



**Navigating the Future  
AI changes everything!**

**Donald Clark**

1980



1985 - 2005



2013-21



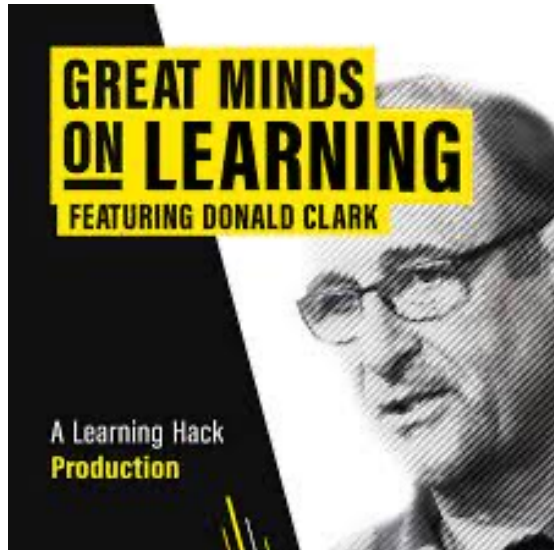
2015-21)



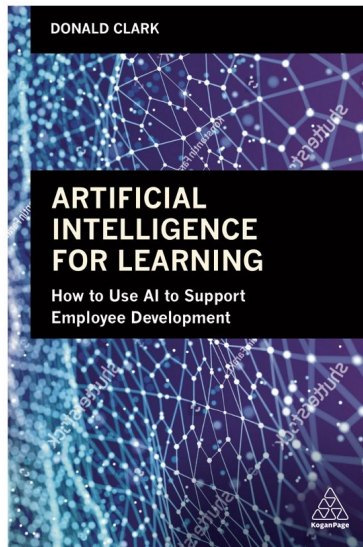
2006-21



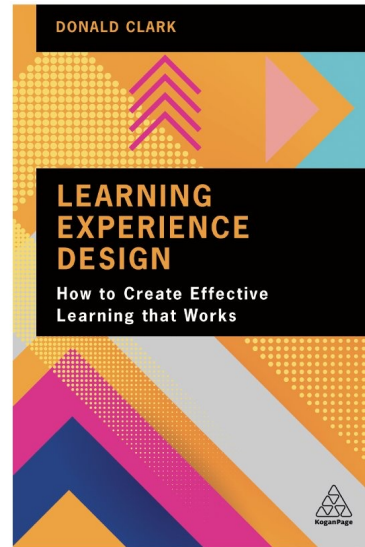
2021



2022



2022



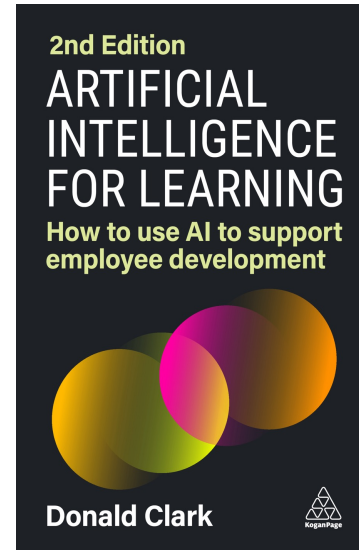
2023



2023



2024



**"I skate to where the puck is  
going to be, not to where it  
has been."**

**Wayne Gretzky**





# **Wilhelm von Humboldt (Idealism/Romanticism)**

Academic freedom

Community of scholars

Research and teaching

Liberal arts/humanities

Organic development



# Wilhelm von Humboldt

Academic freedom

Community of scholars

**Research and teaching**

**Liberal arts/humanities**

**Organic development**



# Wilhelm von Humboldt

Crises of:

- Costs
- Enrolment
- Relevance to the real world
- Administrative bloat
- Ideological capture (left & right)
- Plagiarism & assessment
- Overproduction of research
- Sclerotic decision making



Wilson's "**White Heat**" Speech 1963

Jennie Lee

White Paper 1966

**"Television, Radio, programmed learning and a wider range of audio-visual aids have already..."**

*"students in many other parts of the world"* (1999 USOU - £20m)

*"imaginative use of new teaching techniques and teacher/student relationships"* (2012 Futurelearn)

*Great Britain. Education & Science, Department of*

**A UNIVERSITY OF THE AIR**

*Presented to Parliament by the Secretary of State for Education and Science  
by Command of Her Majesty  
February 1966*



**John Sperling**

**1973 University of Phoenix**

*“If you want to move a graveyard, don’t expect much help from the occupants!”*

**Innovation comes from outside**

**Technology** scales

**Higher Ed NOT** just about 18 year olds

**Vocational** learning matters





# Paul Le Blanc

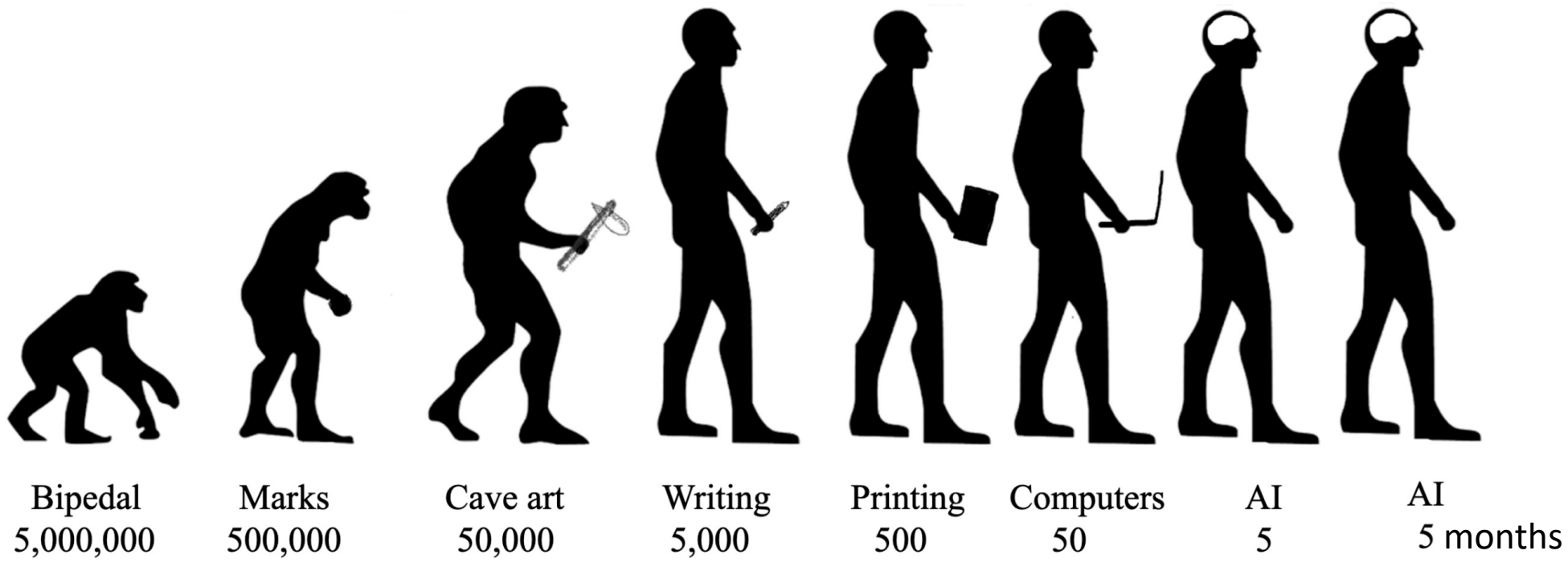
## Impediments:

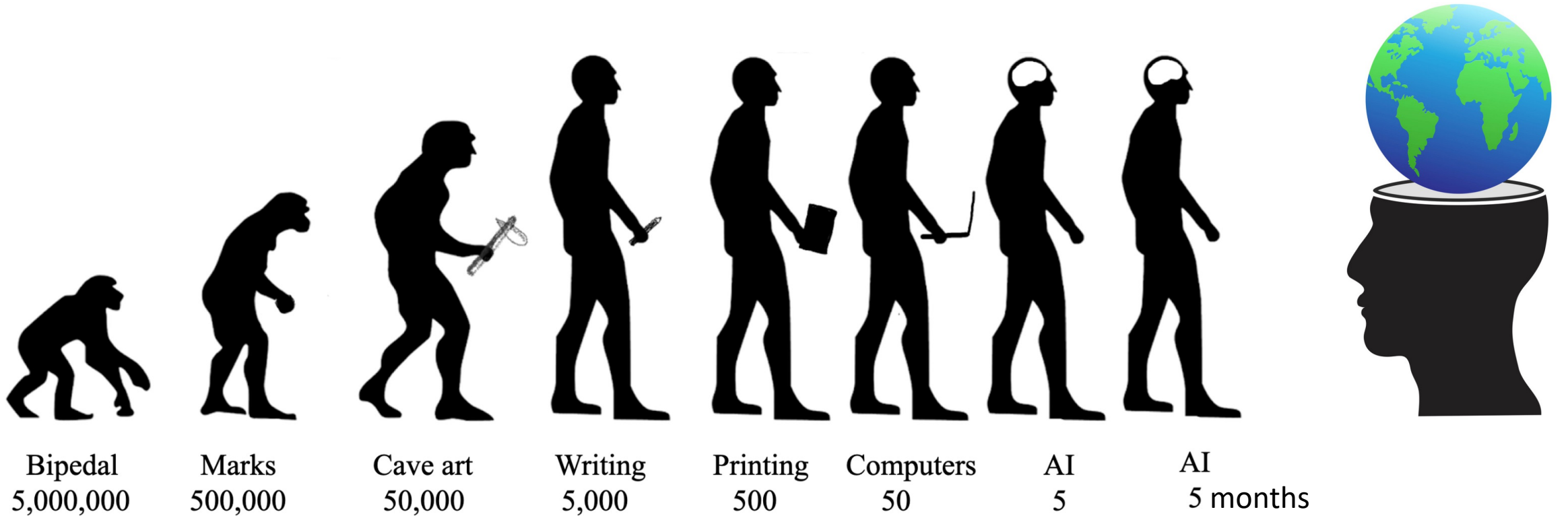
- Money
- Status

Largest US Higher Ed Institutions by Enrollment by DE Type  
 IPEDS 12-Month Enrollments for 2021-22  
 Grad + Undergrad Combined



Institution Name (group)	Sector	Enrollment by DE Type		
		No DE	Some DE	Exclusive DE
Southern New Hampshire University	Private 4-year			215,136
Western Governors University	Private 4-year			214,229
Arizona State University	Public 4-year	57,450		90,905
Ivy Tech Community College	Public 2-year	99,451	32,853	
Grand Canyon University	For profit 4-year			128,025
University of Phoenix	For profit 4-year			135,219
Liberty University	Private 4-year			114,353
Lone Star College System	Public 4-year	33,281		50,604
Dallas College	Public 4-year	33,161		51,727
American Public University System	For profit 4-year			93,828
University of Maryland Global Campus	Public 4-year			73,886
University of Central Florida	Public 4-year	50,205		
Texas A & M University-College Station	Public 4-year	47,241		
Miami Dade College	Public 4-year	32,148		29,311
Walden University	For profit 4-year			73,537
Florida International University	Public 4-year	35,178		
Northern Virginia Community College	Public 2-year			29,561
Capella University	For profit 4-year			67,950
Houston Community College	Public 2-year			29,364
Ohio State University-Main Campus	Public 4-year	51,890		
Purdue University Global	Public 4-year			65,454
Tarrant County College District	Public 2-year	27,413		
New York University	Private 4-year	34,658		
University of Florida	Public 4-year			





**170,000 yrs** to read 8 hrs/day





**A Large Language Model (LLM) happened once before in history and it changed the world forever...**

700k scrolls = 8.4 billion words

GPT dataset = 300 billion words

### **Parallels:**

- Massive dataset
- Metadata
- Open to everyone
- Centuries of innovation & inventions

# **AI for training & learning**

- 1. Search and interfaces**
- 2. Learner engagement**
- 3. Learner support**
- 4. Learning delivery**
- 5. Research**

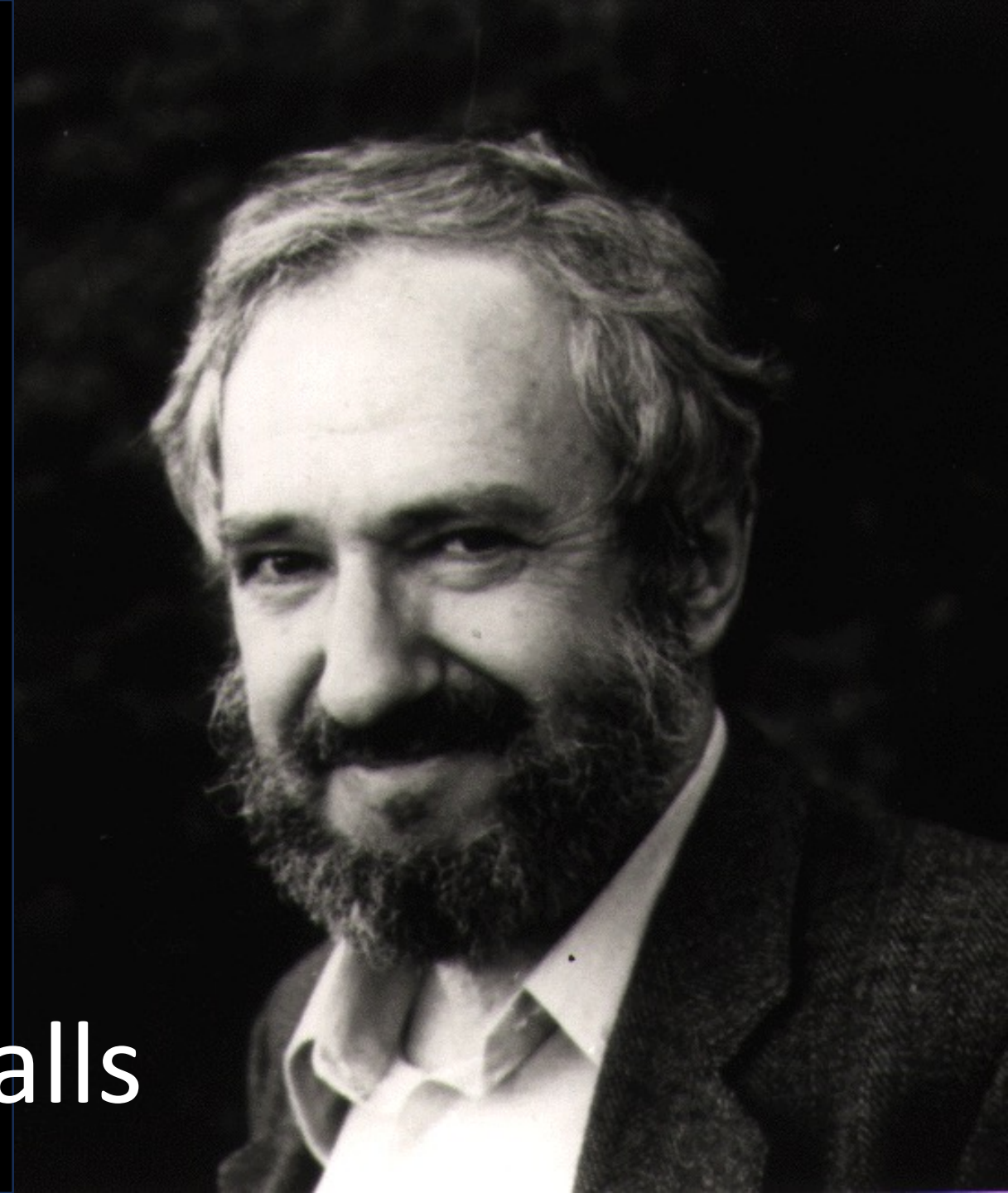
# Search and interface

**HIGH Ceiling**



**LOW Floor**

**WIDE Walls**





# Engagement

# Engagement

**TERRIBLE PROXY** for learning

Engaged but:

- **not learning**
- you already **know**
- doing **harm** to learning

# DAN JONES

# THIS SEEMS AMBITIOUS

*Directed by Ruby Carr*



**PICK OF THE FRINGE**

**THREE WEEKS**

**BROADWAY BABY**

## SHORTLIST

*Amused Moose Comedy Awards 2023*

## The Telegraph

*Top 50 jokes of the Fringe 2023*

**ON SPOTIFY TILL SUNDAY**

**1 million** 5 days

**100 million** 2 months

**1.7 billion** monthly uses

**(free or low-cost to billions of people)**

# ChatGPT is Commanding 1.6 Billion Monthly Visits

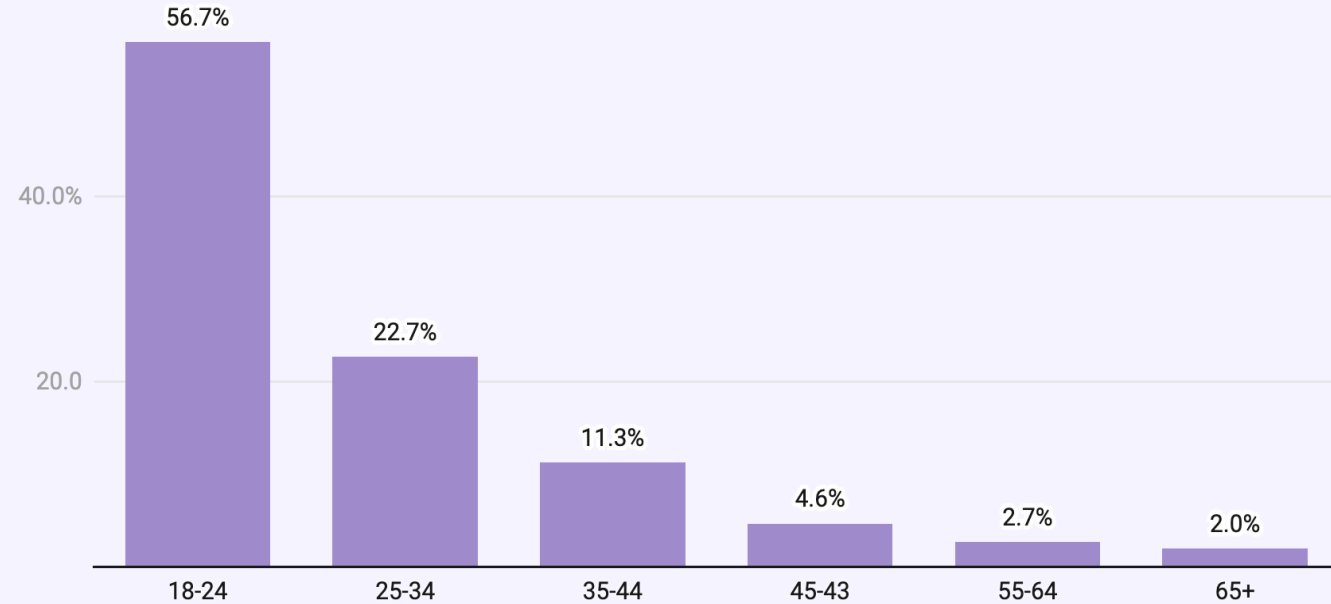
ChatGPT brings in over 1.6 billion monthly visits, putting it above giants like Netflix and The New York Times.

Monthly Traffic (Visits)



## Character.AI Users (By Age Group)

Audience Share



# Support



**Jill Watson (2016)**

**Year 1: 350 students**

**Year 2: Ian & Stacey**

**Some thought that 2 real  
teachers/trainers were AI**





**Ashok Goel (Georgia Tech)**

**JILL WATSON + CHATGPT**

3 online courses (**all 500+**)

Increased: Accuracy, Precision,  
Recall, F1

**Personalisation**

- *Students will use*
- *Teachers will adapt*
- *Staff will worry*
- *Admin will wait*

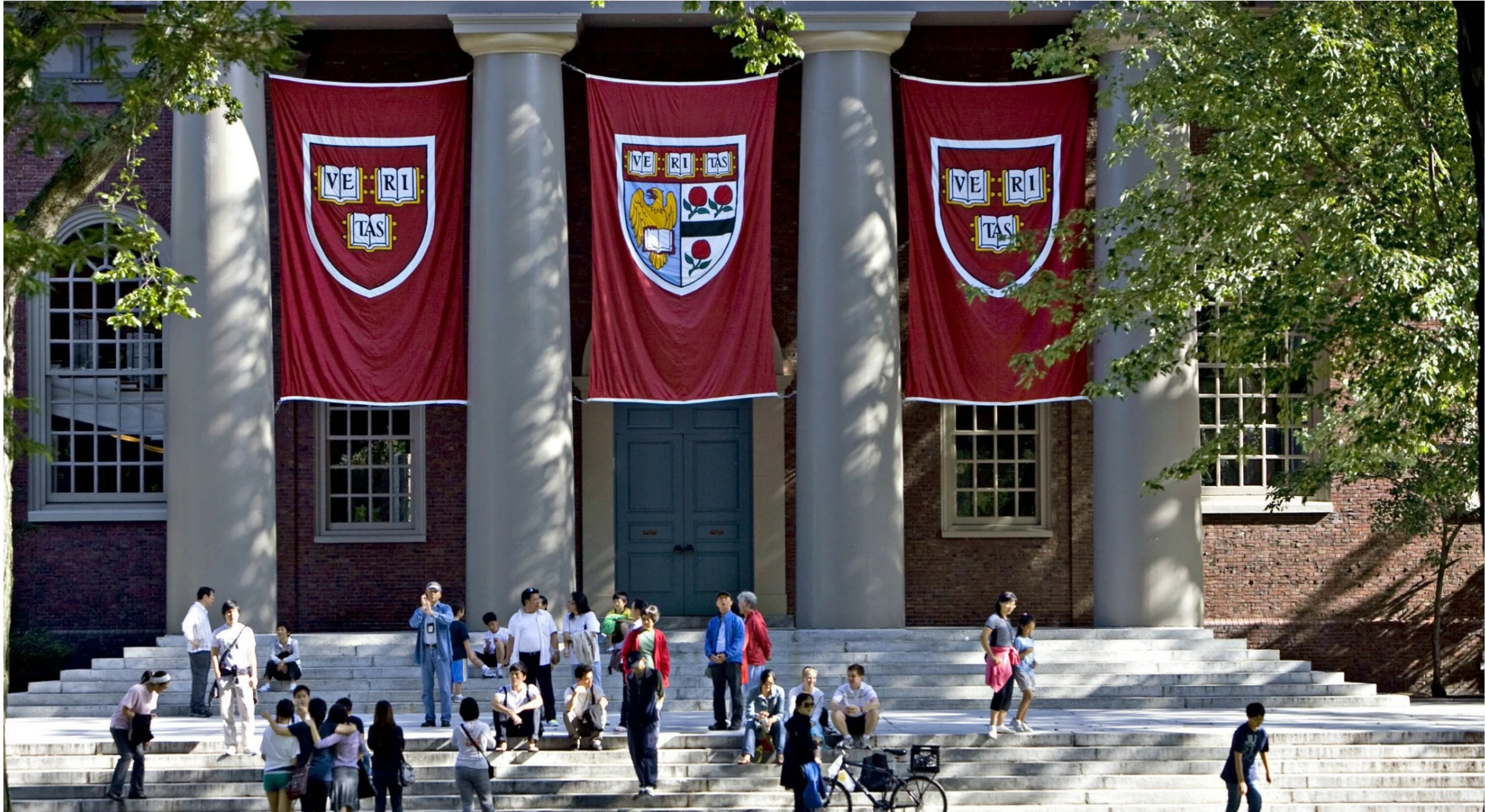
**First AI powered  
Universities**

# Harvard's New Computer Science Teacher Is a Chatbot

The university is encouraging students to use 'CS50 bot' as their 24/7 learning assistant.



by Emily Dreibelbis Jun 22, 2023







## Harvard CS50

There were 3 tools:

- 1) '**Explain Highlighted Code**' quick explanations of code
- 2) Evaluating of **code style tool**
- 3) CS50 **duck chatbot** for inquiries  
ChatGPT4 plus RAG

## RESULTS

**Scaled**

**70 -> 500 -> thousands**

**94%** helpful **95%** effective

"Love love loved the duck.  
We're friends now."





UNIVERSITY OF  
MICHIGAN

# AI Services platform

August 2023

New **suite of GenAI tools**

**ALL faculty, admin & students**

Equity of access

**>100,000**

**16,000** unique users per day

# Mark Daley



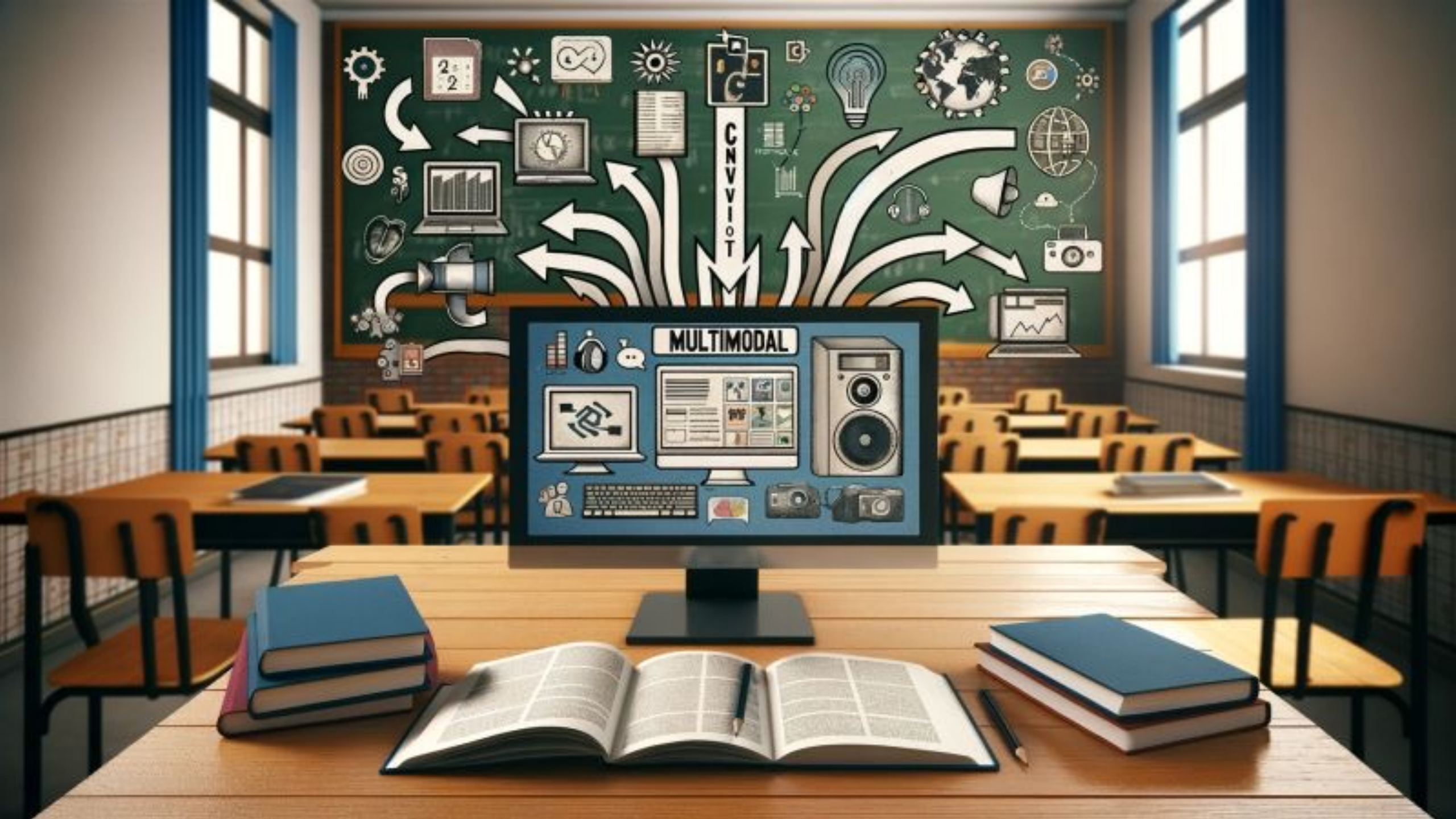
**Chief Artificial Intelligence Officer**

Western University of Ontario

Sacramento State

Northwestern University

# Delivery





## Digital-Don

Drawing from 2500 years of learning theorists from the 'Greeks to the Geeks', ask me anything on **LEARNING THEORISTS** , **LEARNING THEORIES**. and **LEARNING TECHNOLOGIES**

By Donald Clark

Who is relevant to use of Generative AI in learn...

Tell me about learning styles?

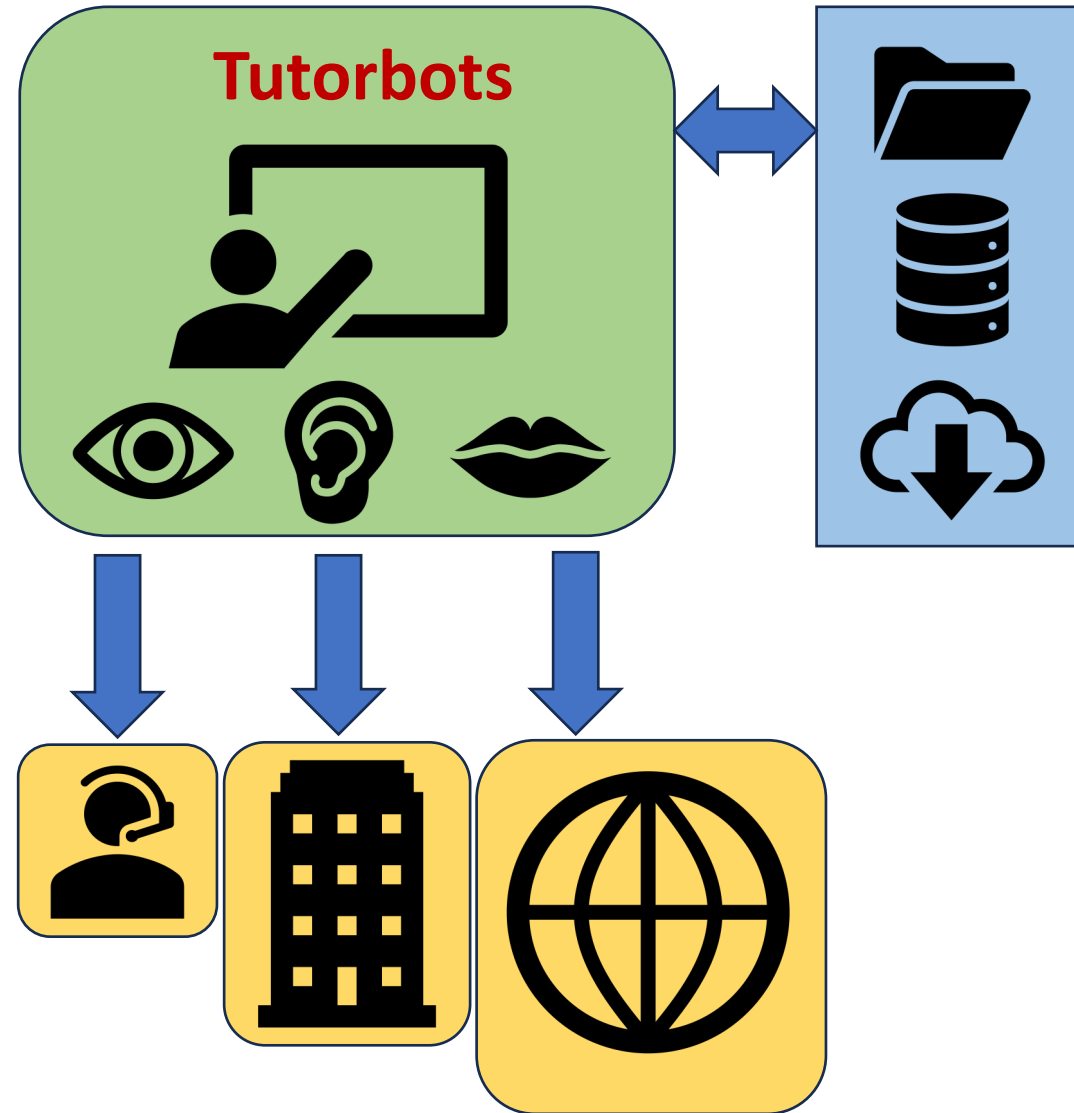
Why is Mayer the most useful researcher on te...

Tell me about using chatbots in learning?

 Message Digital-Don...



# GPT 4 Turbo: **AGENTS** or **GPTs**



# UNIVERSAL TEACHER

Teacher

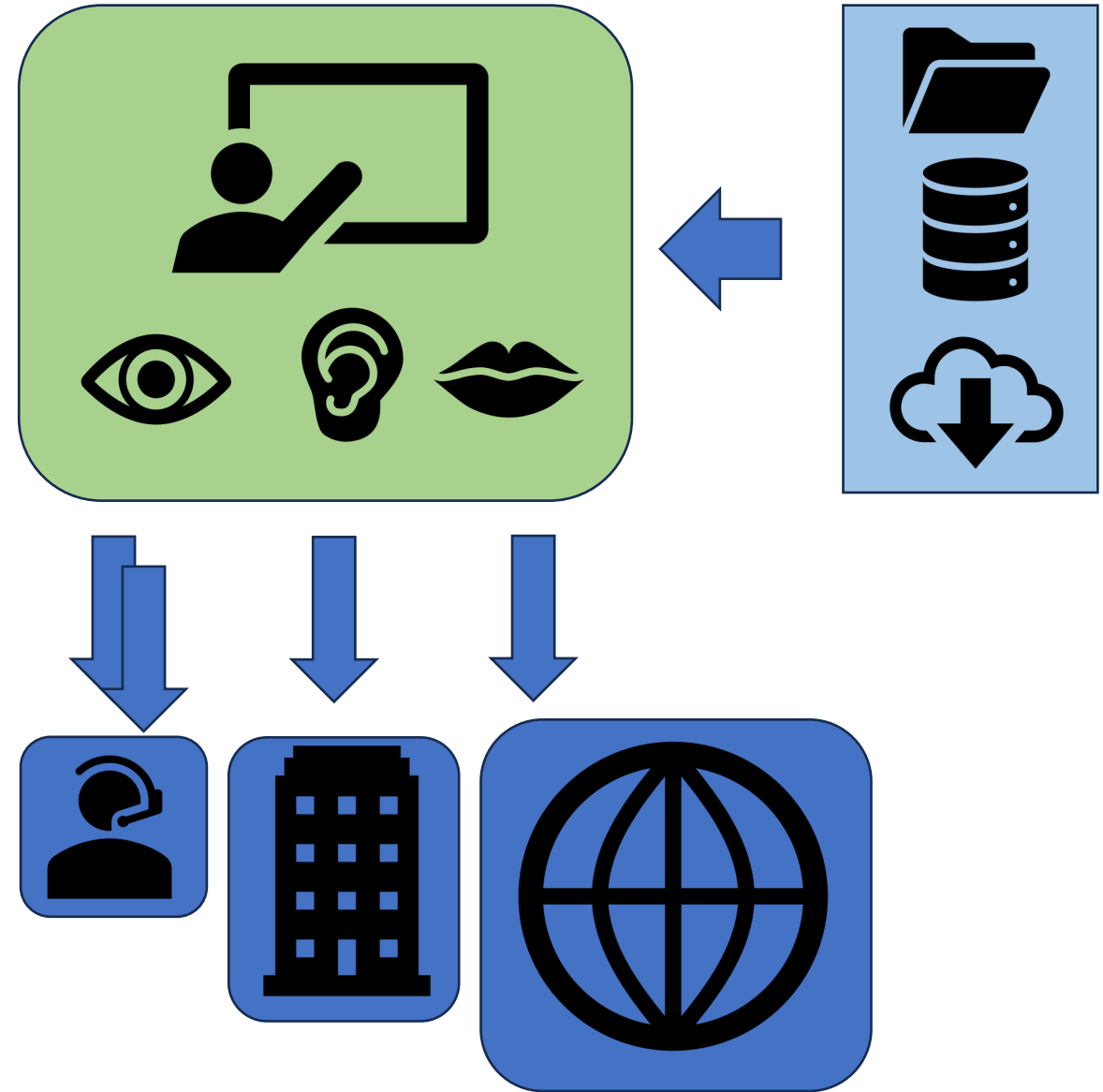
Teacher support

Skills tutors

Revision coach

Performance support

Pastoral support

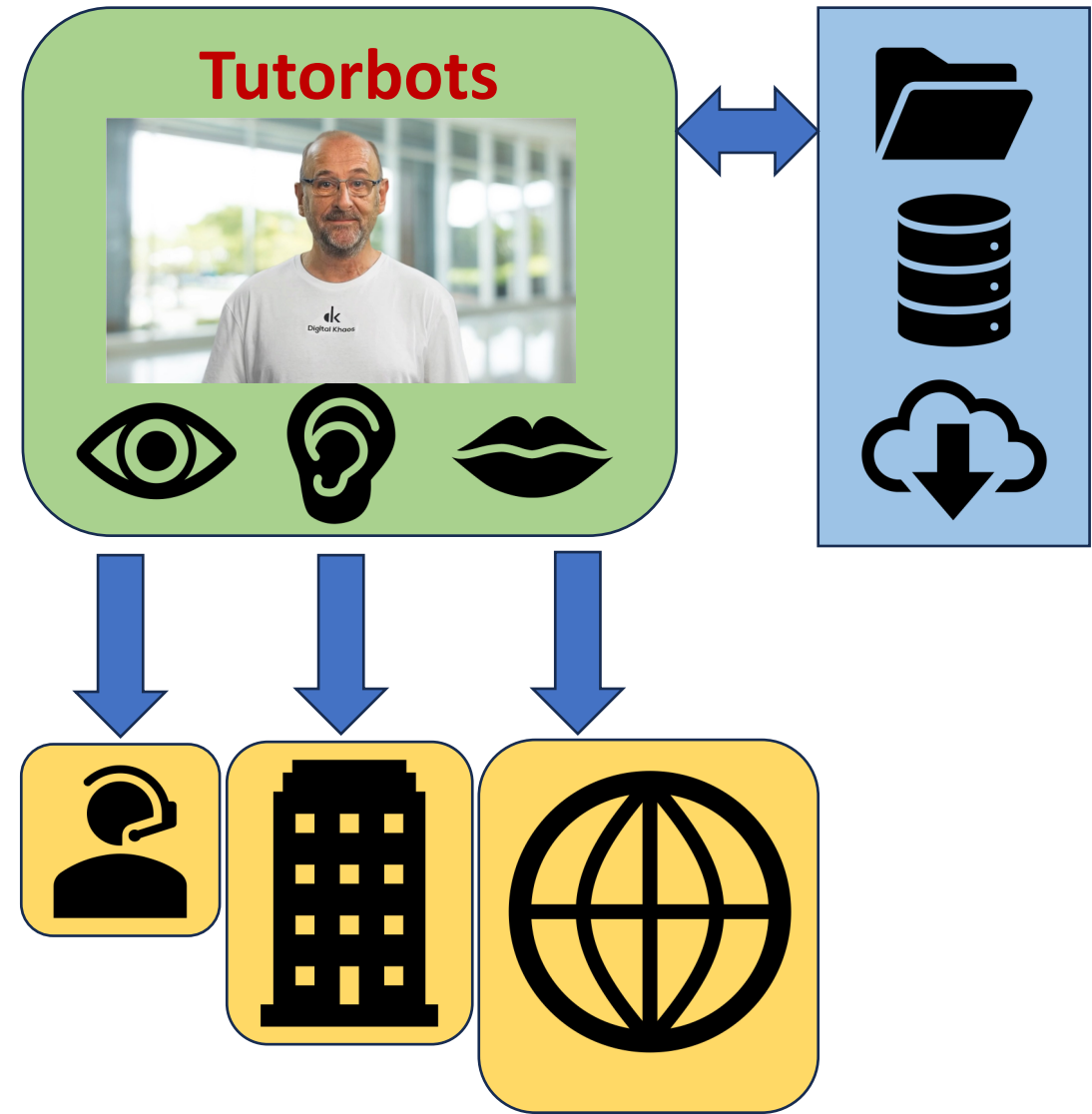




# UNIVERSAL TEACHER

Can teach:

- anything, anywhere
- at **any level**
- highly **'personalised'**
- in **hundreds** of languages



**Game changer for learning....**



# Can GenAI **do feedback**?

Feedback difficult in large courses

## STUDY

601 students - feedback by AI

> 2500 short essays during a semester

- **Peer** feedback (instructor rubric)
- **Self-evaluation** (instructor rubric)
- **Automated AI feedback** (scores & accuracy)

## RESULTS

AI-enabled evaluation a success



STELLAR  
LABS

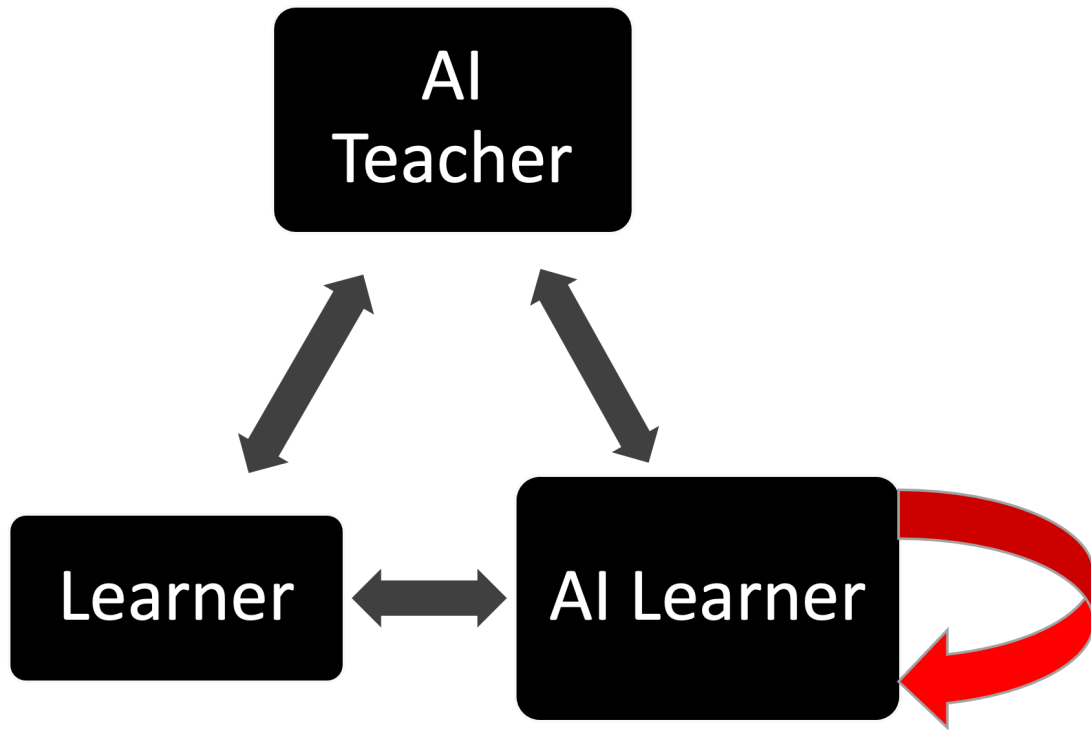
*Doesn't generate content,  
generates **learning, transfer**  
and **action**....*

*in any **subject**...*

*at any **level**....*

*Build **resources***

**in minutes not  
months....**



## Bake **pedagogy** into product:

- text, images, audio, video
- **any style, any level**
- **questions** with inbuilt design
- **scenarios** of various types & lengths
- **supplementary** content creation

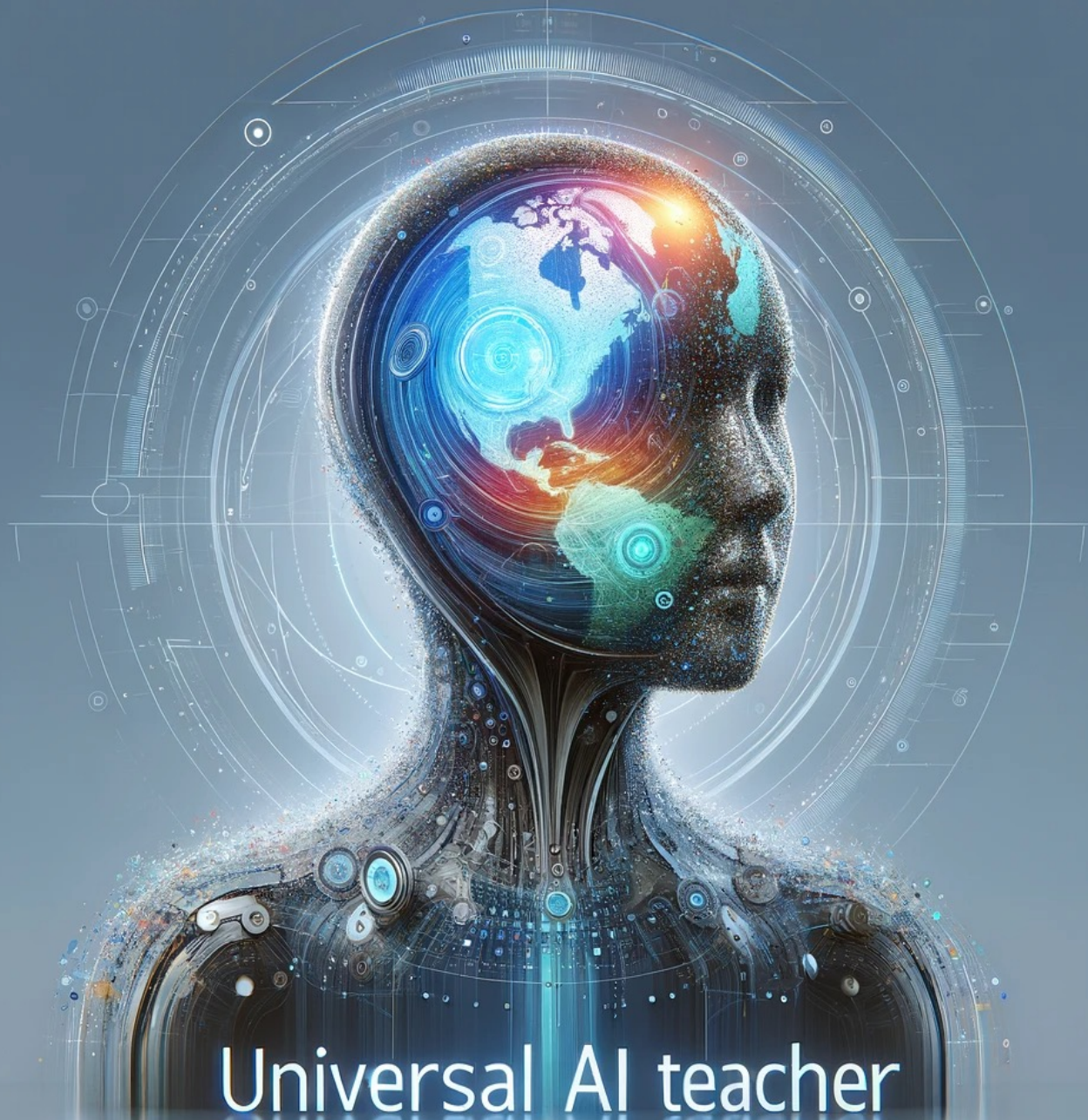
**Flashcards**

**Spaced practice**

Content **translation**

**Performance support**

# In **minutes** not months



Universal AI teacher

**Any subject**

**Anywhere**

**Anytime**

**Any language**

**Accessible**

**Personalised**

**Appropriate level**

**Research on research**

# nature



## PROTEIN POWER

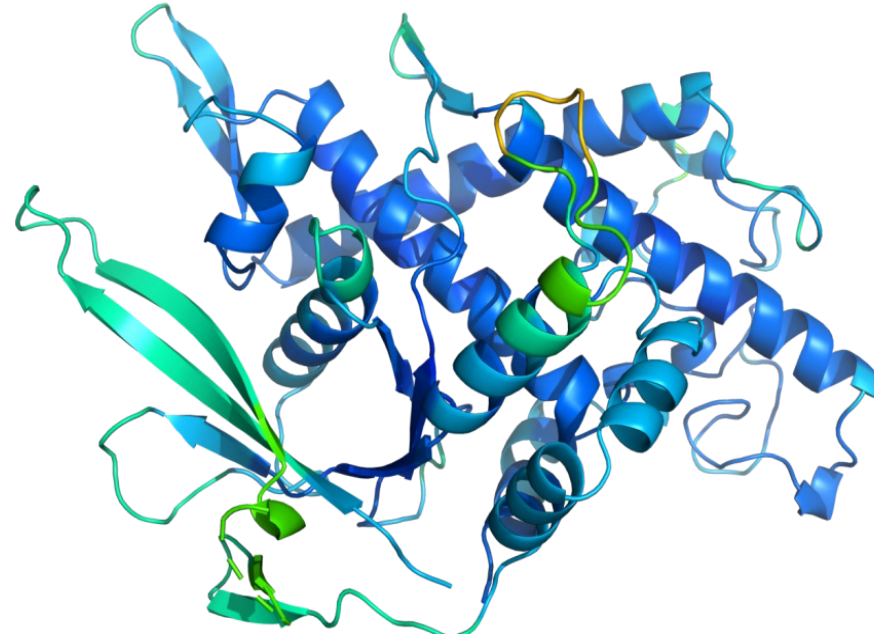
AI network predicts highly accurate 3D structures for the human proteome

**Troubled waters**  
The race to save the Great Barrier Reef from climate change

**Coronavirus**  
Time is running out to find the origins of SARS-CoV-2

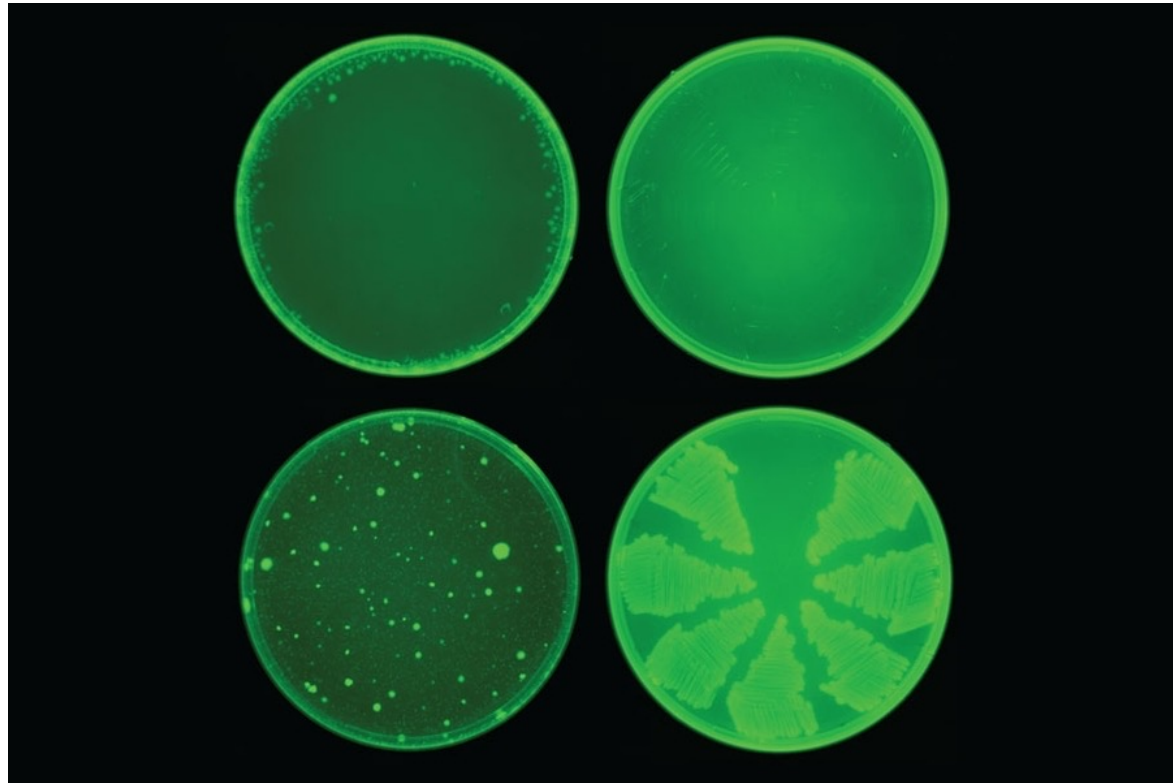
**Storage hunting**  
Quantifying carbon held in Africa's montane forests

# ALPHAFOLD: 3D proteins



200 million known  
1 billion years

# MIT: AI created Super-Antibiotic



Halicin

Ciprofloxacin

**Kills many species of antibiotic-resistant bacteria**



[nature](#) > [articles](#) > article

Article | [Open access](#) | [Published: 29 November 2023](#)

## Scaling deep learning for materials discovery

Millions of new materials discovered  
with deep learning

29 NOVEMBER 2023

Amil Merchant and Ekin Dogus Cubuk

[Share](#)



# How will AI impact **research**?

AI will **accelerate** some research

AI will **automate** tasks

AI will **eliminate** areas of human research

- AlphaFold
- Materials science
- Metastudies/armchair

AI will **create** new research opportunities

AI will **critique** and **peer review**

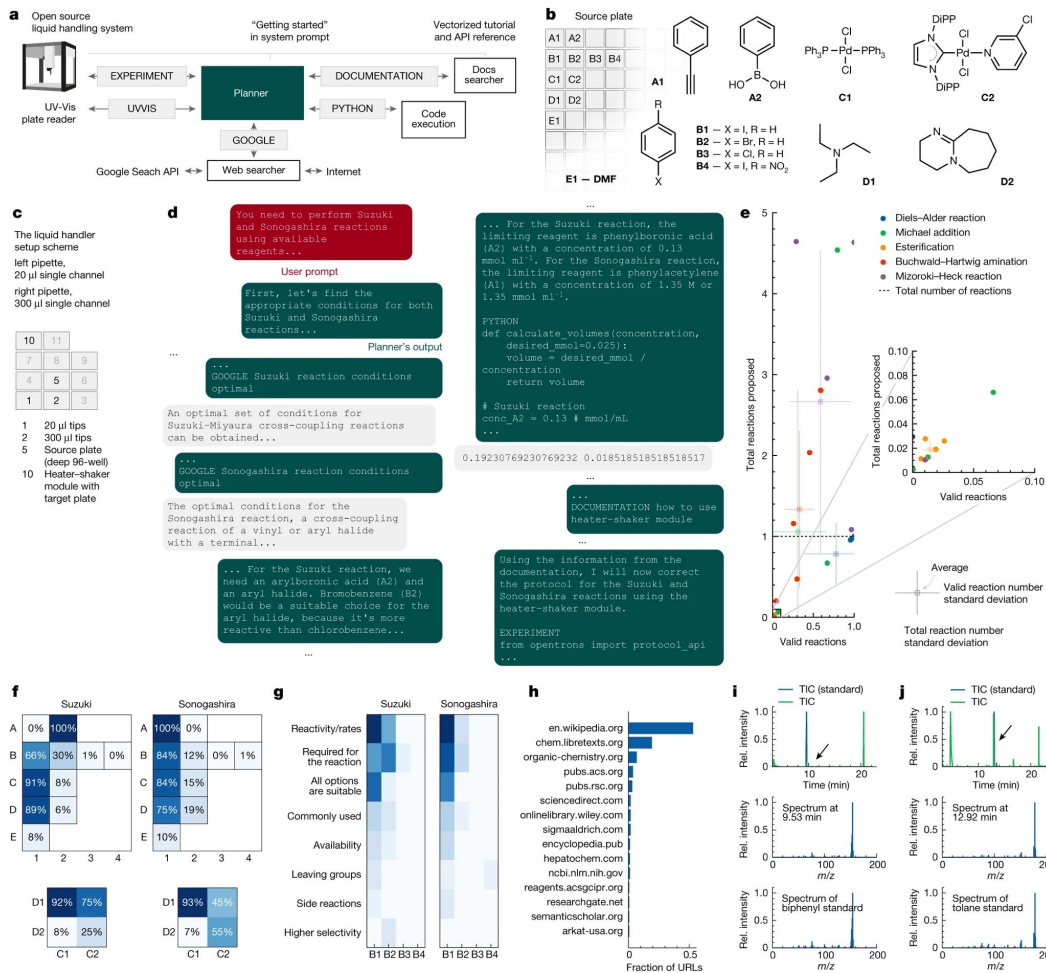
# Can GenAI do **research planning**?

## STUDY

## AI and scientific research

## RESULTS

- GPT-4 to research, plan & conduct chemical experiments
- learning how to use lab equip. by reading documentation (most were operated by code, but one task had to be done by humans)



# Can GenAI do specific **research tasks**?



## **STUDY**

**Titles & abstracts** Chen and Eger (2022)

**Literature synthesis** Aydın & Karaarslan (2022)

**Research gaps/hypotheses/plans**

**Scoring/Open text survey analysis** Mellon et al. (2022)

**New concepts** Wenzlaff and Spaeth (2022)

**Idea generation** Dowling (2023)

**Data analysis** Dowling (2023)

**Full paper outlines** Zhai (2022)

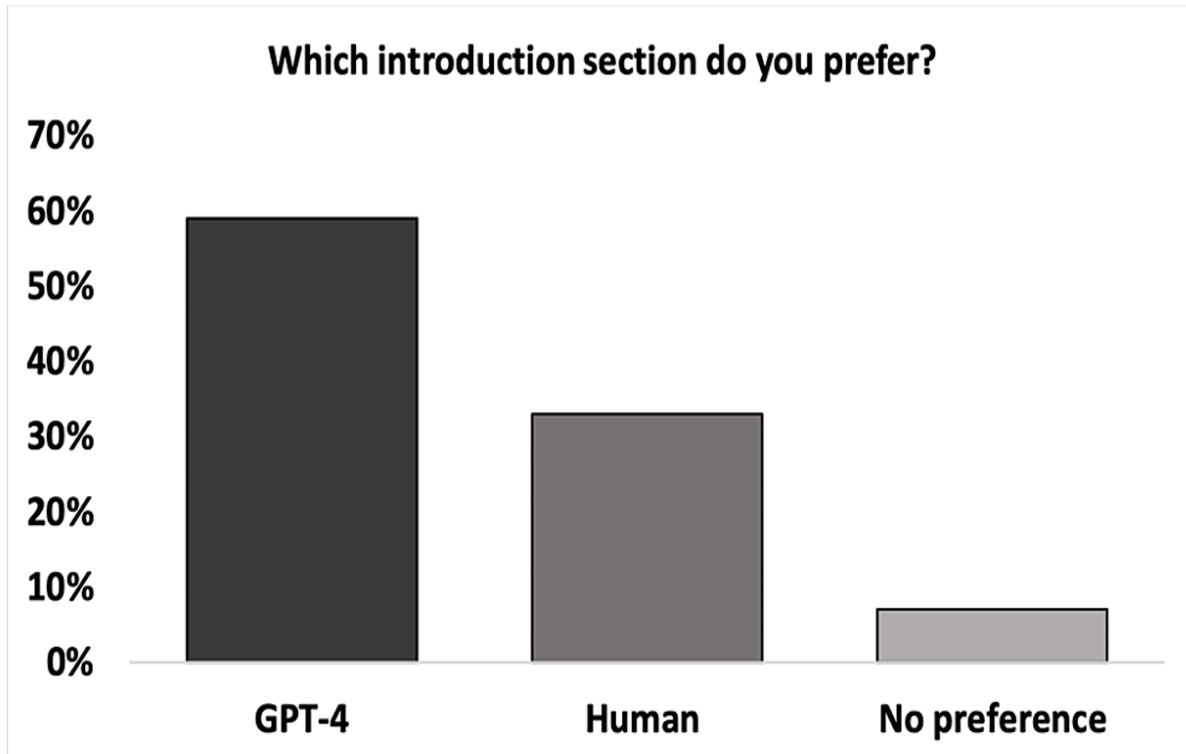
**Research papers** Adesso (2022)

**Faster peer review - NOW**

## **RESULTS**

**Inroads into all aspects of research**

# Can GenAI do **research introductions**?



## STUDY

Writing introduction sections for scientific articles

**GPT4 v Already published intros**

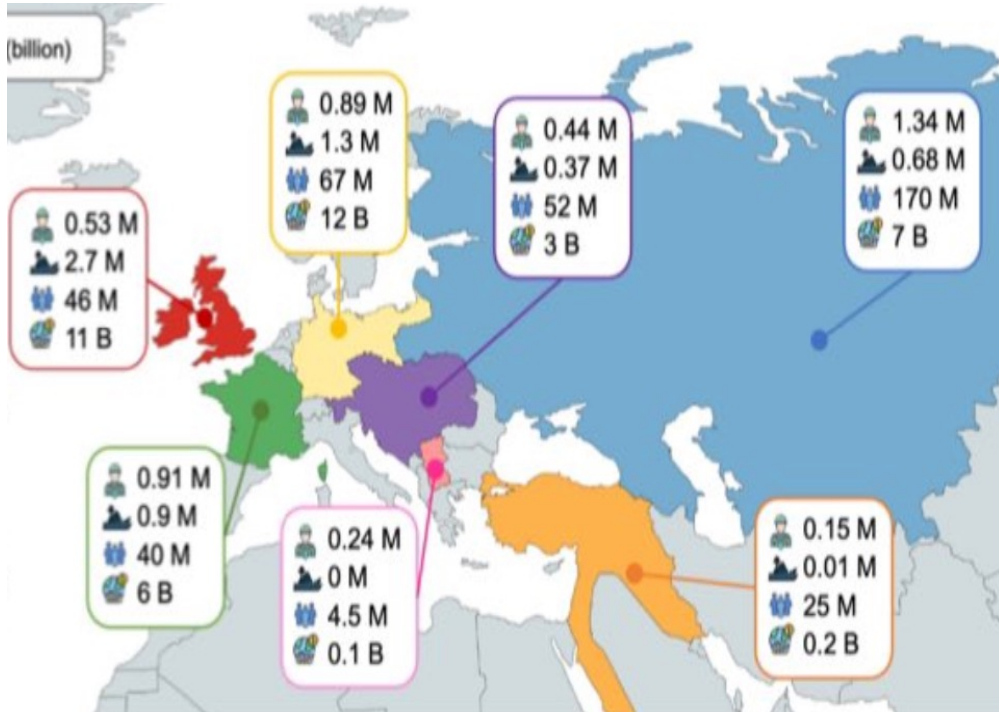
## RESULTS

**No significant difference**

**59%** assessors preferred GPT-4

**33%** preferred human-written

# Can GenAI do **research**?



## STUDY

LLM-powered multi-agent AI system  
Simulates decisions & consequences  
WWI, WWII & Ancient China

## RESULTS

Emergent agent interactions give **novel perspective** for conditions that lead to war  
AI-augmented insights can **redefine conflict resolution & peacekeeping**

Offers blueprint for using AI to possibly **prevent** future international conflicts

**AI University**



The Boston Globe

✓ Following

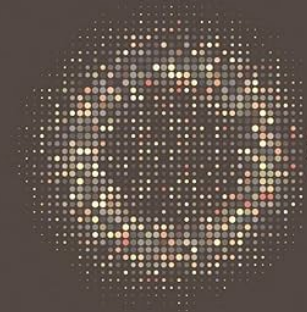
Outgoing SNHU president: AI means universities must change 'dramatically'



# Paul Le Blanc

## STUDENTS FIRST

Equity, Access, and Opportunity  
in Higher Education



PAUL LEBLANC

Foreword by Bridget Terry Long

"If you read only one book about American higher education, read this one."

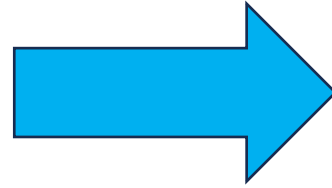
— Ted Mitchell, president, The American Council on Education





## OpenAI signs up its **first higher education customer**

- Researchers, staff and faculty get ChatGPT
- Open challenge to invite faculty and staff to submit ideas for ChatGPT
- **Odd that students not involved!**



## Zombie LMS/VLEs

Courses

SCORM

Data difficult

## LearnAdvantage

AI-first learning platform

\$1 billion



# Entrants

**Non-traditional** students; age & background

Skills **shortages**

Intake at **any time**

Quick & easy to **apply and enrol**



# Teaching

Every teacher has **24/7 chatbot**

Teaching at **different levels** by AI

Teaching in **many languages** by AI

3D for **social learning**

**AI** key part of curriculum

**Data-driven** approach, privacy

**Low but highly productive admin**

**High 24/7 teaching & learning**



# Learning

Full range of **tutor & GenAI tools**

Every student has '**Digital Twin**'

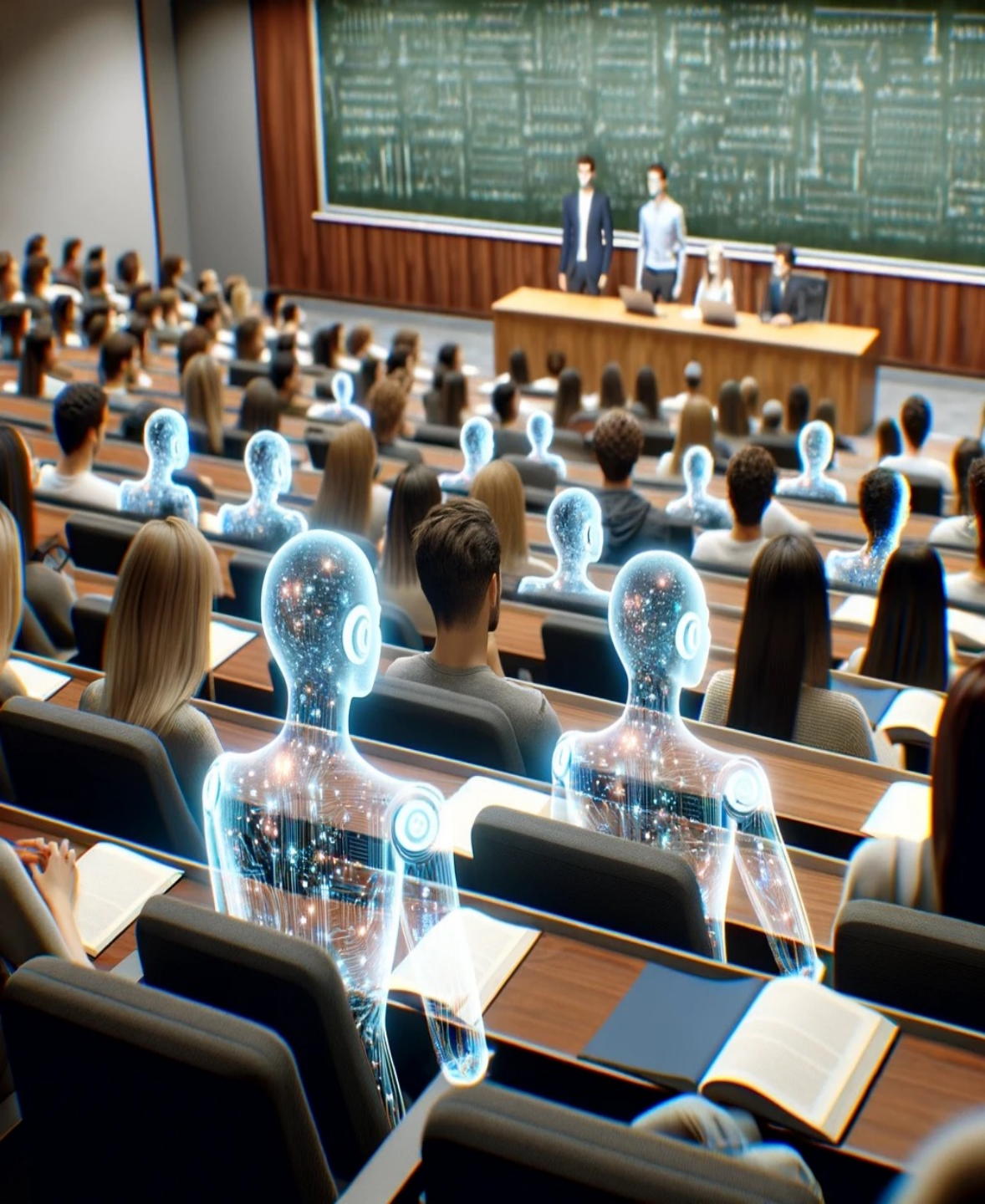
**Personalised** learning using AI

**Multimodal** from start

Focus on **generative** learning

Complete at **own pace**

**Assessment when ready**



**Uni has 2 AI students:**  
Ferris University (US)  
Enrol and register  
Choose courses  
Not robots

Aim to evaluate:  
**‘Student experience’**

# Educators needs to **UPSKILL**

## **OLD**

Presentation skills

Media production

Linear theory courses

Monologue

MCQs, Drag & Drop etc.

Gamification

Learning analytics

## **NEW**

**AI & 3D skills**

**Media generation** (txt/images/audio/video/avatars/3D)

**Complex performance**

**Dialogue**

**Open input, dialogue & doing**

**Personalised learning journeys**

**Data-driven**

**Thank you!**