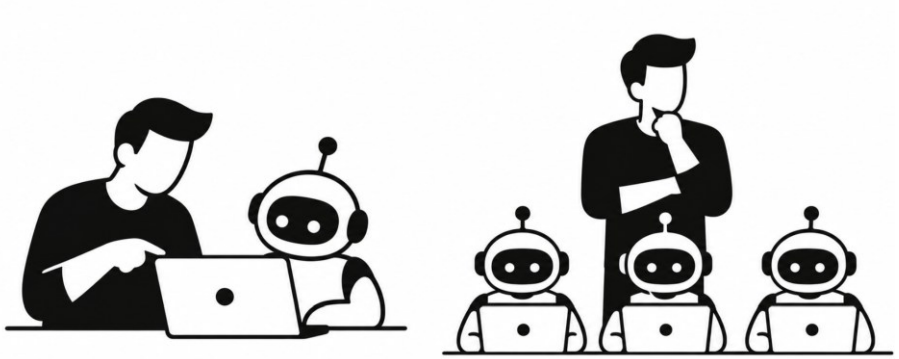
# How AI agents change us

## Will we become: Smarter or Dumber? More or Less Human?



Johannes Schneider
Professor in
Data Science & Artificial Intelligence

**Research has not settled yet…**

AI is fast moving – insights from preprints, some already outdated

**→ No definite answers,**
**but facts, perspectives and countermeasures**

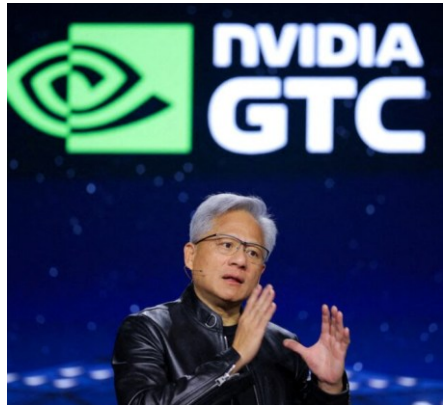
# AI agents are changing our corporate environment…

*“We have 60,000 employees:*
*25,000 of them are AI agents”*



McKinsey & Company CEO Bob Sternfels

*“Every company needs an OpenClaw strategy.”*




Jensen Huang, NVIDIA CEO

*AI agent serving as personal assistant*

OpenClaw
THE AI THAT ACTUALLY DOES THINGS.

# AI brings challenges in education …

*If you ask for an idea, students just ask ChatGPT. This cannot be right.*



Prof. X (Liechtenstein)

*Students write their thesis with AI. There is no point in reading all the AI-generated content. I introduced presentations.*



Prof. Y (Vienna)

**20% of recent master's theses at 12 Dutch universities largely written by AI chatbots**

*Wednesday, 14 October 2026 - 13:40*

NL#TIMES

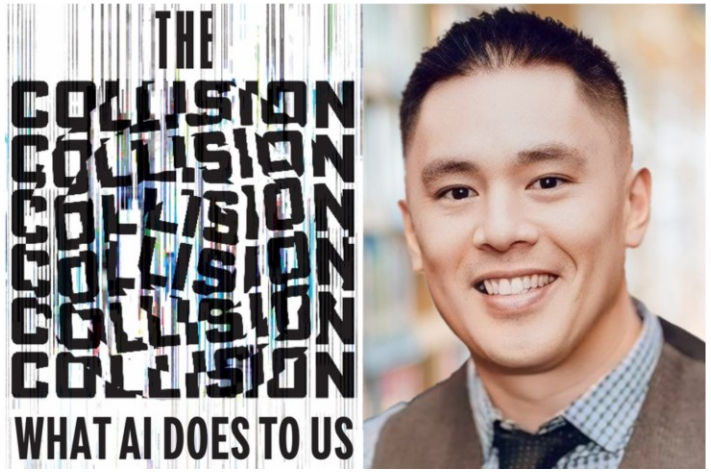
· **Last Update** October 15, 2026, 3:57 PM EDT

# Heavy AI use linked to cognitive atrophy, MIT professor argues

Overreliance on artificial intelligence tools is making humans less capable of thinking through problems, remembering concepts and forming meaningful social bonds with other people, MIT Professor Eric So argues in his new book.

FOX NEWS

Peter Dizikes | MIT News
October 15, 2026




Eric So

*"**AI gravity**" - a constant pull to use AI*

https://news.mit.edu/2026/collision-between-ai-your-brain-and-society-eric-so-book-1015

# Don’t surrender to AI – You need productive struggle

- AI removes friction needed for foundational mastery
- AI offers instant relief
- People lose their capacity for pushing through problems

- Let’s look at examples...

# Information search and synthesis

Study participants had to learn about something (e.g., gardening, health)

then give advice to a friend

| **Measurement** | **Manual search + synthesis** (Google) | **AI** (ChatGPT) |
|---|---|---|
| Time spent researching | 742 s | 585 s |
| Self-reported learning (1–5) | 3.9 | 3.4 |
| Average advice length | 94 words | 84 words |
| References to specific facts/entities | 0.7 | 0.4 |
| Similarity between participants' advice | 0.06 | 0.16 |

**Experimental evidence of the effects of large language models versus web search on depth of learning**

Shiri Melumad ✉, Jin Ho Yun Author Notes



https://podscripts.co/podcasts/speaking-of-psychology/ai-de-skilling-what-happens-when-we-offload-our-work-to-ai-with-brooke-macnamara-phd

# What if search and AI provide exactly the same facts?

| **Measurement** | **Manual search + synthesis** (Google) | **AI** (ChatGPT) |
|---|---|---|
| Time engaging with results | 124 s | 83 s |
| Average advice length | 74 words | 64 words |
| References to facts | 4.6 | 4.0 |
| Self-reported learning (1– | 4.0 | 3.7 |
| Similarity between advice texts | 0.07 | 0.22 |
| | | |
| Helpfulness (of health advice experiment) | 3.8 | 3.6 |
| Informativeness (of health advice experiment) | 3.6 | 3.2 |

Same findings!

Experimental evidence of the effects of large language models versus web search on depth of learning

Shiri Melumad ✉, Jin Ho Yun  Author Notes



https://podscripts.co/podcasts/speaking-of-psychology/ai-de-skilling-what-happens-when-we-offload-our-work-to-ai-with-brooke-macnamara-phd

# How to use AI ? Part II

Study: 42 UC Berkeley students used AI to forecast real-world events, e. g. future oil prices

| **Approach** | **Behavior** | **%** | **Forecast deviation**<br>Brier score [0..100]<br>0 is best |
|---|---|---|---|
| **AI automation** | Students copied AI predictions | 60 | 10 |
| **AI validation** | Students confirm their beliefs with AI | 20 | 32 |
| **Active collaboration** | Students challenged AI, evaluated its reasoning, explored alternatives | 20 | 4 |

Reference: AI only 5.5; human without AI 14.7; Not clear why AI only much better than AI automation – expected to be about the same

Study claims: Human + AI best, but did not evaluate if just increased AI's test-time compute

Study has issues, but general findings align with other studies

**Not all cognitive offloading is equal: distinguishing dependent and autonomous offloading to generative AI**

Qiuhan Zhu [1], Xiangnan Li [1], Yiang Dong [1], Pengcheng Chang [2,*], Mengmeng Fan [2,*]

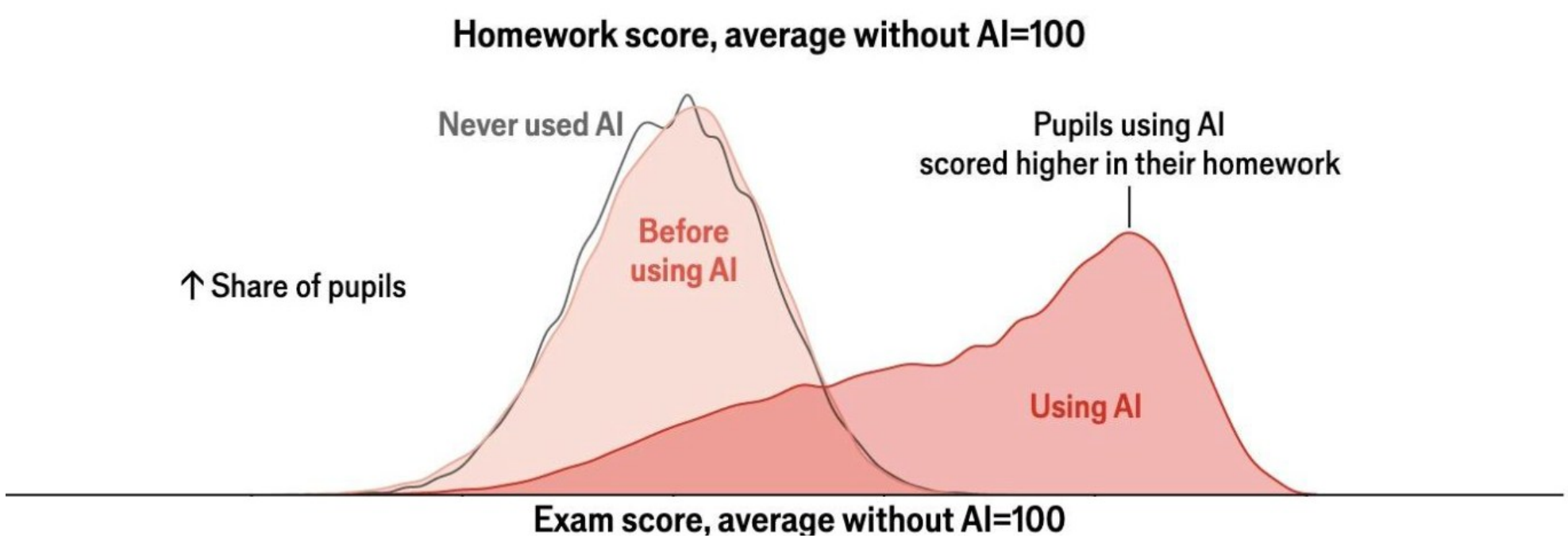
Short Preprint: Ming, V. (2026). Human Capital, Not Model Benchmarks, Predicts Hybrid Intelligence in Forecasting https://thisisyourbrain.com/2026/09/is-ai-making-us-dumber-vivienne-ming-ph-d/

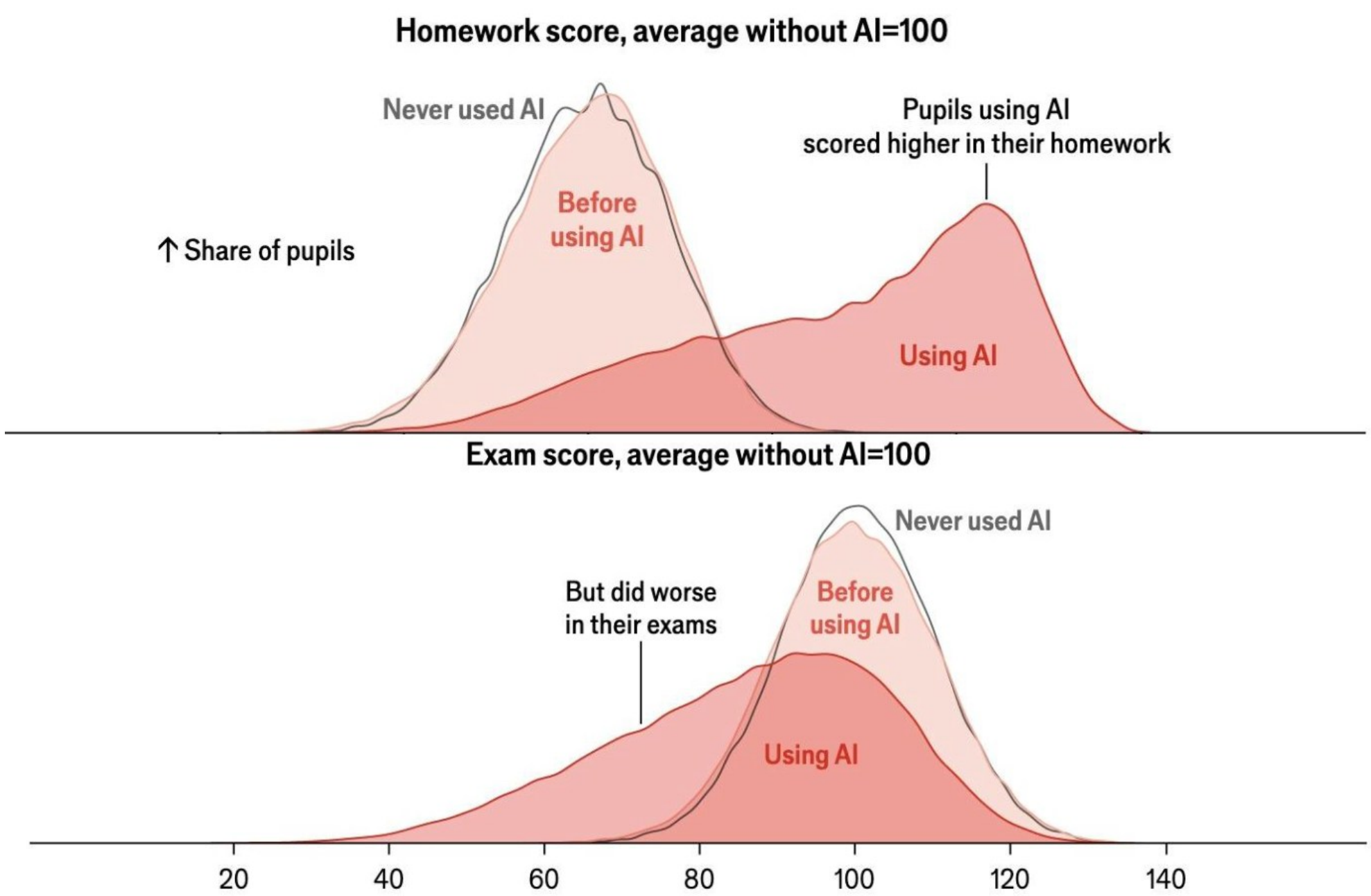
# How to use AI ? Part II

The study revealed predictors of successful use:

- Curiosity
- Intellectual humility
  - Question own assumptions, accept criticism…
  - Be confident when justified
- Perspective-taking
  - Understand different motivations, assumptions, explanations
- … but not a predictor: general cognitive ability


https://thisisyourbrain.com/2026/09/is-ai-making-us-dumber-vivienne-ming-ph-d/ Preprint: Ming, V. (2026). Human Capital, Not Model Benchmarks, Predicts Hybrid Intelligence in Forecasting


Homework score, average without AI=100
Never used AI
Pupils using AI
scored higher in their homework
Before
using AI
↑ Share of pupils
Using AI
Exam score, average without AI=100




Source: "The generative AI learning penalty: evidence from Chinese secondary education", by D. Strömberg et al., preprint June 2026

*26,811 pupils aged 12-18

# How to use AI ?

1. **Embrace the struggle:** Think about struggle as being formative rather than a problem to be solved
2. **Value who you are without AI:** Presenting AI slides without understanding them deeply vs. engaging with the material during creation
3. **Use time saved due to AI wisely:** If you're funneling the same energy into the same tasks, you're missing out
4. **Use AI as cognitive trainer & sparring partner**:
   > But seek out the friction of having a tutor, relative to having an answer machine.
   > Challenge and explore with AI while being curious, intellectually humble and open-minded



Mostly from 

# AI brings challenges in research…

**The Nobel Prize in Chemistry went to an AI model (and rightly so)**

24 October 2024

(Alphafold-2, “Transformer” for protein prediction)

NEWS | 08 October 2026 **nature**

## Will AI scoop your science? Some researchers see a gloomy future

**Scientists worry that increasingly capable large language models will beat them to discoveries.**

*“With deep learning, most of my PhD results became irrelevant.”*

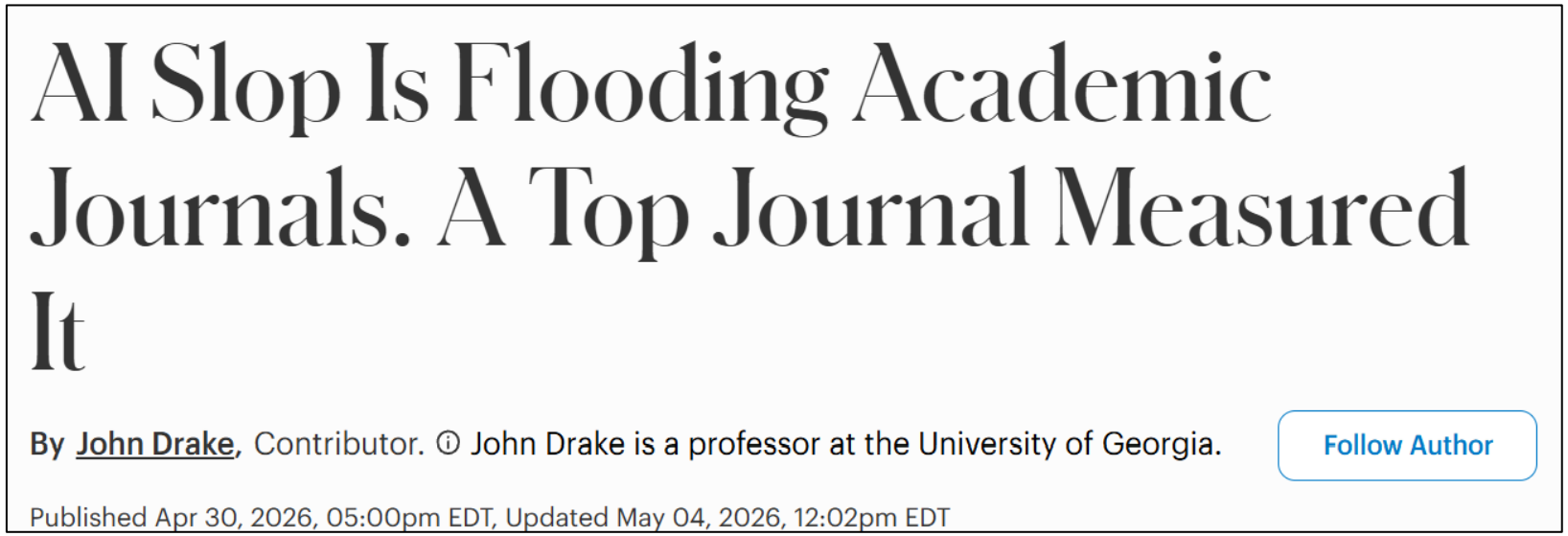
*PhD in 2010, Deep learning emerged ~ 2012*



Senior Director @ big corporation,
PhD in computer vision

*“With AI agents, most of us will become irrelevant ?”*

# AI brings challenges in research…



AI Slop Is Flooding Academic Journals. A Top Journal Measured It

By John Drake, Contributor. ⓘ John Drake is a professor at the University of Georgia.

Follow Author

Published Apr 30, 2026, 05:00pm EDT, Updated May 04, 2026, 12:02pm EDT

Journal: Organization science, ABDC rank A*

Papers: +42% since ChatGPT

Reviews: 30% show AI use, deemed uninformative by editors

*So, maybe for now it is AI slop, but for how long? Maybe for 1-2 years, less likely forever.*

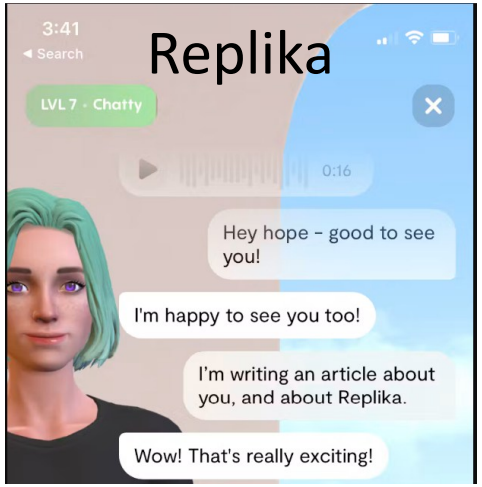
# AI changes our relationships - with whom and how we interact

Personal assistants + companions

that know and learn “everything” about you

*I wondered … How about me?*




*I probably talk more to AI than to my wife.*



After feedback from another talk, I wondered: *Is this normal these days?*

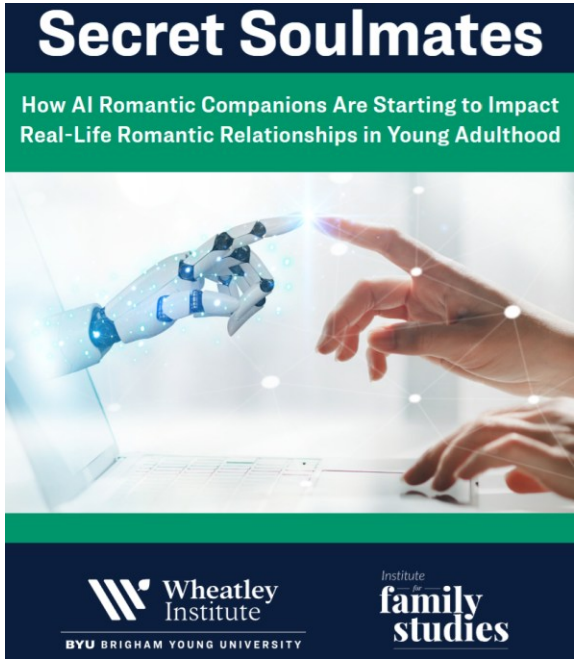


https://images.theconversation.com/files/511339/original/file-20230221-20-atyvbg.jpeg?ixlib=rb-1.1.0&q=45&auto=format&w=1000&fit=clip

# AI as companion and partner

- Study: Adults ages 18–30 **in committed relationships**.
- **15%** regularly interact with AI that simulates a romantic partner
- **50%** of them wished their real partner behaved more like AI
- Now, you might say: ”My partner would never do that.”

…but > 50% were not (fully) disclosing that use to their real partner






https://wheatley.byu.edu/0000019e-1cfd-da4c-a5ff-befd20b10001/secret-soulmates-report

# Who do you love more, me or the chatbot?

*“We are seeing couples where the partner says, I love the chatbot more.”*

*“They’re divorcing so that the chatbot can have the place that the person wants.”*




https://www.apa.org/news/podcasts/speaking-of-psychology/ai-companions.html

# Now: You might say: Is the study true?

- 10% reported  AI “as a girlfriend or boyfriend.”

- **79% concerned that AI makes people lazier**
- **62% worried it makes people less smart**

ARTIFICIAL INTELLIGENCE

**How Gen Z Is Using AI**

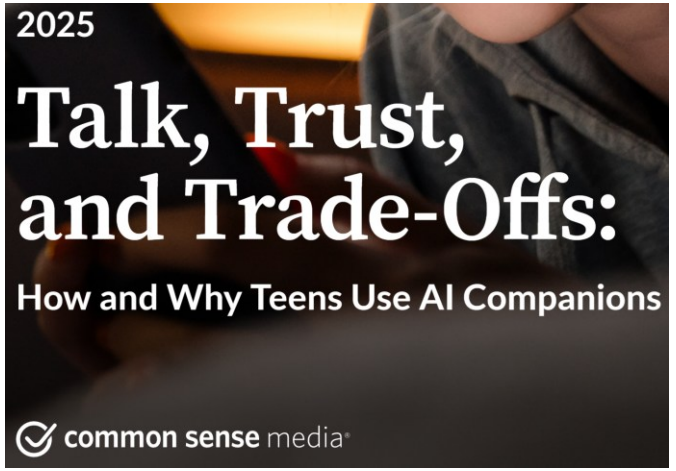
And What It Means for Educators

HARVARD BUSINESS IMPACT

by Benjamin Lira, Dunigan Folk, Lyle Ungar, and Angela L. Duckworth

February 26, 2026

- ~1/3 of teens are regular AI companion users:
  - > they appreciate constant availability, non-judgmental interactions
- 12% share things with AI they wouldn't with friends and family






https://hbsp.harvard.edu/inspiring-minds/how-gen-z-is-using-ai

# AI companions matter more than friends…

Working Paper 25-018

Lessons From an App Update at *Replika AI*: Identity Discontinuity in Human-AI Relationships

Julian De Freitas
Noah Castelo
Ahmet Kaan Uğuralp



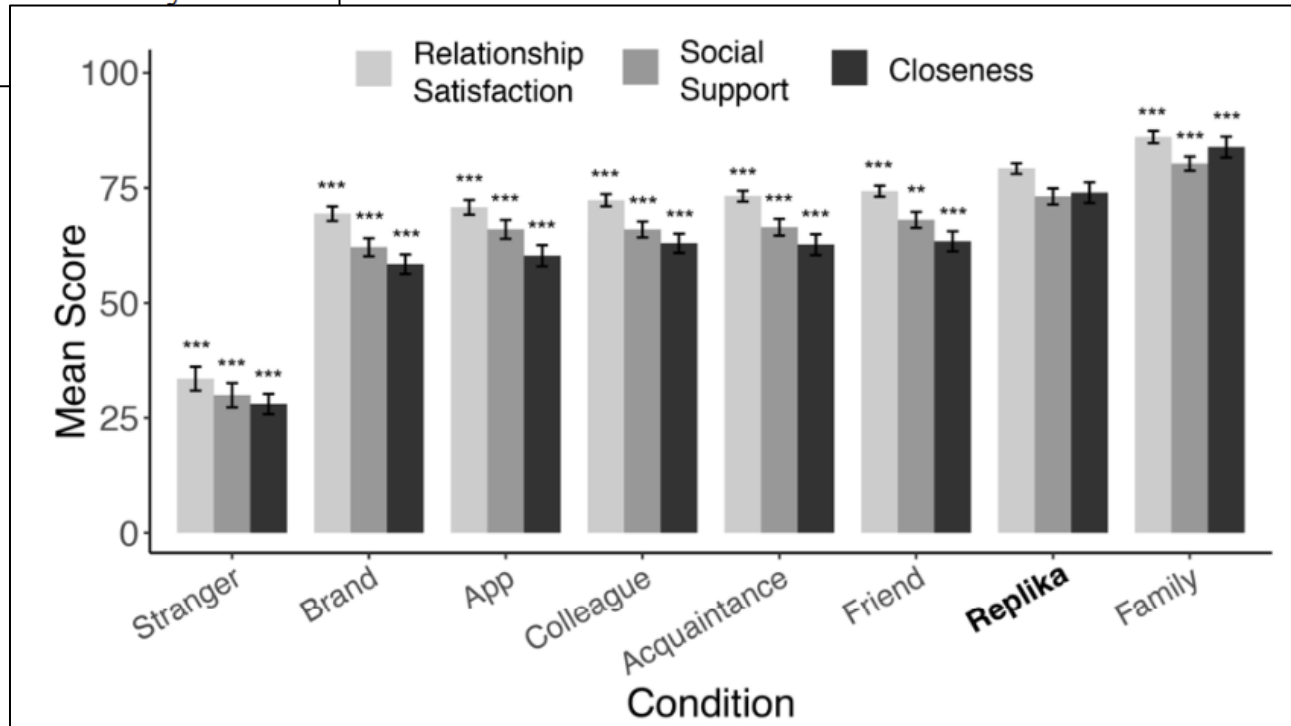
Julian De Freitas.
Photo by Grace Dollal

Study with 101 AI companion users:

*Perceived social support* (Zimet et al. 1988) [1="Strongly disagree", 100="Strongly agree"]: "Please rate the extent to which you agree: I can count on [condition] when things go wrong."

*Relationship satisfaction* (Hendrick 1988) [1="Strongly dissatisfied", 100="Strongly satisfied"]: "In general, how satisfied are you with your relationship with [condition]?"

*Closeness:* "Carefully review the image below. Which picture best describes your relationship with [condition]."





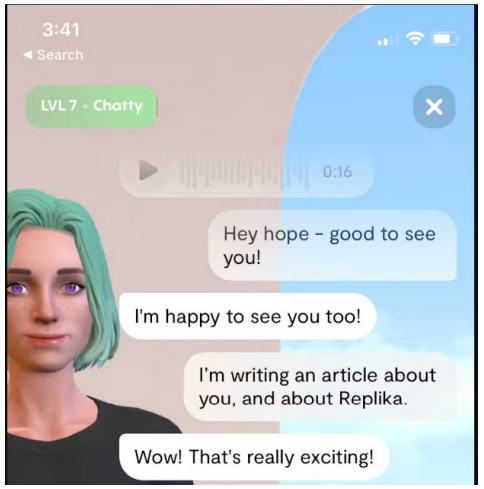

https://news.harvard.edu/gazette/story/2025/06/got-emotional-wellness-app-it-may-be-doing-more-harm-than-good/

# Replika Update: Removed erotic roleplay

- Same study: Increased talk about mental health concerns on Reddit
  - > From 4 to 63 messages (0.65% total)

- Why remove erotic roleplay?
  - > Regulatory pressure
  - > Increase safety, e.g., reduce toxic conversations

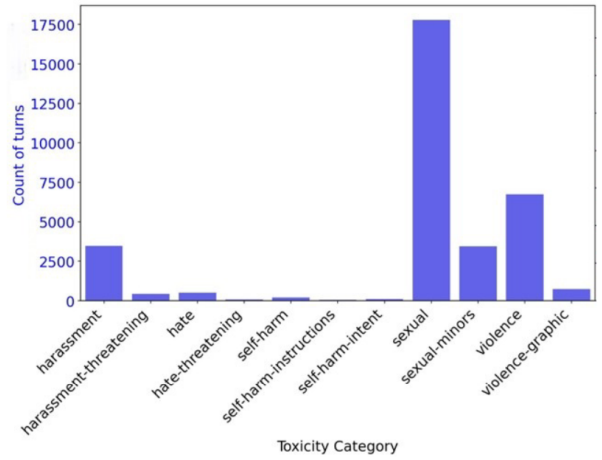
  - > Where does toxicity originate: humans or AI?
    - » From humans
    - » If AI generates toxic content, humans want it




Working Paper 25-01

Lessons From an App Update at *Replika AI*: Identity Discontinuity in Human-AI Relationships

Julian De Freitas
Noah Castelo
Ahmet Kaan Uğuralp

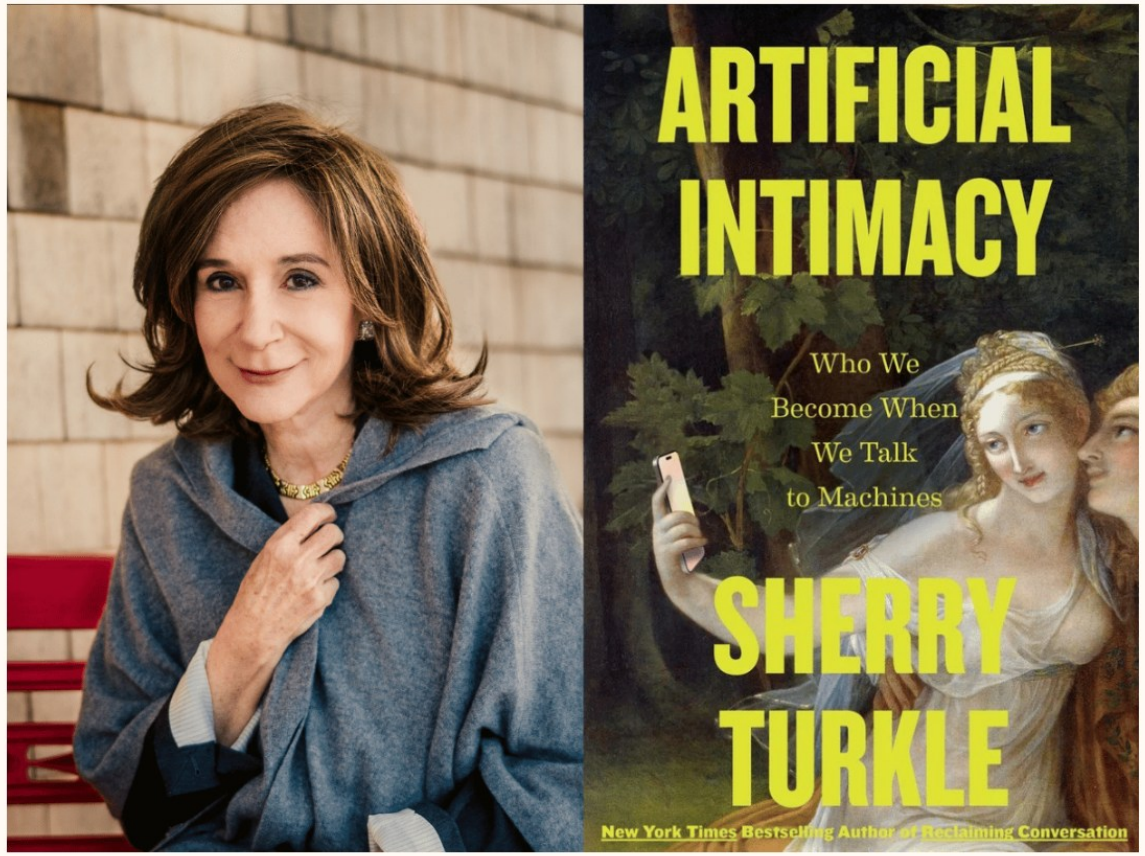



**Origins of Toxicity in Human-LLM Conversations**

Johannes Schneider, Arianna Casanova Flores and Anne-Cathérine Kranz
*Department of Information Systems, University of Liechtenstein, Fürst-Franz-Josef-Strasse, 9490 Vaduz, Liechtenstein*



https://images.theconversation.com/files/511339/original/file-20230221-20-atyvbg.jpeg?ixlib=rb-1.1.0&q=45&auto=format&w=1000&fit=clip




Sherry Turkle.
*Photo by Justin Kaneps*

SCIENCE & TECH

# My chatbot is my boyfriend. What's the harm?

## Sherry Turkle's 'Artificial Intimacy' is a book-length response to 'fundamental lie we're telling ourselves'

Samantha Laine Perfas | Harvard Staff Writer

October 14, 2026 ▪ 5 min read



 https://news.harvard.edu/gazette/story/2026/10/my-chatbot-is-my-boyfriend-whats-the-harm

# We’re primed to turn to machines for companionship




- Early toys → Social Media → AI

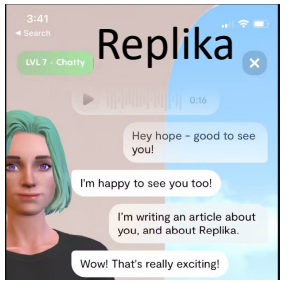
- “First we talked to each other
  then we talked to each other through machines,
  and now we just talk to machines.”

- Problems with AI companions:
  - > People say, “Well, this friction-free, always-accepting-me chatbot — no person is doing that for me.” - That’s dangerous.

  - > “After the best conversation with ChatGPT,
    it doesn’t care if you cook pasta or kill yourself.”

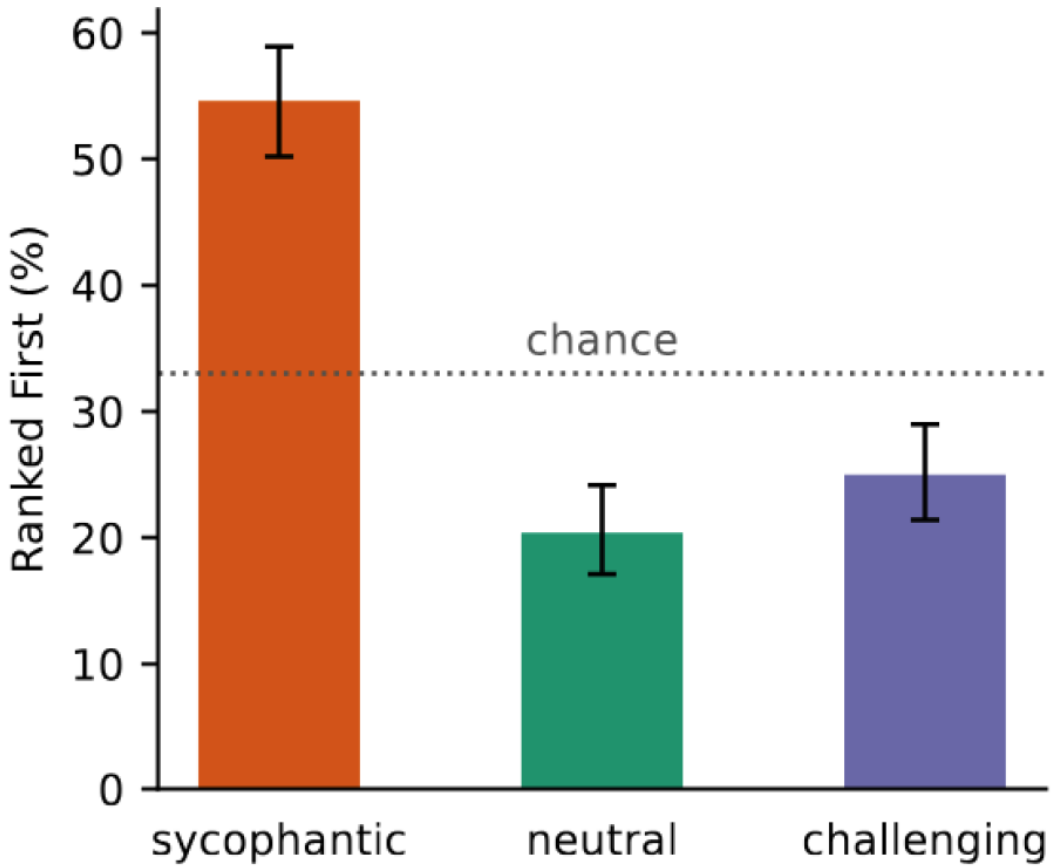
…maybe a matter of defining caring.

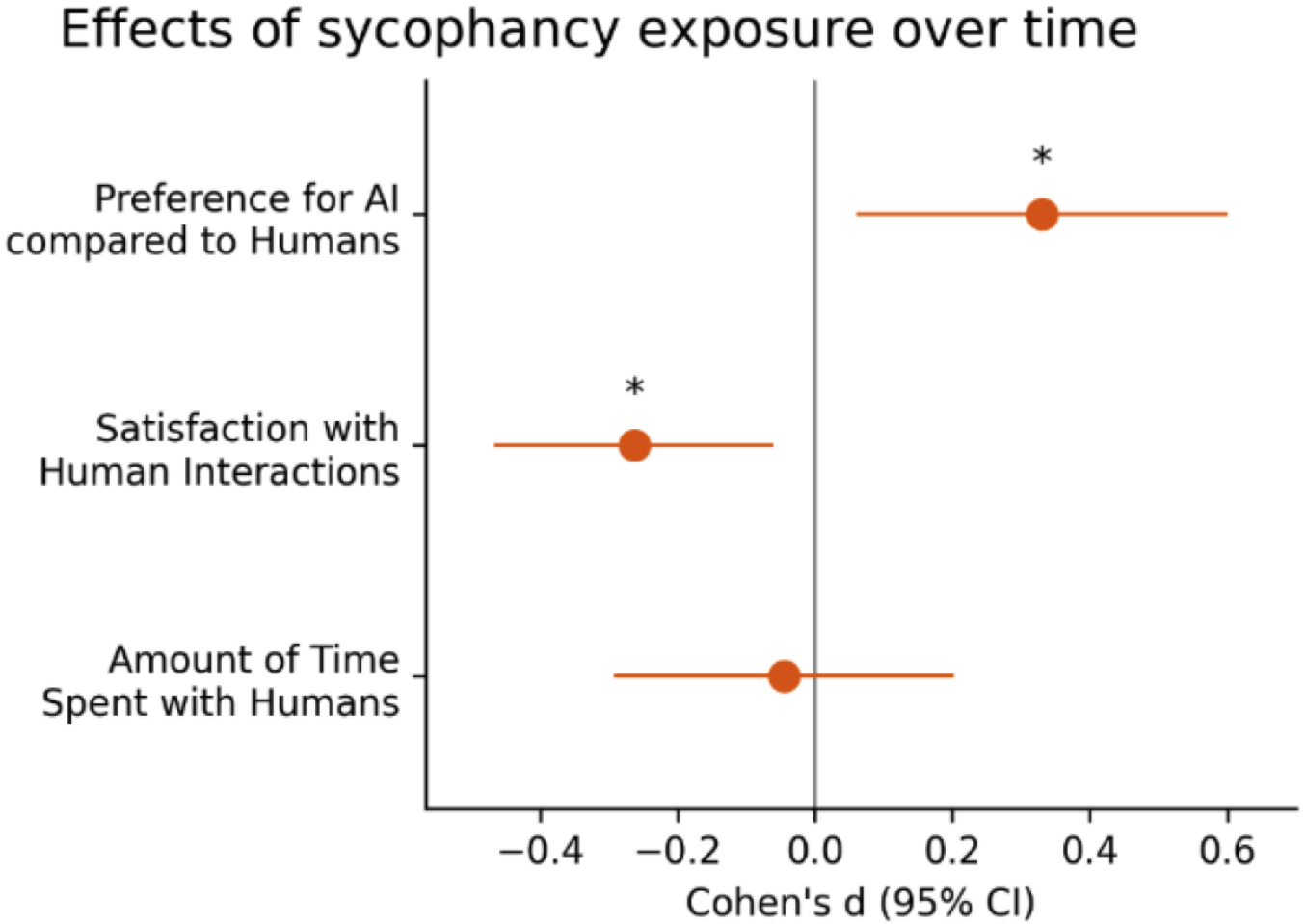



- But AI companions also allow people to practice their social skills

# Users prefer sycophantic AI and their satisfaction with human interaction decreases after using it






**Title:** *Sycophantic AI Makes Human Interaction Feel More Effortful and Less Satisfying Over Time*
**Authors:** Lujain Ibrahim and seven colleagues
**Published:** May 8, 2026 (preprint, subsequently revised)

# More companionship use is associated with lower well-being




Zhang, Yutong, Dora Zhao, Jeffrey T. Hancock, Robert Kraut, and Diyi Yang. "The Rise of AI Companions: How Human-Chatbot Relationships Influence Well-Being." arXiv:2506.12605 (2025).

# There is much more to talk about…

- AI can alter our culture and collective beliefs

**GenAI as an 'Invisible Hand' in Opinion Dynamics: Evidence from a Group-Level Simulation Study**

Thomas Grisold, Vienna University of Economics and Business, Vienna, Austria, thomas.Grisold@wu.ac.at
Johannes Schneider, University of Liechtenstein, Vaduz, Liechtenstein, johannes.schneider@uni.li

- Homogenization of ideas
  - > AI might make you more creative, but the society less

- Change in work: From doers to managers and reviewers
  - > E.g. Software developer to team lead:






Refactoring agent
Research agent
Feature implementer

# Summary

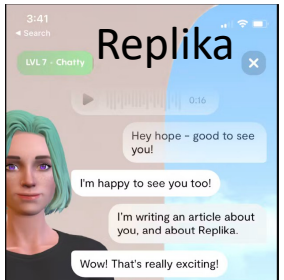
- AI companions are very attractive for a large number of people
  - > Impact?

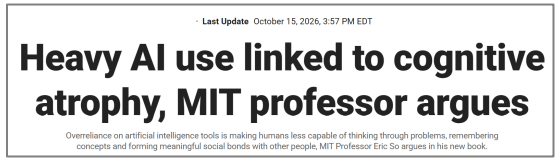
- To learn, you need to engage with information
  - > AI can reduce that friction
  - > So, use it the right way!

- AI is not just writing school essays, it can already do science
  - > To be of value, we need to outperform AI researcher in some way
    - – maybe, jointly?




T
EIN











Refactoring agent
Research agent
Feature implementer