



knowledge changing life

UNDERSTANDING ARTIFICIAL INTELLIGENCE IN HEALTH SCIENCES EDUCATION

David Hotchkiss

January 10, 2024



| GENERAL KNOWLEDGE

FOR TODAY...

Artificial Intelligence (AI)

The capability of a machine to imitate intelligent human behavior

IT'S LIKE "CLOUD"

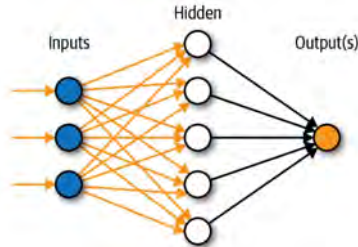
Artificial Narrow Intelligence (ANI)

Machines perform tasks that ordinarily require human intelligence



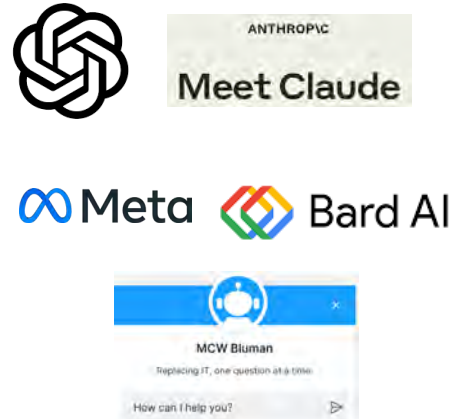
Neural Network

A learning computer system inspired by the way human brains work



Generative AI

Tools that generate human-like input



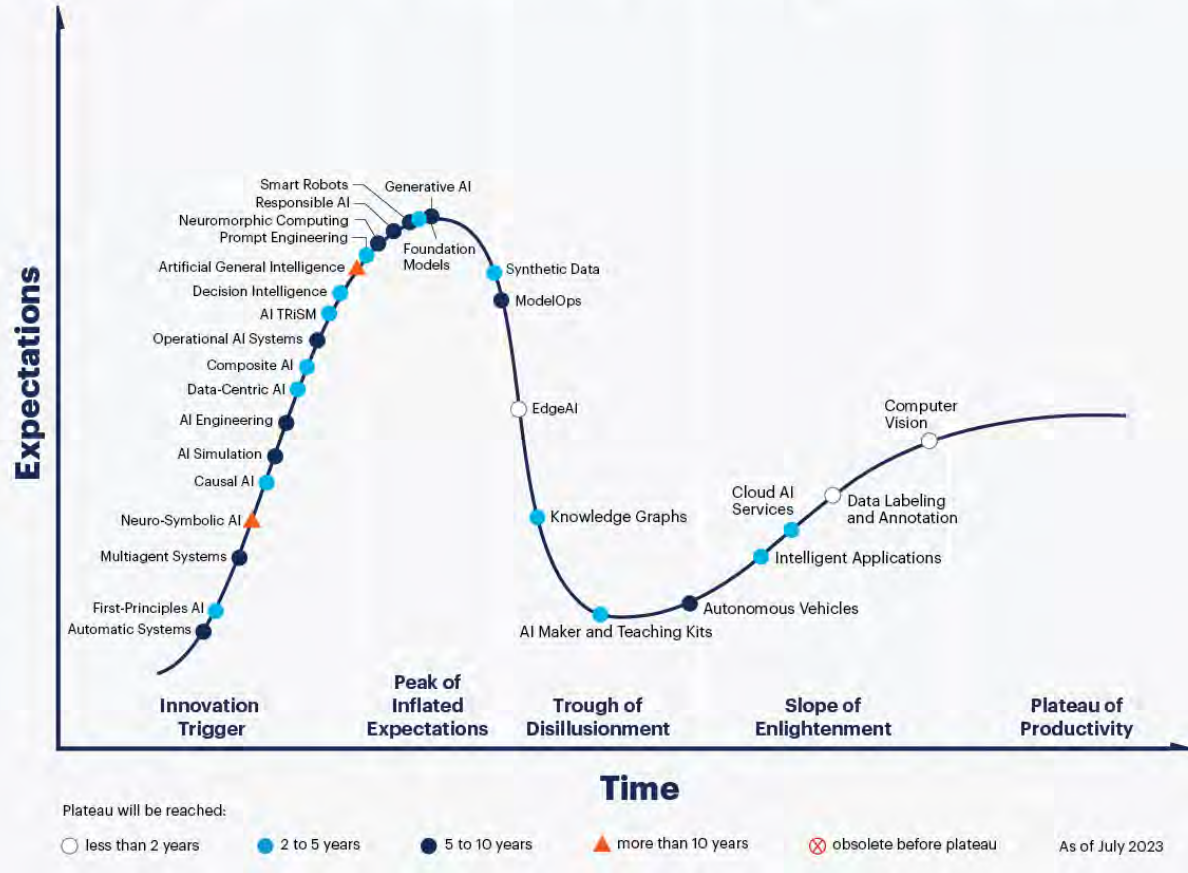
Artificial General Intelligence

Machines perform tasks just as well as humans



chat.openai.com

Hype Cycle for Artificial Intelligence, 2023

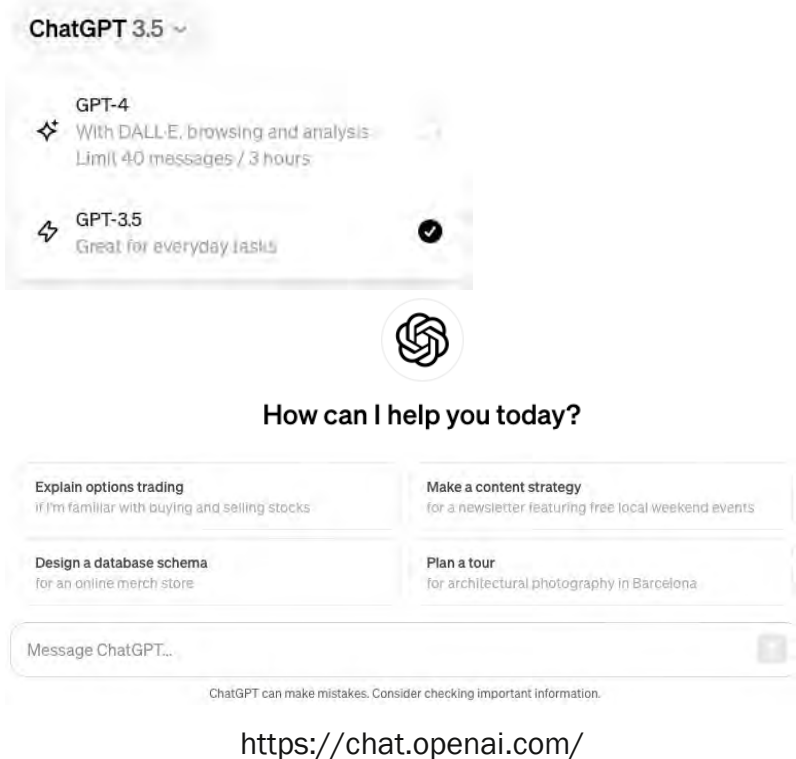


This tech
feels
different

Selected Online Services To Reach 1 Million Users



HOW LLM'S WORK – CHATGPT



The screenshot shows the ChatGPT 3.5 interface. At the top, it says "ChatGPT 3.5". Below that, there are two model options: "GPT-4" with a star icon and "GPT-3.5" with a lightning bolt icon. The "GPT-3.5" option is selected and has a checkmark. Below the model selection is the OpenAI logo and the text "How can I help you today?". There are four suggested prompts: "Explain options trading", "Make a content strategy", "Design a database schema", and "Plan a tour". At the bottom, there is a text input field labeled "Message ChatGPT..." and a disclaimer: "ChatGPT can make mistakes. Consider checking important information." Below the disclaimer is the URL "https://chat.openai.com/".

- *Powered by text*
- Pre-trained on the public internet (01/2022*)
- *Non-supervised and hyper-scalable*
- *Learned underlying structures and patterns*
- More training data, better outputs
- *Transformers weigh the importance of words in sequence and predict the next word*
- Fine-tuned with Reinforcement Learning from Human Feedback (RLHF)
- Popular vs. Accurate

Prompt → ? → Output

FOUNDATION MODELS

- Trained on massive generalized, unlabeled datasets
- Self-supervised learning
- Millions of dollars to develop
- Can be adapted to a wide range of downstream tasks
- “Foundation” for the creation and training of new ML models
- Foundation models are publicly available

BERT



Gemini



GPT



Claud



Llama



[What are Foundation Models? - Foundation Models in Generative AI Explained - AWS](#)

OPEN AI CHATBOT AND LLMS



- [ChatGPT](#) & GPT-3.5
 - Free to use with some limitations
 - Trained on Internet content as of January 2022
 - 175 billion input parameters
- [ChatGPT](#) & GPT-4
 - \$20 per month with priority access and expanded capabilities
 - Trained on Internet content as of April 2023*
 - Images, custom GPTs, personalized settings, connected to the Internet
 - Over 170 trillion input parameters



OTHER CHATBOTS

- [Copilot](#) (formerly Bing; Microsoft and Open AI)
 - Free to use, unique conversational tone, multimodal
 - Similar to ChatGPT using GPT-4
 - Provides sources for its response | creative, balanced & precise modes
 - Limit of 30 interactions per interaction
- [Claude AI](#) (Anthropic; Google and Amazon)
 - Free & paid versions
 - Ethical alternative to ChatGPT
 - Regularly trained on current information, not connected to the Internet



OTHER CHATBOTS

- [Bard](#) (Google)
 - Free to use, unique conversational tone, not multimodal
 - Gemini Pro LLM
 - Can be slower than ChatGPT
 - Connected to the Internet



| UNCERTAINTY

COMMON QUESTION

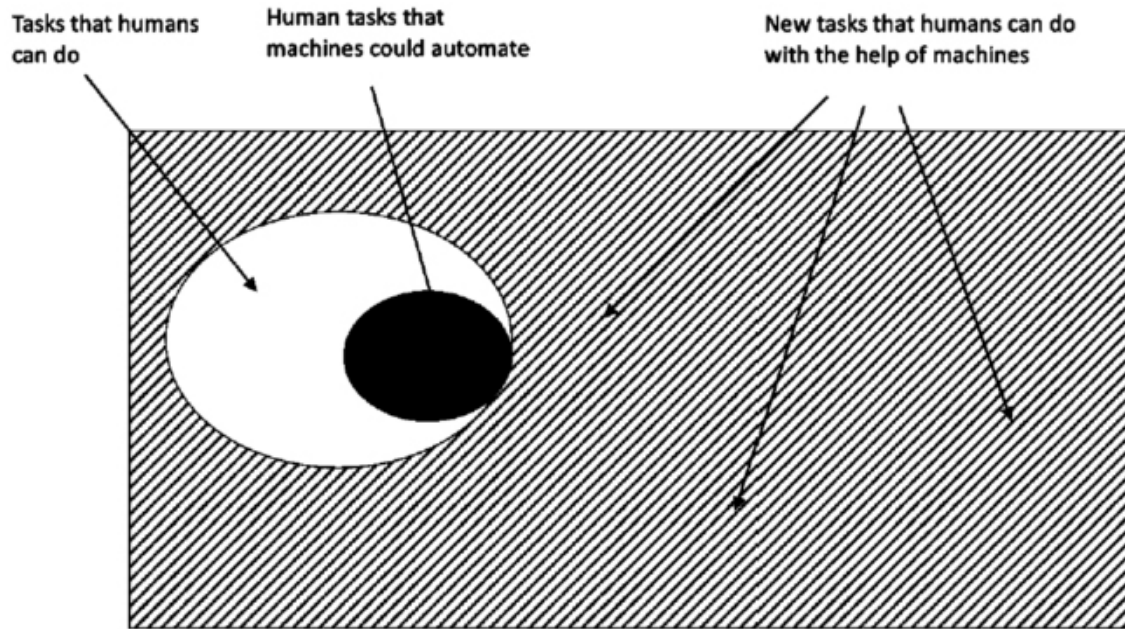


AI is not going to replace humans, but humans with AI will replace humans without it.



– Patricia Garcia, MD
Stanford Health Care

POTENTIAL



[The promise and peril of human-like AI - Stanford](#)



THREE PARTS OF A TASK



chat.openai.com



Ajay Agrawal at the 2023 Workday Rising conference.



THREE PARTS OF A TASK



chat.openai.com



Ajay Agrawal at the 2023 Workday Rising conference.

MORAVECS PARADOX

(Hans) Moravec's Paradox

The basic observation is that things which we find easy to do as human's - catching a baseball - are very hard for machines whereas things which are hard for human's - calculating the trajectory of a missile - are easy for machines.

– Ted Shelton
Bain and Company



CHALLENGES

- Fear of the unknown
- Time and money
- Usage restriction
- Workforce upskilling
- Copyright Litigation
- Accuracy and hallucinations
- Responsible use
- Regulation
- Model collapse



| WHAT DOES THIS MEAN?

OPPORTUNITIES

- Extend one's personal and professional limits
- Eliminate the “where do I begin” burden (productivity)
- A digital co-worker
- Offload structured and repetitive knowledge work
- Self-service empowerment
- (Big) data analysis



chat.openai.com



CONSIDER THIS

- Ask for a prototype
- Rethink your limits
- Resist distraction
- Get help, not homework
- Think in sequences
- Pretend it's sentient
- Fact-check everything
- Enjoy your superpowers

[I've Worked With Generative AI for Nearly a Year. Here's What I've Learned. Alexantra Samuel - WSJ](#)



RESPONSIBLE USE



- Treat ALL AI as a public model, unless told otherwise
- NEVER enter [EPI](#) in a public AI
- Do not give an AI permission to directly connect to your MCW information
- Cite the tool in your work

[NIST characteristics of a trustworthy AI](#)


- [Part I](#) Introduction to AI for Teachers and Student
- [Part II](#) Large Language Models
- [Part III](#) Prompting AI
- [Part IV](#) AI for Teachers
- [Part V](#) AI for Students


Practical AI for Instructors and Students Part 4: AI for Teachers




Wharton School 
158K subscribers





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 313



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16K views 5 months ago Wharton Interactive Crash Course: Practical AI for Instructors and Students

In this video, Wharton Interactive's Faculty Director Ethan Mollick and Director of Pedagogy Lilach Mollick discuss how to use AI to make your teaching easier and more effective, and we show how to use specific prompts to develop personalized examples, explanations, and low-stakes tests and create a pedagogically sound syllabus.

...more



SHOULD (CAN) I USE AI?

- The short answer... YES, DON'T WAIT!
- Create free accounts and experiment
- Choose one or many chatbot opportunities
- Treat it as a person and converse
- Iterate, iterate, iterate

chat.openai.com





HUMAN-CENTERED ACTION



chat.openai.com



| AI AT MCW

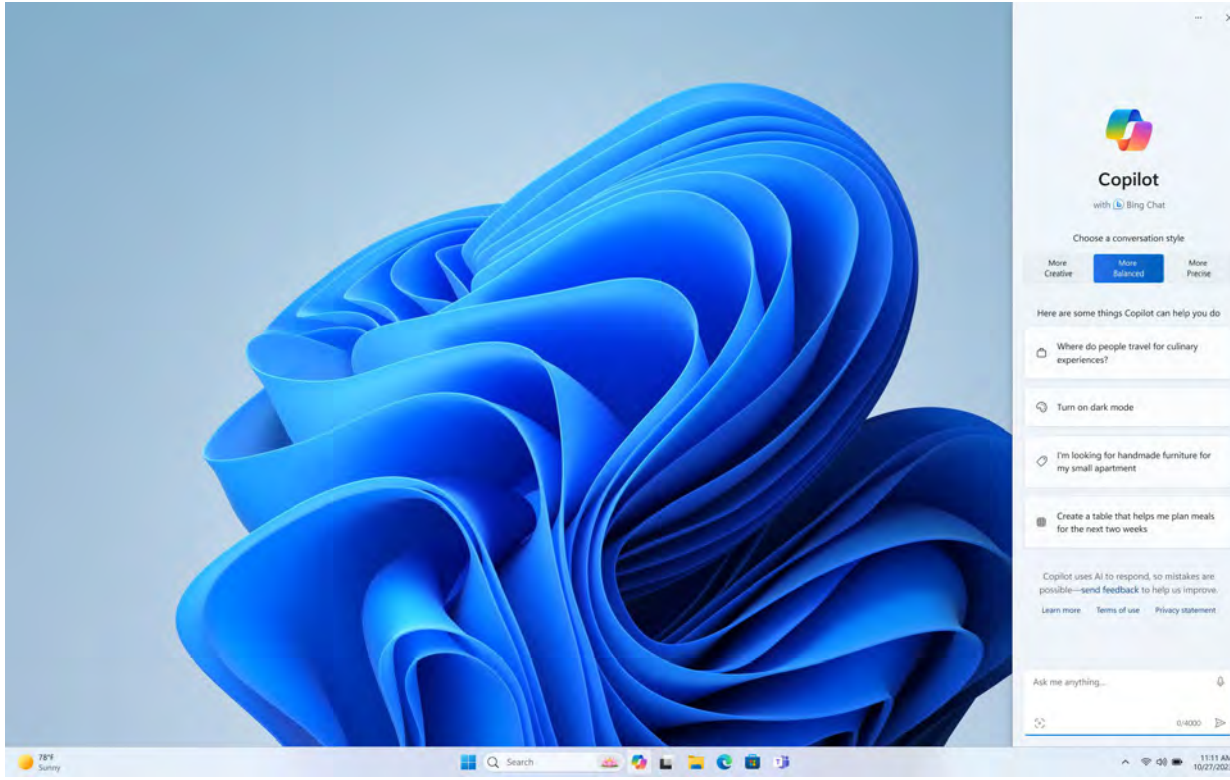
IT'S ALREADY HERE



- Zoom & WebEx AI Companions
- Scite, Grammarly, Evernote
- MCW-IS Bluman
- Workday
- Faculty, staff, and student use of public and private models (coding, image analysis, unstructured notes)
- Vendor partnerships

WHAT ABOUT... MS COPILOT

Windows 11



WHAT ABOUT... MS COPILOT

The screenshot displays the Microsoft Bing homepage with the AI-powered Copilot interface. At the top, there are navigation links for 'Microsoft Bing', 'SEARCH', and 'CHAT'. The main heading reads 'Bing is your AI-powered copilot for the web'. Below this, five interactive cards are shown: 'Compare' (Should I buy a road bike or a mountain bike if I want to exercise?), 'Code' (Write a Python script to perform Binary search), 'Travel' (Where do people travel for culinary experiences?), 'Organize' (Organize the world's tallest trees into a table by habitat), and 'Shop' (I'm looking for handmade furniture for my small apartment). A 'Chat' section contains two prompts: 'What's the most popular true crime show streaming right now?' and 'Write a poem with vivid imagery that doesn't rhyme'. A 'Create' button is also visible. Below the chat prompts, a disclaimer states 'Bing is powered by AI, so surprises and mistakes are possible. Please share feedback so we can improve! Terms Privacy'. A 'Choose a conversation style' section offers three options: 'More Creative', 'More Balanced' (selected), and 'More Precise'. At the bottom, a 'New chat' button is next to a text input field 'Ask me anything...' with a character count '0/2000' and a 'Feedback' link.

WHAT ABOUT... MS COPILOT



- ChatGPT at your fingertips
- Microsoft heavily invested in Open AI
- Not available to .edu's yet
- \$30/pp/mo, zero education discount
- Single biggest potential for impact in companies worldwide
- Internal discussions underway

MCW AI WORKGROUP

Faculty

- Dr. Kevin Cohoon – Cardiology
- Dr. Brad Crotty – Inception Health
- Dr. Bill Hogan – Data Science
- Dr. Fabrice Jotterand – Institute for Health and Equity
- Dr. Anai Kothari – Surgical Oncology
- Dr. Andrew Nencka – Radiology (Center for Imaging Research)
- Dr. Bob Treat – Academic Affairs
- Dr. Ying Zhang – Radiation Oncology

Staff

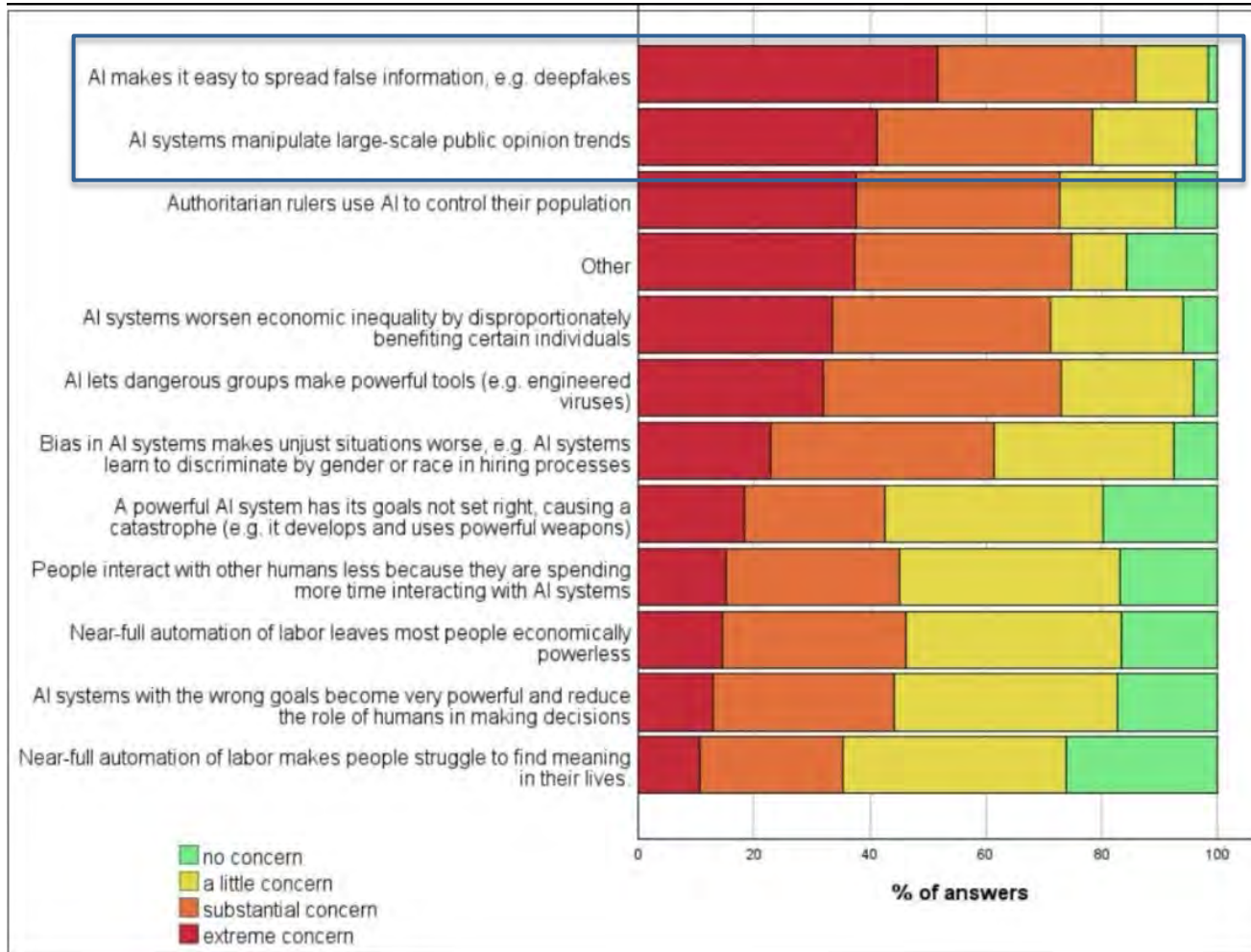
- CTSI – Brad Taylor
- MCW IS – Dr. Matt Flister, David Hotchkiss, Dustin Martin, Becky Morrison, Jeremy Tews, Ron Williamson



chat.openai.com



| EXPERTS WEIGH IN



[Experts: 5% Chance AI Kills Us All](#)



| WAIT, THERE'S MORE!

DATA REGISTRIES, DASHBOARDS & AI

February 1 | 4 – 5 PM



KERN INSTITUTE
FOR THE TRANSFORMATION OF MEDICAL EDUCATION

Tavinder K. Ark, BSc, MSc, PhD

This presentation and fireside chat centers on the Medical Education Data Science Lab, including:

- *the **medical education registry**, which provides a foundation for groundbreaking research, curriculum evaluation and evidence-based decision-making for curriculum improvement;*
- *integrating data access and utilization through innovative **data dashboards**, designed for both learners and coaches;*
- *collaborative **use of AI in educational processes**, such as grading and feedback, to enhance student learning.*



ALMOST DONE...

Prompt: “create a 16:9 image representing the word “whew” after a person shares a lot of information”

Response: “Here is an image representing the word “whew” after a person shares a lot of information. It depicts a person sitting at a desk, surrounded by stacks of books and papers, looking overwhelmed but relieved.”

