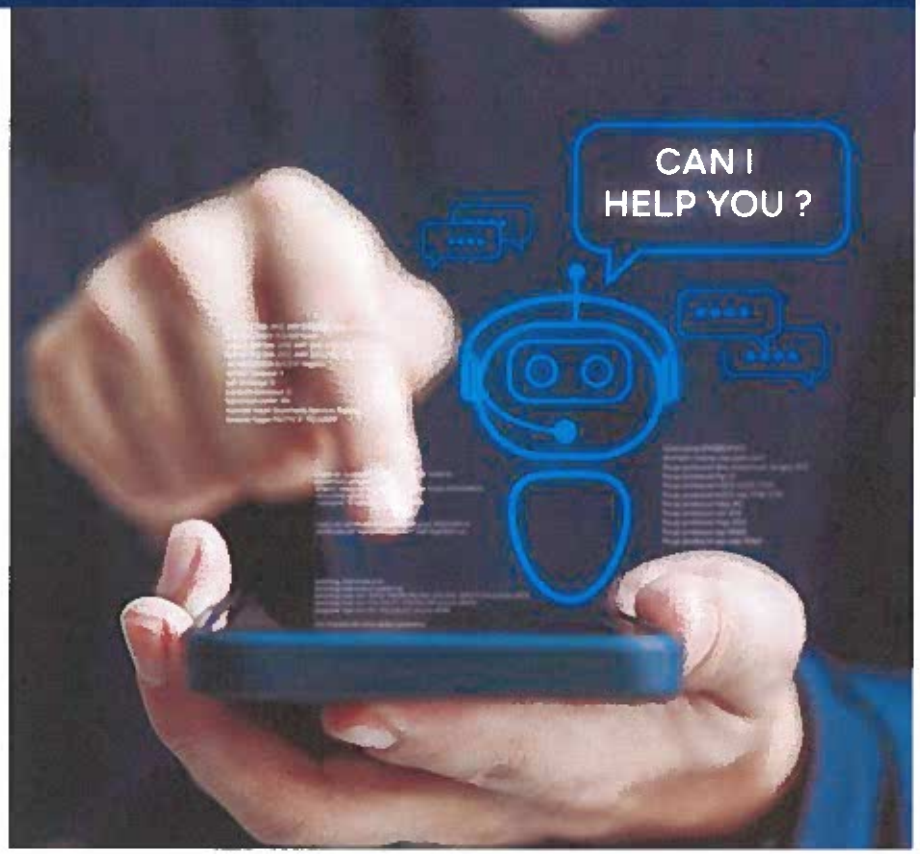
AI can assist those with visual and hearing disabilities.

- There are over 1.3 billion people in the world with significant disability
- 12 million people are visually impaired or blind in US
- 48 million people with hearing issues in US



AI and Accessibility Case Study

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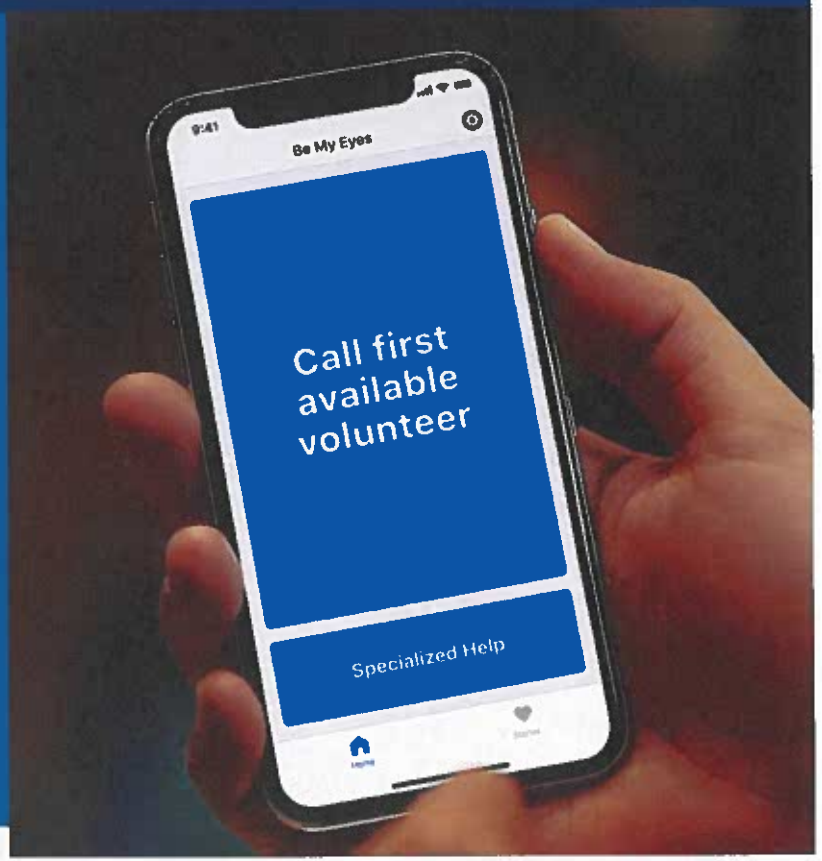
Be My Eyes App began using crowd-sourced efforts to provide descriptions of objects for the visually impaired.

New AI-enhanced version can instantly scan images and allow people to query them.

A blind person could scan a menu with the app and then ask questions - "What chicken dishes are available?"



What Does “Ethical AI” Look Like?

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Case Study: Karya, a non-profit in India, which is crowdsourcing the training of AI large-language models.

And paying a living wage to do it.

Call to Action

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Michigan has an opportunity to lead the country in Gen AI. Working together, we can make a difference. Your impact starts now.