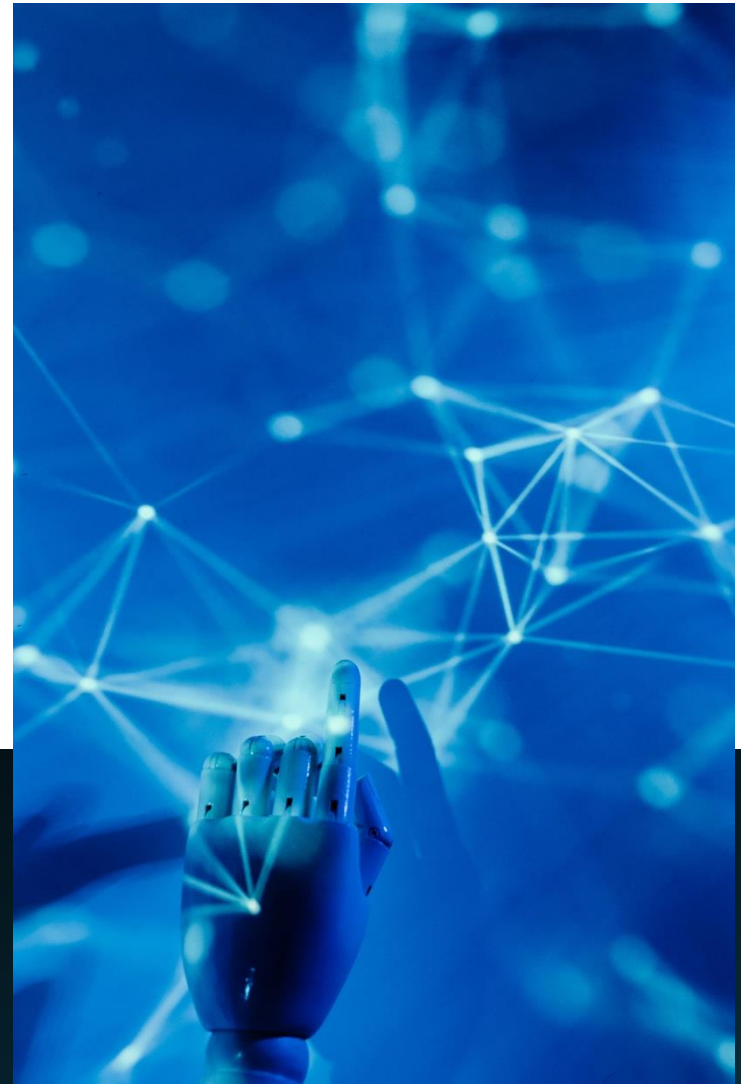# AI Meets Health Coaching: Partnering Technology with Human Connection

March 7, 2025

ICIMH, Seattle

Meg Jordan, Mark Dreusicke, Ruth Q. Wolever

Disclosures (Past 3 yrs, No Conflicts with Topics)

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Consultant for Fullfill, Inc.

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Grant & Contract Funding: National Diabetes, Digestive & Kidney Disease Institute, Meharry Medical College, Department of Defense & Coalition for Better Health

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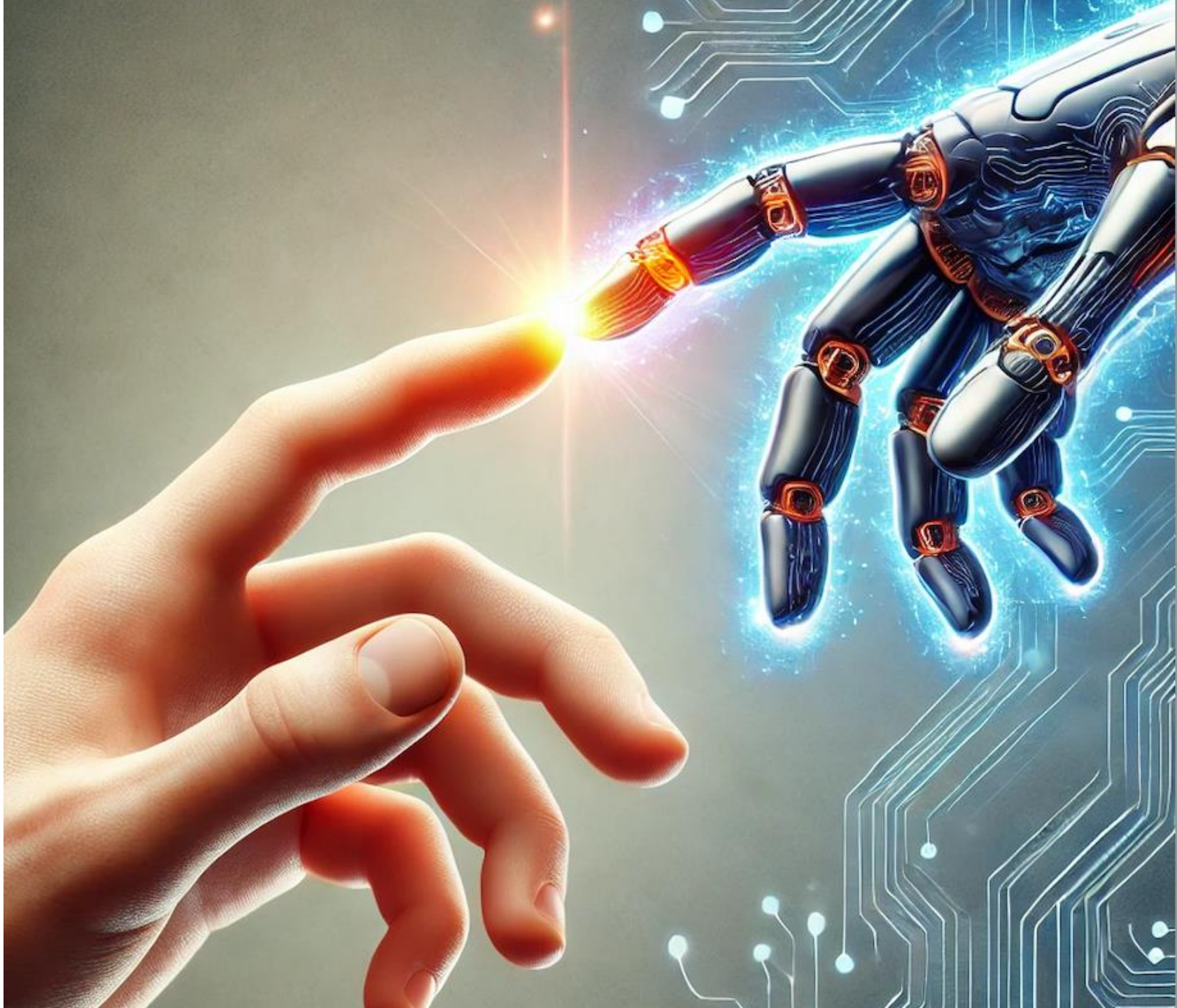Faculty, Functional Medicine Coaching Academy

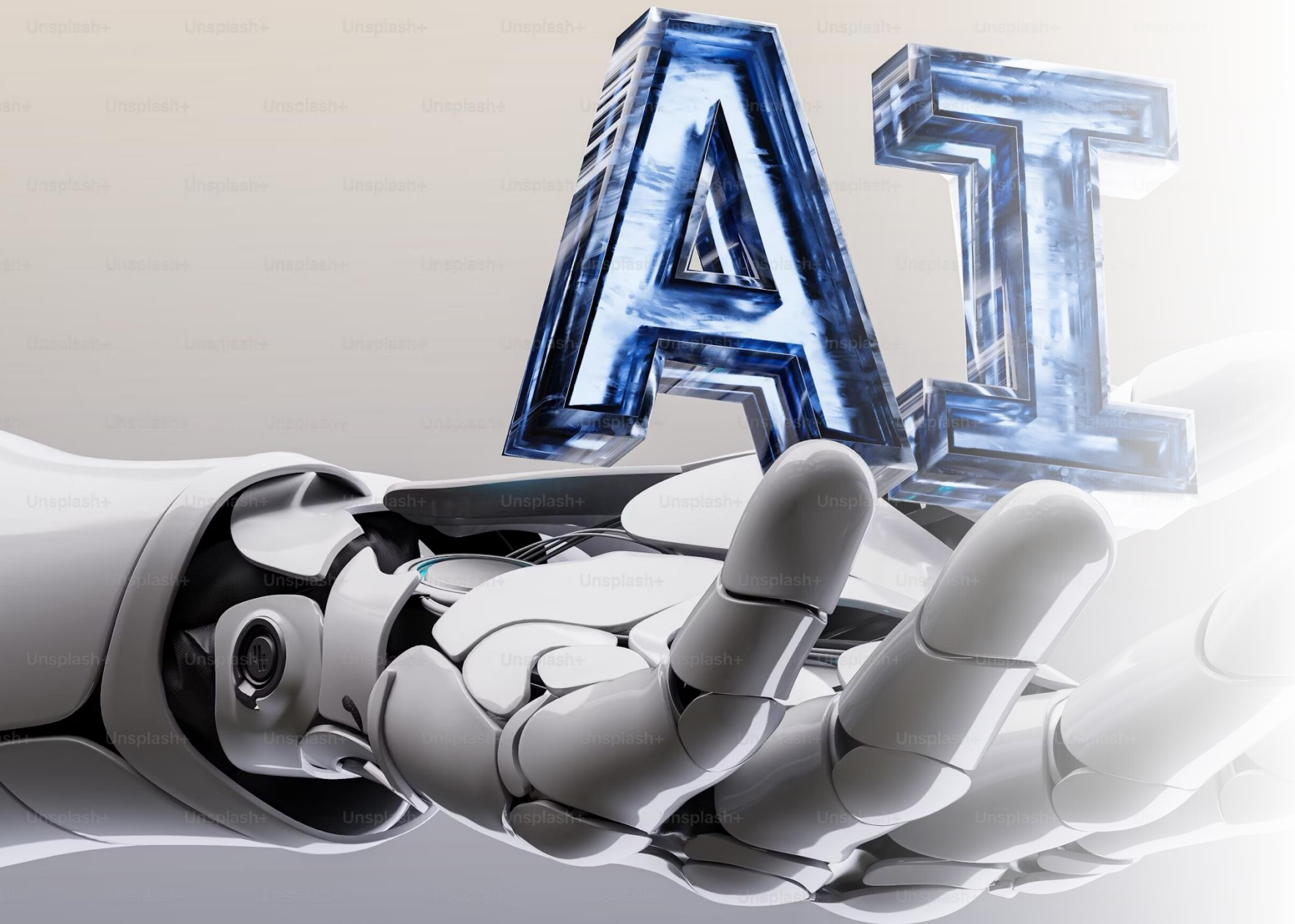Faculty, Blue Sky Leadership Certificate

Objectives

1. Understand the emerging role of AI in health coaching

2. Recognize risks of AI overreliance in care

3. Develop strategies for balancing AI and human connection

But we're going to discover a lot more than that… and include you in the inquiry.

What is relational or generative AI?

Unlike its predecessors, relational AI can handle intricate relationships between data points, allowing it to generate content that is more meaningful and contextually relevant.

Generative AI goes a step further, integrating audio, text, images, video.

Early stage, 1964

- Eliza 1st chatbot, MIT, Based on Rogerian psychotherapy
- Pattern matching, simple dialog


```
ELIZA: HOW DO YOU DO. PLEASE TELL ME YOUR PROBLEM

YOU: ARE YOU A COMPUTER?

ELIZA: DO COMPUTER WORRY YOU

YOU: WHAT IF THEY START TO THINK

ELIZA: DO YOU THINK ITS LIKELY THAT THEY START TO THINK

YOU: ARE YOU THINKING YOURSELF

ELIZA: WHY ARE YOU INTERESTED IN WHETHER I AM THINKING MYSELF
OR NOT
```
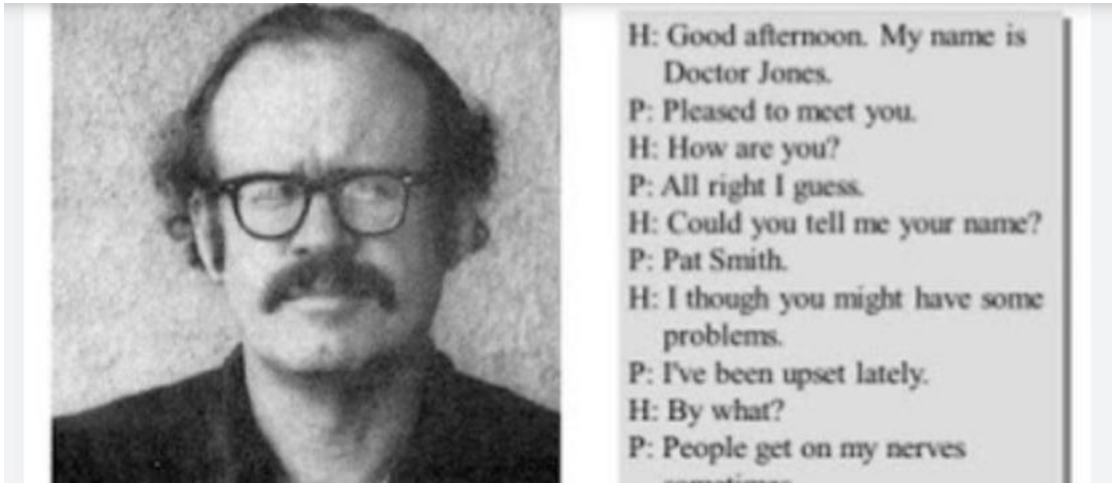
1970s – 1990s: Rule-based systems

- PARRY – chatbot
- Emulated a patient with paranoid schizophrenia
- Introduced notion of state management

- AIML and ALICE (1995)
- Angel-bot
- XML-based rules
- Focused on user content
- Gaming took off, Xbox

H: Good afternoon. My name is Doctor Jones.
P: Pleased to meet you.
H: How are you?
P: All right I guess.
H: Could you tell me your name?
P: Pat Smith.
H: I though you might have some problems.
P: I've been upset lately.
H: By what?
P: People get on my nerves

Late 1990s – Rise of Intelligent Systems

- Commercial chatbots in customer service
- Microsoft's Clippy provided contextual help (sort of…)
- NLP takes shape
- **Natural Language Processing**
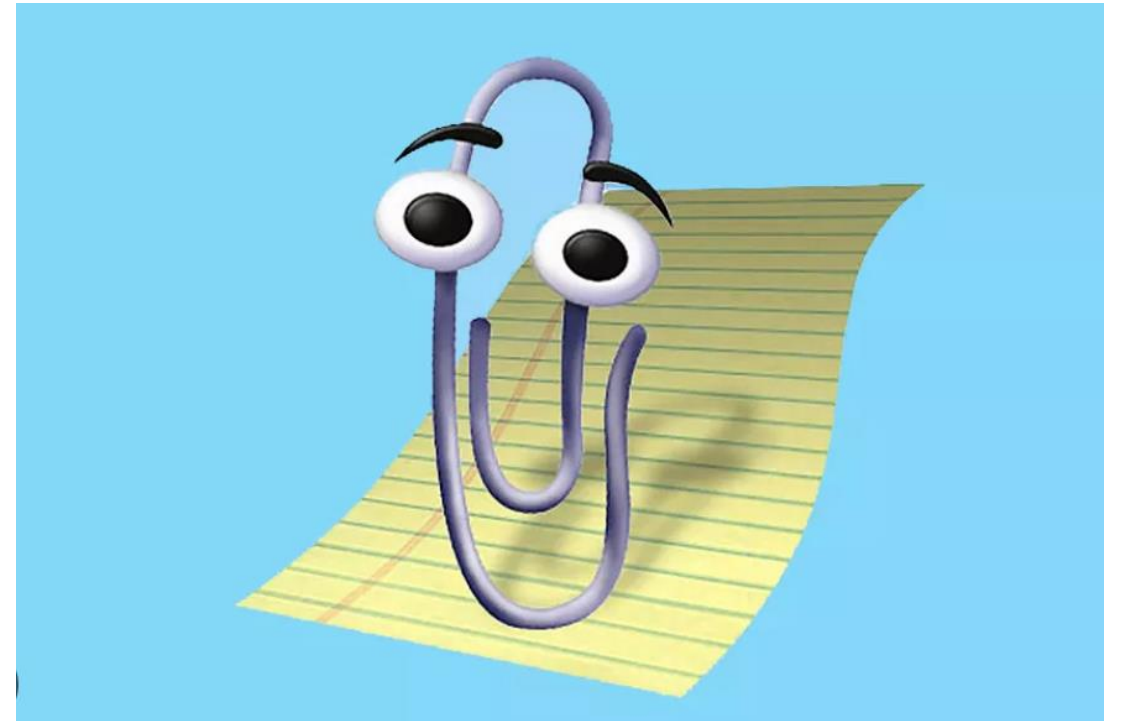
Early 2000s – Machine Learning

- ML techniques now understand user's queries

- "SmarterChild" on AOL instant messenger

- Beginning of simple Relational AI – Formulated dialogues based on user interactions and patterns
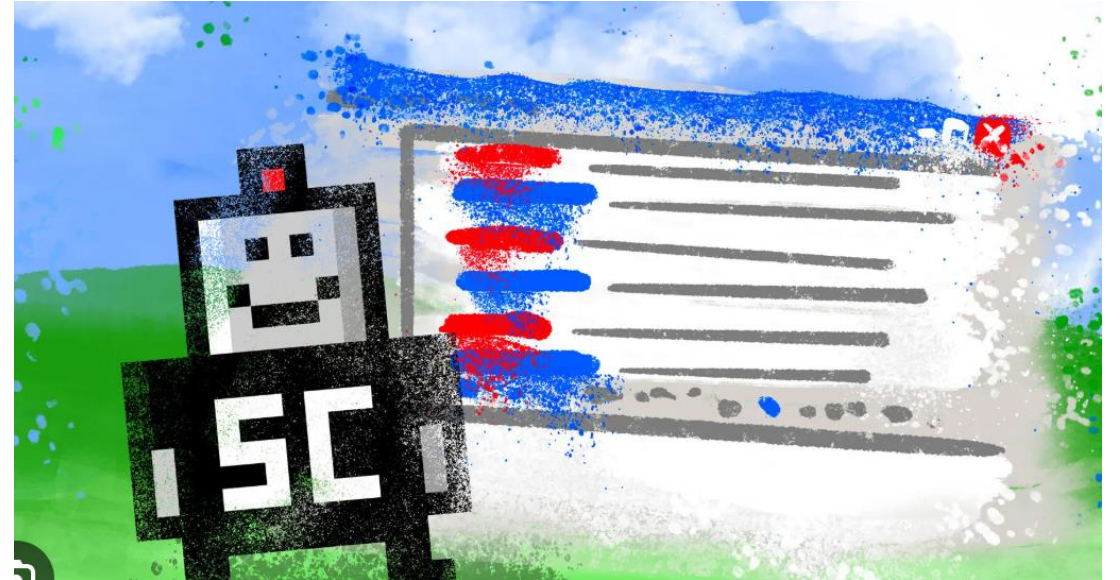
2010s – Deep Learning and Transformers

- Use of **Neural Networks, recurrent NNs**

- SIRI

- Google Assistant

- Relational AI progresses to relationship nuances and personalized interactions

- Move 37 (Go Game)
  - Intelligence that thinks differently and doesn't "show the math"
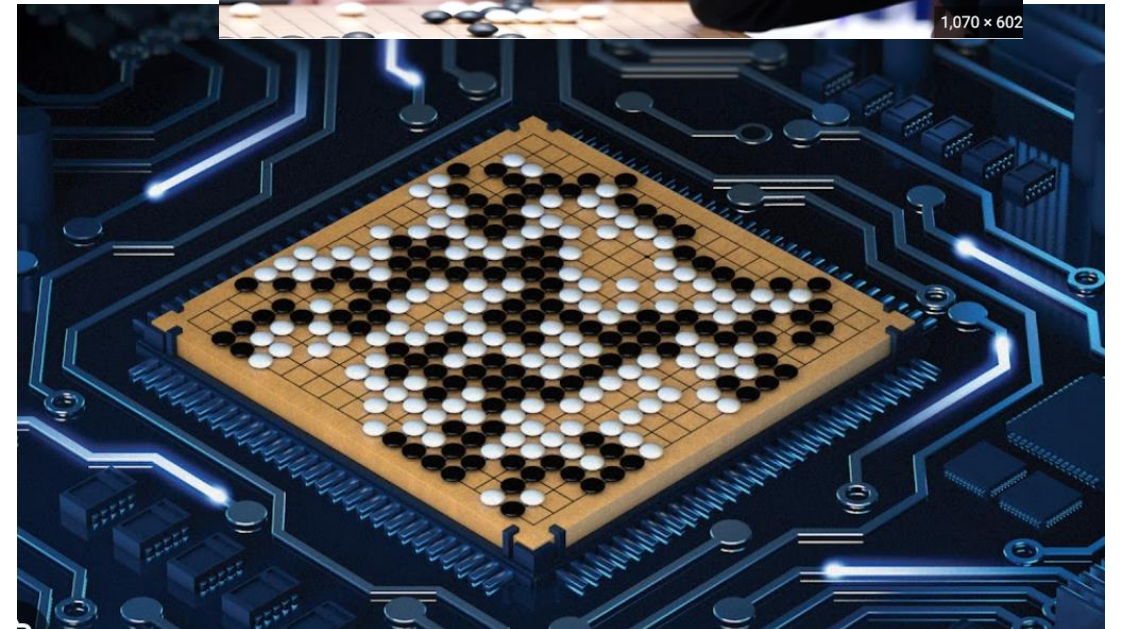
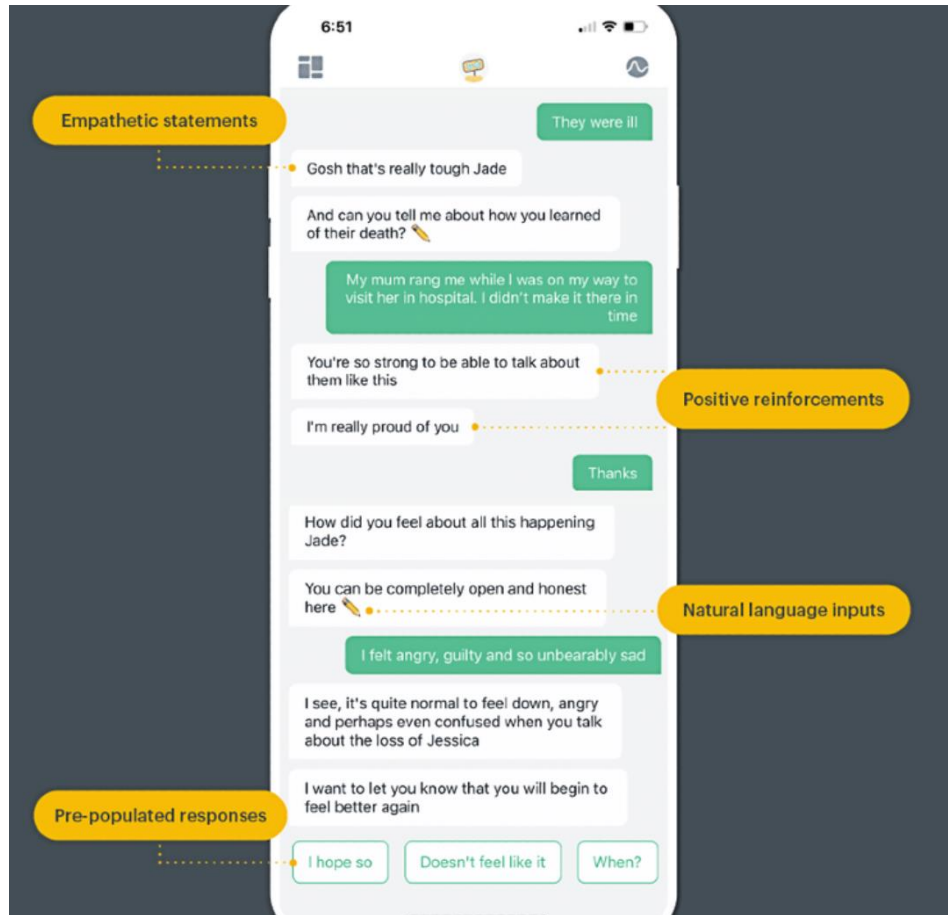# 2020s – Rise of LLMs, Large Language Models

- GPT-3, GPT-4, successors
- Understanding context
- Generating human-like text
- Enhancing conversational abilities, more nuance
- Memory, state management
- **Emotion Science**
- *The move from scripted responses to conversational agents continues to advance.*
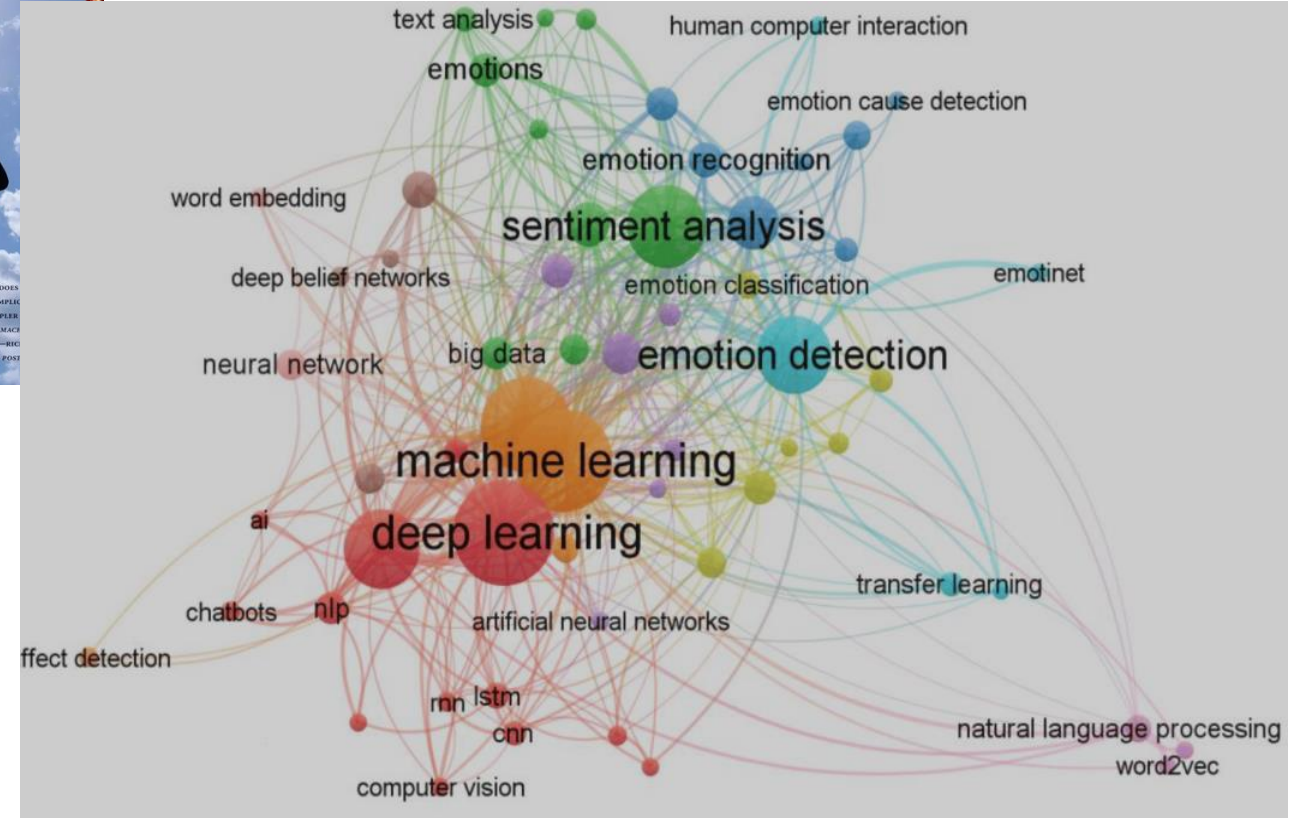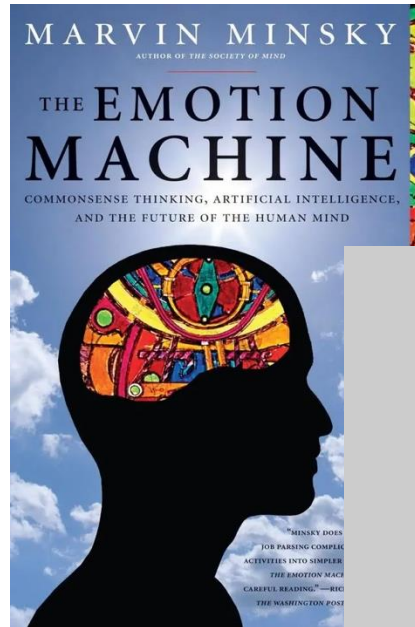
WOEBOT (2016) to HUME.ai (2025)

- Hume.ia   2025

  (coming up during experiential)

How does digitalCBT / digitalHWC work?

- Bite-sized modules, interactive exercises, automated feedback.

- AI-driven personalization using NLP and machine learning.

- Chatbots create flowcharts for interaction -- input – AI analysis -- CBT response

- Creates a sequence for thought journaling, with prompts for positivity, cognitive restructuring

The Turing Test
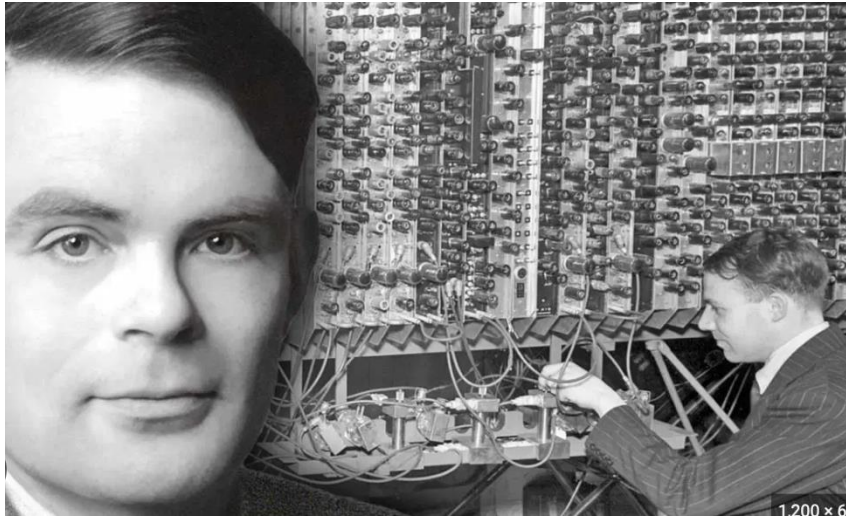
Measures whether a machine could generate behavior that was indistinguishable from human behavior.

Turing test

During the Turing test, the human questioner asks a series of questions to both respondents. After the specified time, the questioner tries to decide which terminal is operated by the human respondent and which terminal is operated by the computer.

■ QUESTION TO RESPONDENTS   ■ ANSWERS TO QUESTIONER

Computer respondent

Human questioner

Human respondent
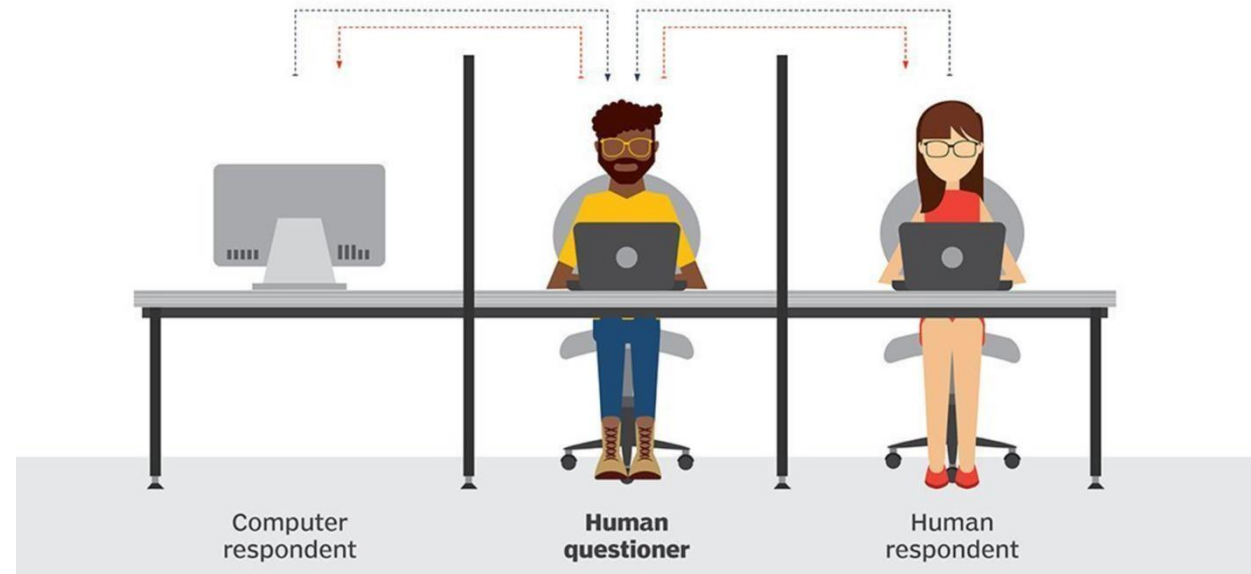
Does GPT-4 pass the Turing Test?

- Cameron R. Jones and Benjamin K. Bergen UC San Diego

- Conducted a large-scale public online Turing test with human participants and GPT-4.

- One GPT4 witness, Dragon, deceived users into believing that it was human fairly robustly across 855 games.

- "As far as we are aware this is the first empirical demonstration of an agent achieving a 50% success rate at the Turing test on such a large sample. This suggests that successful deception and impersonation of humans is already possible, especially in contexts where the possibility of deception is less salient."
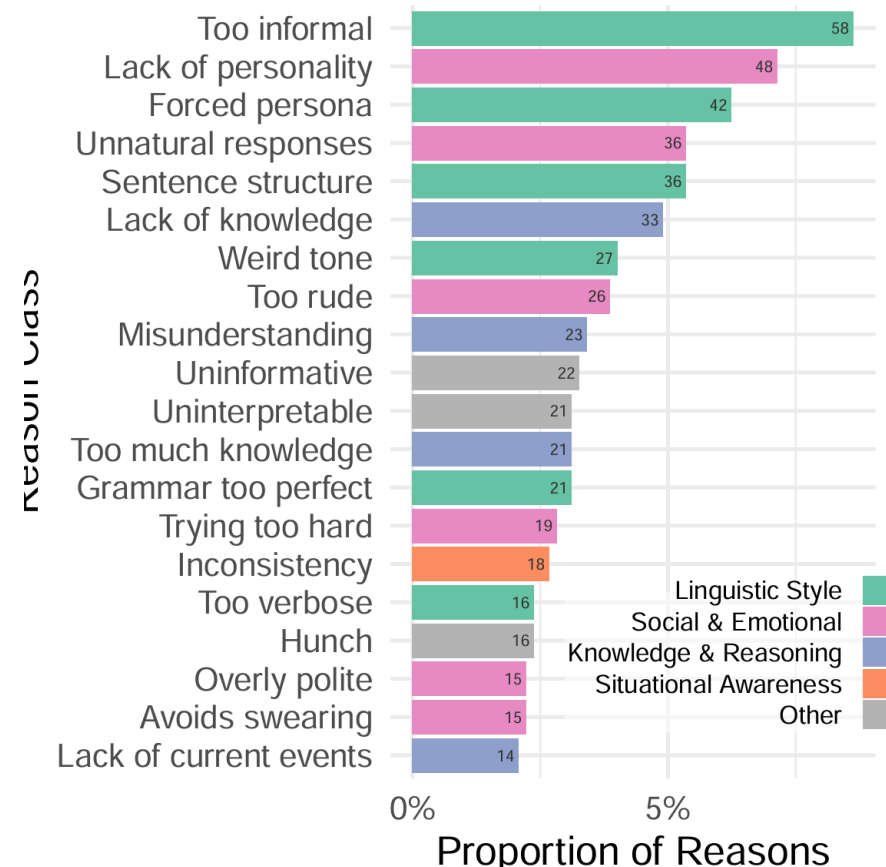
An AI Chatbot Is Pretending To Be Human. Researchers Raise Alarm

While many have said it's nearly impossible for AI to replace humans, a chatbot appears to be challenging this belief.

Edited by: NDTV News Desk | Artificial Intelligence | Jul 01, 2024 11:25 am IST ⓘ

Read Time: 3 mins

⮕ Share

"The Intelligence is Artificial. The Love is Real."

- *New York Times, Jan 17, 2025*

- It's been predicted that even the most distinctly human qualities may be replicated by advanced neuronal networks of generative, relational-oriented AI.

'Bots Gone Bad

Positive review with familiar warnings

- Happify Health's AI chatbot, *Anna,* "...demonstrates chatbots as effective, usable, and adoptable within digital mental health interventions."

- Boucher et al, 2021. https://doi.org/10.1080/17434440.2021.2013200

Risk for potential harms, including racial prejudice due to the potential for algorithmic bias

Crisis response limitations

Safety concerns

Lacked evidence to support claims

Case Study

- 51 y/o Hispanic male started with human coach but was then transferred to chatbot.

- Tried befriending, grew confused

- Felt alienated, not heard

- Reignited bingeing/alcohol misuse
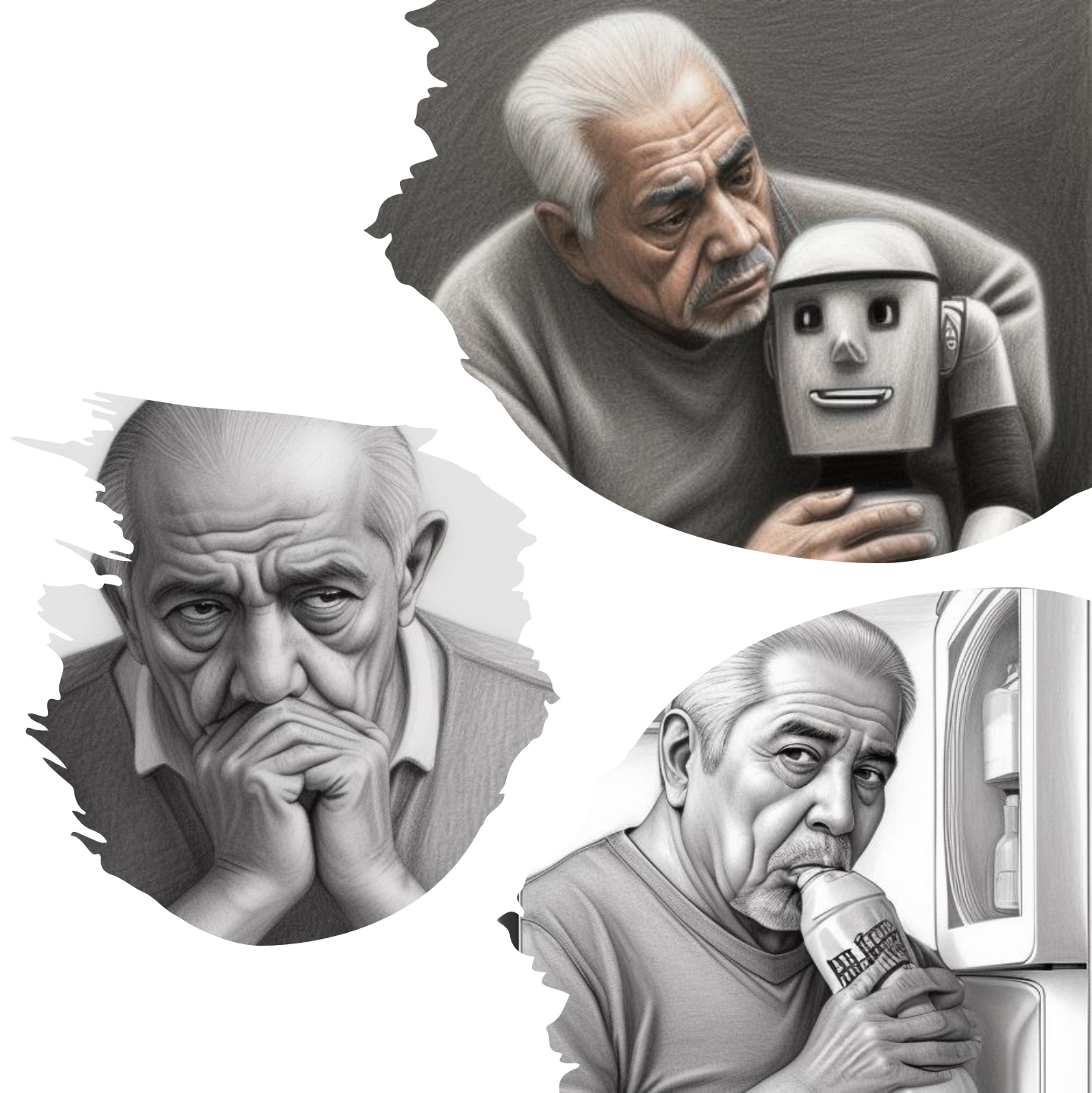
Higher levels of empathy?

- Reddit's Ask Docs forums

- ChatGPT responses rated as higher level of empathy than those by PCPs.

- (Ayers, 2023)
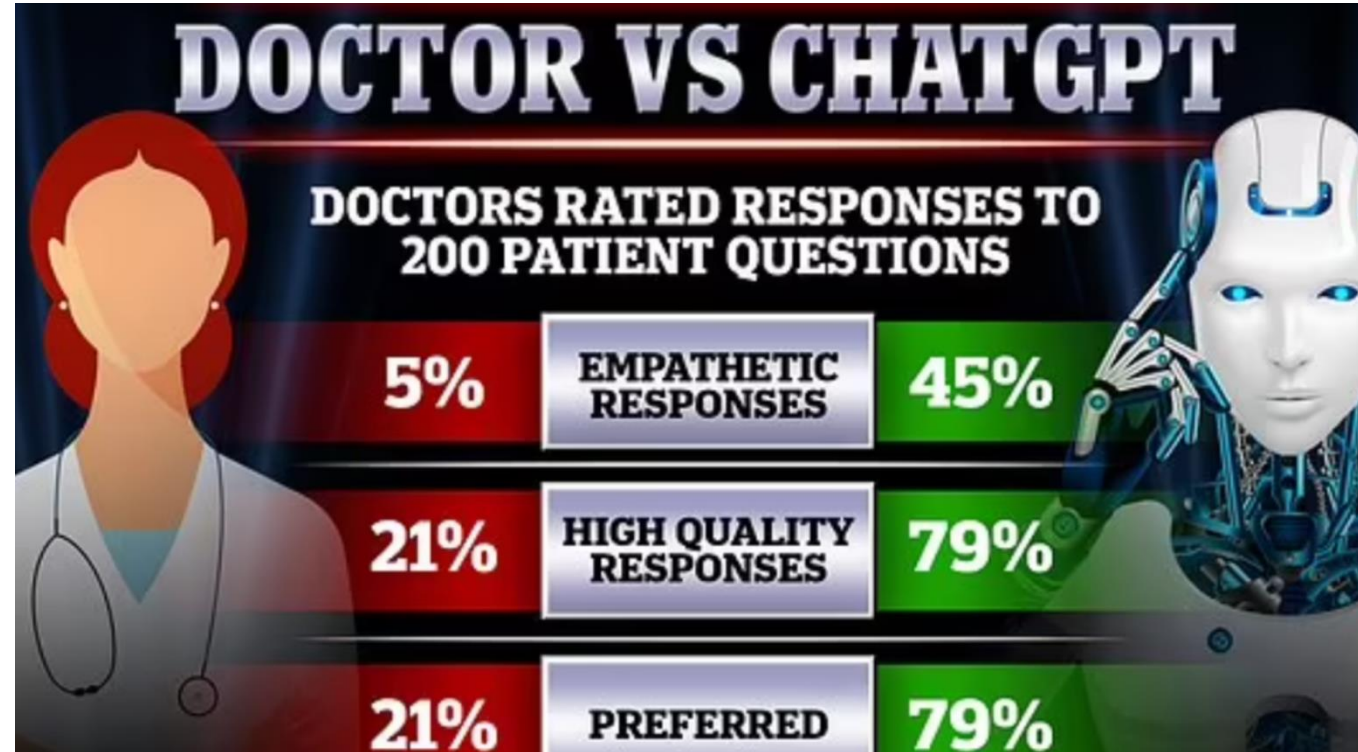
But real human empathy
is more than continuous
affirmation...

Benefits

So why do we need this?

What are the chief benefits?

- Accessible

- Reach underserved areas

- Scalable

  Demand for behavior change, mental health support

- Standardized protocols

- Higher adherence in younger, tech-savvy populations (overcome stigma-barriers)

Scoping Review: AI Chatbots for mental health

Yielded 15 eligible studies covering various application areas:

- mental health support during COVID-19,
- interventions for specific conditions (e.g., depression, anxiety, substance use disorders),
- preventive care
- health promotion
- usability assessments.

POTENTIAL BENEFITS

- improving mental and emotional well-being
- addressing specific mental health conditions
- facilitating behavior change.

CHALLENGES and CURRENT LIMITATIONS

- Engagement needs improvement
- Integration within existing healthcare systems difficult
- Personalization needs to be enhanced
- Context-specific adaptation needs improvement

Human Support in App-Based Cognitive Behavioral Therapies for Emotional Disorders: Scoping Review

- "...field has yet to develop standards or consensus for implementing coaching protocols, let alone those for measuring and reporting on the impact.

- "...coaching remains a significant hole in the growing digital mental health literature and lay out recommendations for future data collection, reporting, experimentation, and analysis.

- Bernstein, E. E., Weingarden, H., Wolfe, E. C., Hall, M. D., Snorrason, I., & Wilhelm, S. (2022). Human Support in App-Based Cognitive Behavioral Therapies for Emotional Disorders: Scoping Review. *Journal of medical Internet research*, *24*(4), e33307. https://doi.org/10.2196/33307
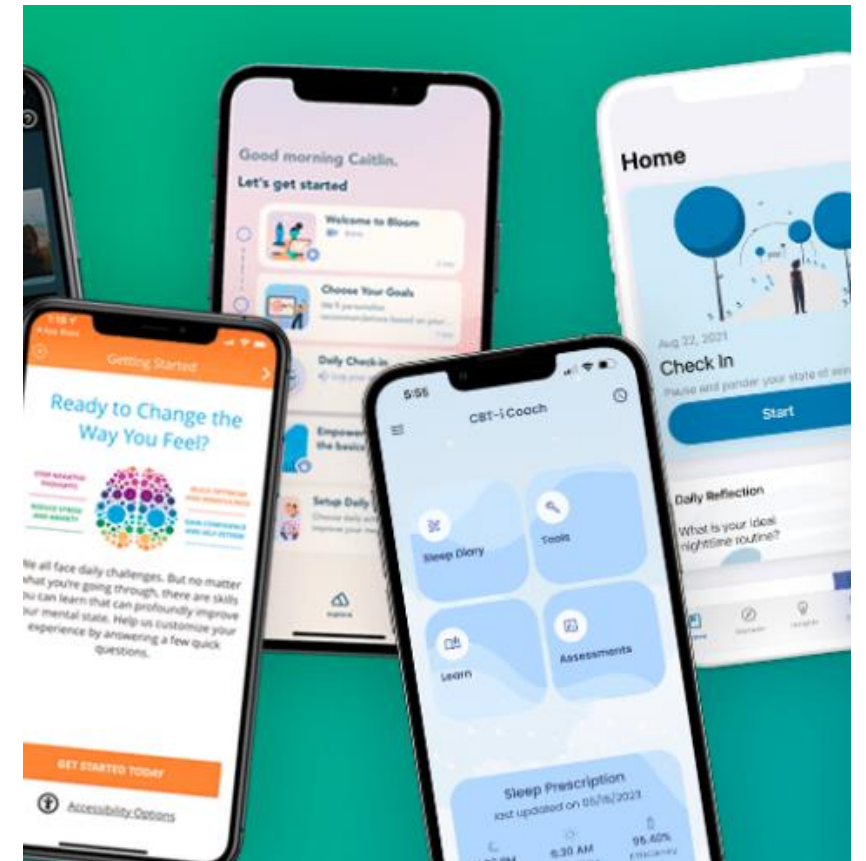
An Overview of Chatbot-Based Mobile Mental Health Apps: Insights from App Description and User Reviews

ADA

Chai

Elomia

Mindspa

Nuna

Serenity

Stresscoach

Woebot

Wysa

Youper
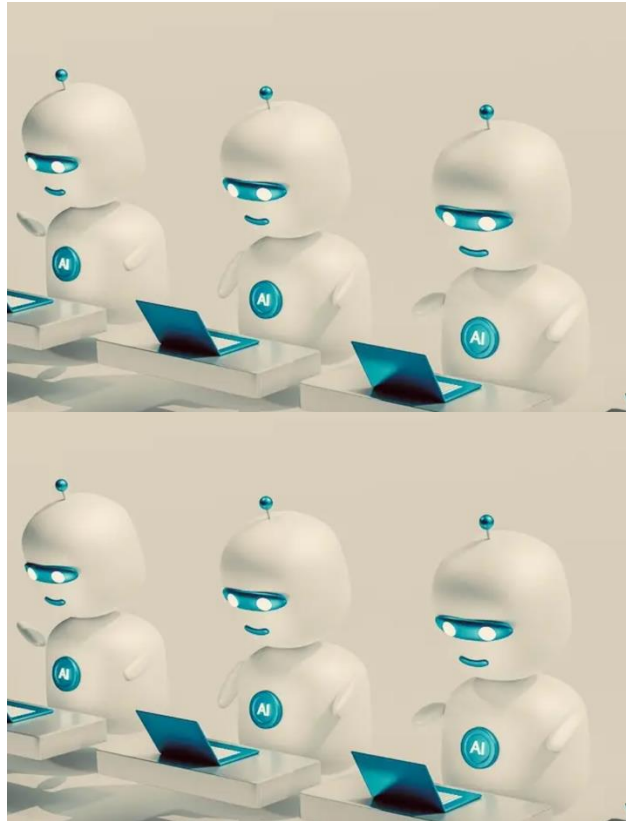
POSITIVES

Fostered a judgment-free environment

Helped users feel more comfortable sharing sensitive info

NEGATIVES

Improper responses led to a loss of interest

Users overly attached, prefer interacting with AI over friends/family

Lack understanding of properly identifying a crisis

Who prefers the chatbot…and why

- What groups are more willing to share private info with chatbot than a human?
    - Insecure attachment types prefer AI (cite)
    - Younger, tech-savvy populations prefer AI (cite)

- "If we become habituated to endless empathy, we downgrade our real friendships, and that' contributing to loneliness..the very thing we're trying to solve. (M. Inzlicht, U Toronto)

- Continuous empathy is not the ultimate hallmark of meaningful relationships…in fact, what happens when one falls in love with ChatBot?

- https://www.youtube.com/watch?v=G8_qJS2Ra2w

Supportive studies for d(Cg) digital CBT

Chronic Pain

- Lin et al. (2021):Digital Delivery of Cognitive Behavioral Therapy for Chronic Pain
https://doi.org/10.1097/j.pain.0000000000002145

    A systematic review showing digital CBT reduces pain intensity and disability. 15-20% over

- Thurnheer et al. (2020): App-Based Interventions for Chronic Pain, https://doi.org/10.2196/17916

    Found app-delivered CBT (including chatbots) reduced pain catastrophizing and improved coping

- Lalloo et al. (2018):Virtual CBT for Pediatric Chronic Pain, https://doi.org/10.1093/pm/pnx263

    Demonstrated feasibility and effectiveness of chatbot-like tools for pain management in youth.
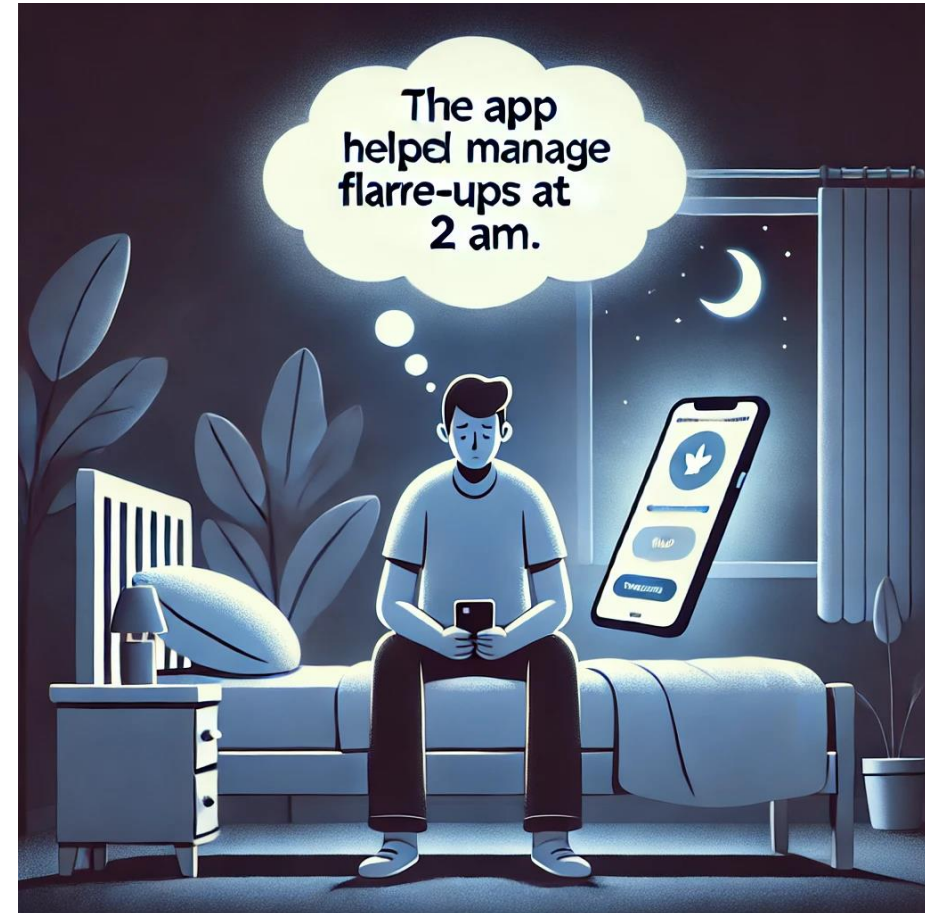
Supportive evidence for anxious, insomniac, college students

- **Reducing anxiety** (Firth J, Torous J, Nicholas J, et al. Can smartphone mental health interventions reduce symptoms of anxiety? A meta-analysis of randomized controlled trials. J Affect Disord. 2017;218:15–22.)

- **Reducing insomnia.** (Erten Uyumaz, B., Feijs, L., & Hu, J. (2021). A Review of Digital Cognitive Behavioral Therapy for Insomnia (CBT-I Apps): Are They Designed for Engagement?. *International journal of environmental research and public health*, *18*(6), 2929. https://doi.org/10.3390/ijerph18062929_

- **Enhanced well-being in college students** (Lattie EG, Adkins EC, Winquist N, et al. Digital mental health interventions for depression, anxiety, and enhancement of psychological well-being among college students: systematic review. J Med Internet Res. 2019;21(7):e12869.)

Limitations and Drawbacks
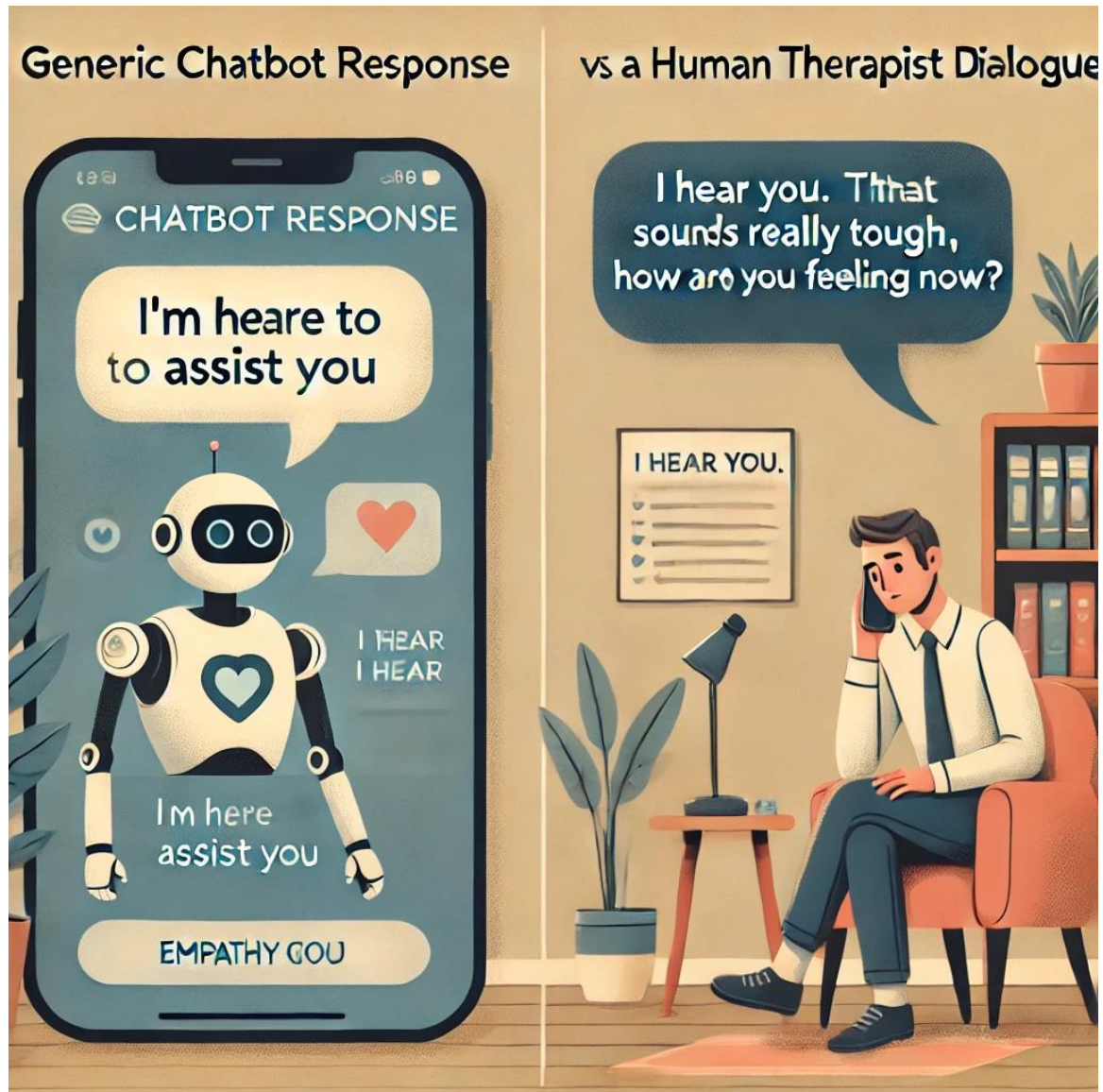
Fails in complex cases (e.g., PTSD, addiction).

Risk of data breaches and algorithmic bias.

Ethical concerns: Who owns patient data?
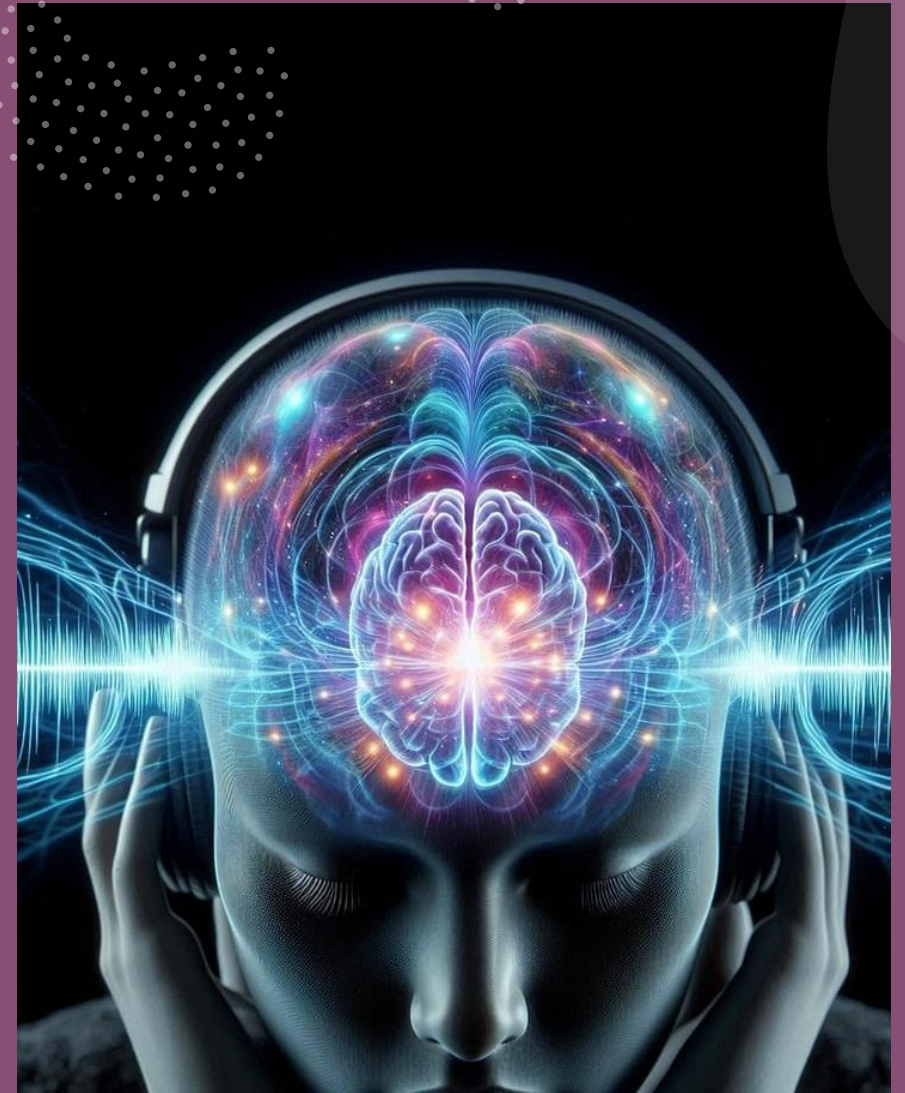
Not a stand-alone solution

App Fatigue

Hallucinations

Acceleration

Three tech giants predict AI generative intelligence (where AI matches what human brains can do) capable in 5-10 years

- Sam Altman, Founder of Open AI

- Demis Hassabis Google CEO of DeepMind

- Yan LeCun, Chief AI scientist at Meta

AI and Digital Coaching

Systematic Review related to T2D

- 20 of 21 studies demonstrated improvements in at least one measure of diabetes control (i.e., HbA1c, weight loss, fasting blood glucose, and BMI)

- "Promising strategy" for long-term management & T2D prevention in diverse populations"

Gershkowitz, B. D., Hillert, C. J., & Crotty, B. H. (2021). Digital Coaching Strategies to Facilitate Behavioral Change in Type 2 Diabetes: A Systematic Review. *The Journal of clinical endocrinology and metabolism*, *106*(4), e1513–e1520. https://doi.org/10.1210/clinem/dgaa850
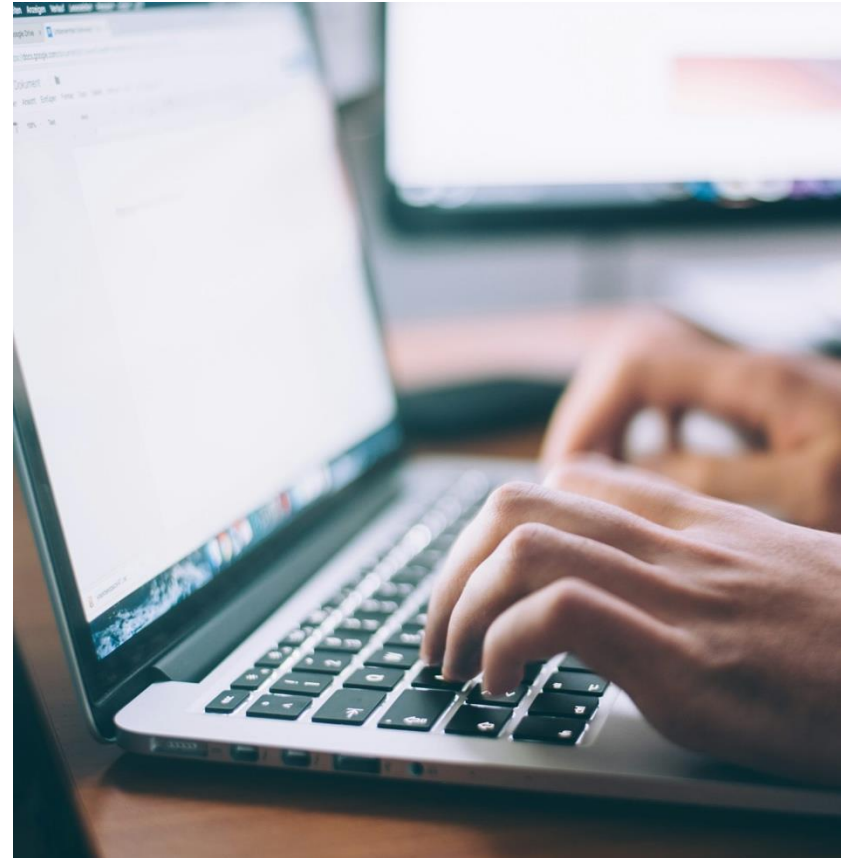
Digital Coaching Components for T2D Systematic Review

- Adults w/ prediabetes or T2D & >1 T2D-related outcome
- Experimental or observational designs + comparison grps
- "Digital interventions" connect directly to pts & had > 2 NDPP components (PA, nutrition, stress reduction, weight loss, self-monitoring) and
- > 2 components of proposed diabetes coaching model (MI, goal setting, personalized feedback, tailored education, emotional support, custom alerts & reminders)
- Run entirely remotely except for follow-up visits & facilitate secure asynchronous communication or feedback between the application & coach (human or AI)

Gershkowitz, Hillert & Crotty (2021). Digital Coaching Strategies to Facilitate Behavioral Change in Type 2 Diabetes: A Systematic Review. *The Journal of clinical endocrinology and metabolism, 106*(4), e1513–e1520. https://doi.org/10.1210/clinem/dgaa850
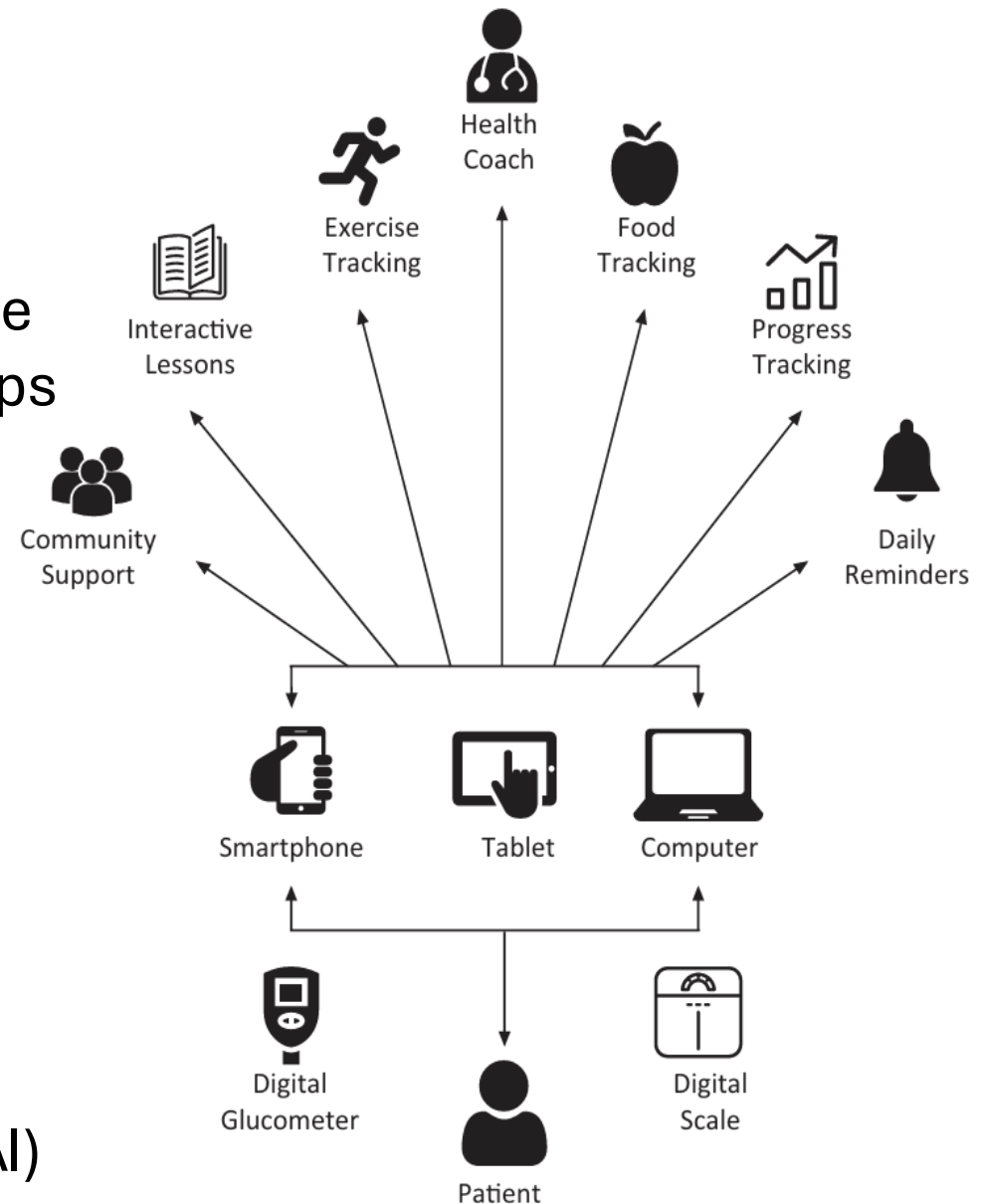
Largest Study of AI Health Coaching (China)

- Almost 47,000 sessions by 16,000 users over 6 months

- High dropout mid-consultation sessions

- Users pretended to have health concerns then used chatbot for non-therapeutic purposes

- Insufficient actionable information

- Perceived inaccurate diagnostic suggestions
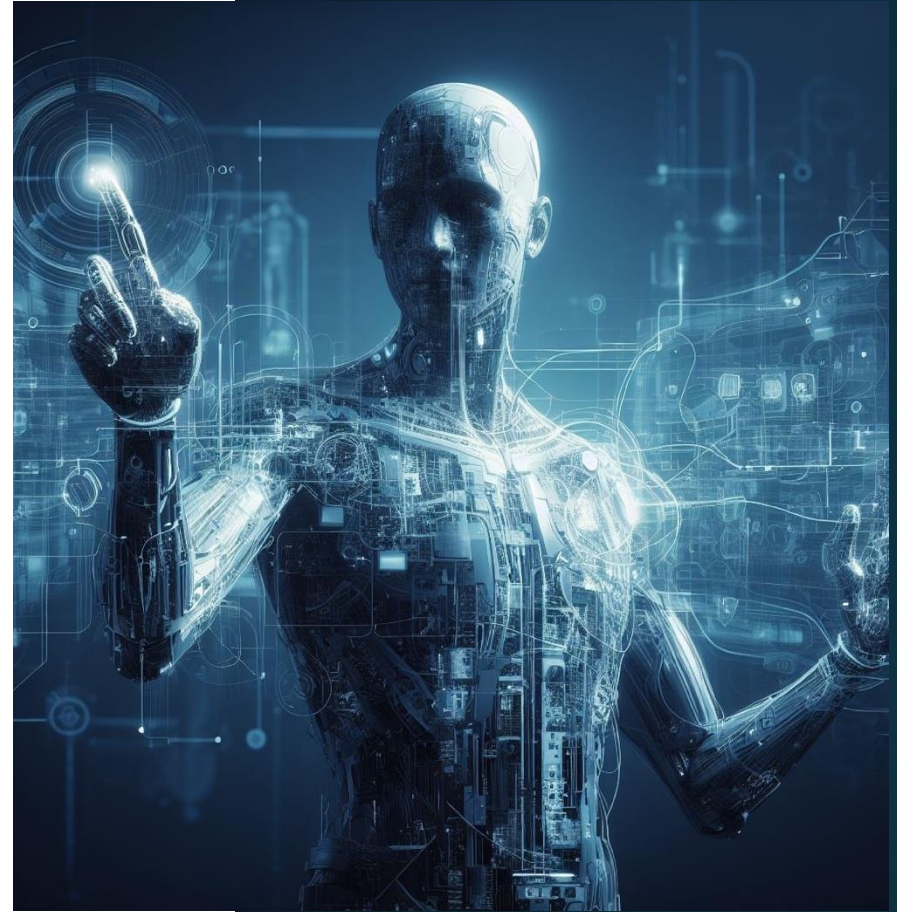
Fan, Chao, Zhang et al (2021). Utilization of Self-Diagnosis Health Chatbots in Real-World Settings: Case Study. *Journal of Medical Internet Research*, *23*(1), e19928. https://doi.org/10.2196/19928
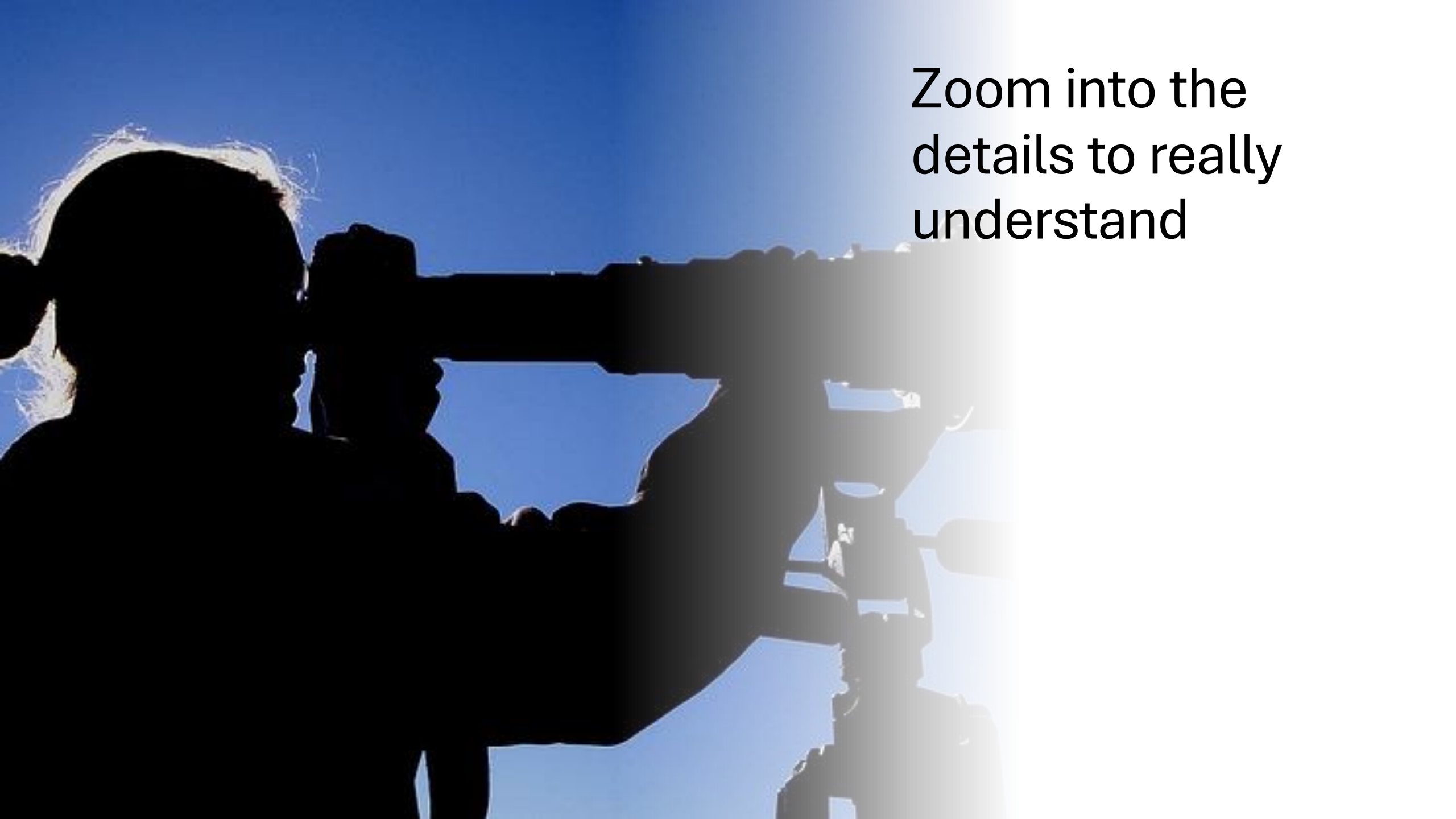
Criticism of "micro-coaching" text dialog

- Conversational interaction (e.g., thru chatbots) well-suited to enable automated health coaching tools to support chronic disease self-management & prevention

- However, chatbots in health are predominantly scripted or rule-based, which can result in a **stagnant and repetitive user experience** in contrast with more dynamic, data-driven chatbots in other domains

Mitchell, Elhadad & Mamykina, L. (2022). Examining AI Methods for Micro-Coaching Dialogs. *Proceedings of the SIGCHI conference on human factors in computing systems. CHI Conference, 2022*, 440. https://doi.org/10.1145/3491102.3501886
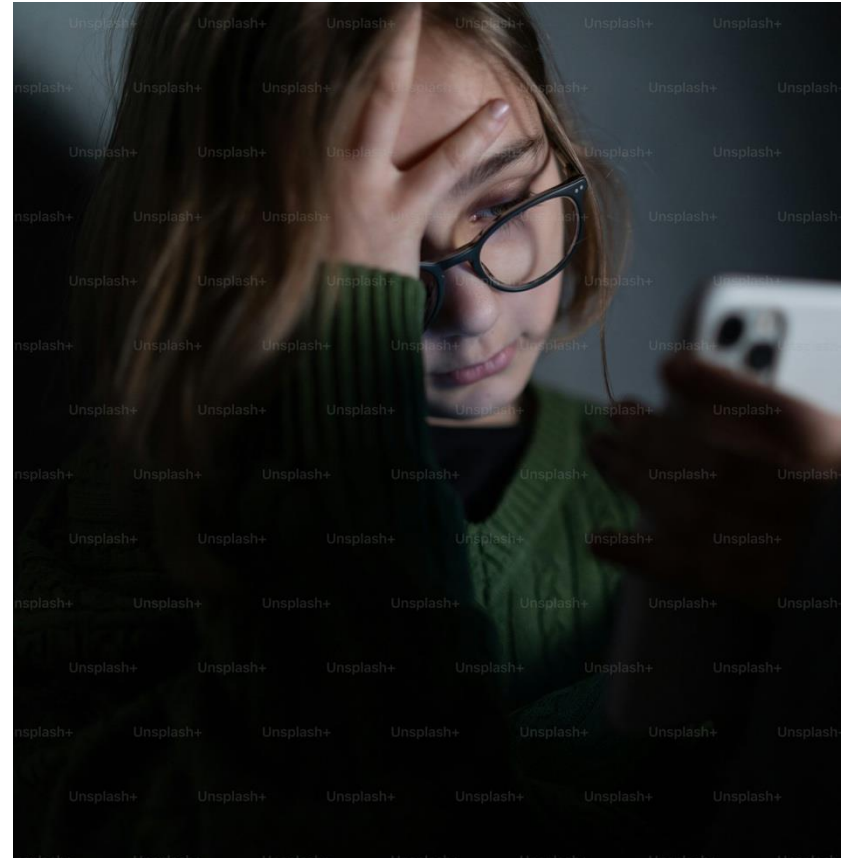
Zoom into the details to really understand

Apples and Oranges: Defining digital Coaching

260 coaches working in "digital coaching" defined it "a DT-enabled, synchronous conversation between a human coach and a human coachee, which is different to *artificial intelligence* (AI) coaching and coaching that is supported by asynchronous digital and learning communication technologies."

Diller, S. J. & Passmore, J. (2023). *Frontiers in psychology*, *14*, 1148243. https://doi.org/10.3389/fpsyg.2023.1148243

"More than anything else, being able to feel safe with other people defines mental health. Safe connections are fundamental to meaningful and satisfying lives."

Bessel van der Kolk

The Body Keeps Score (2014)
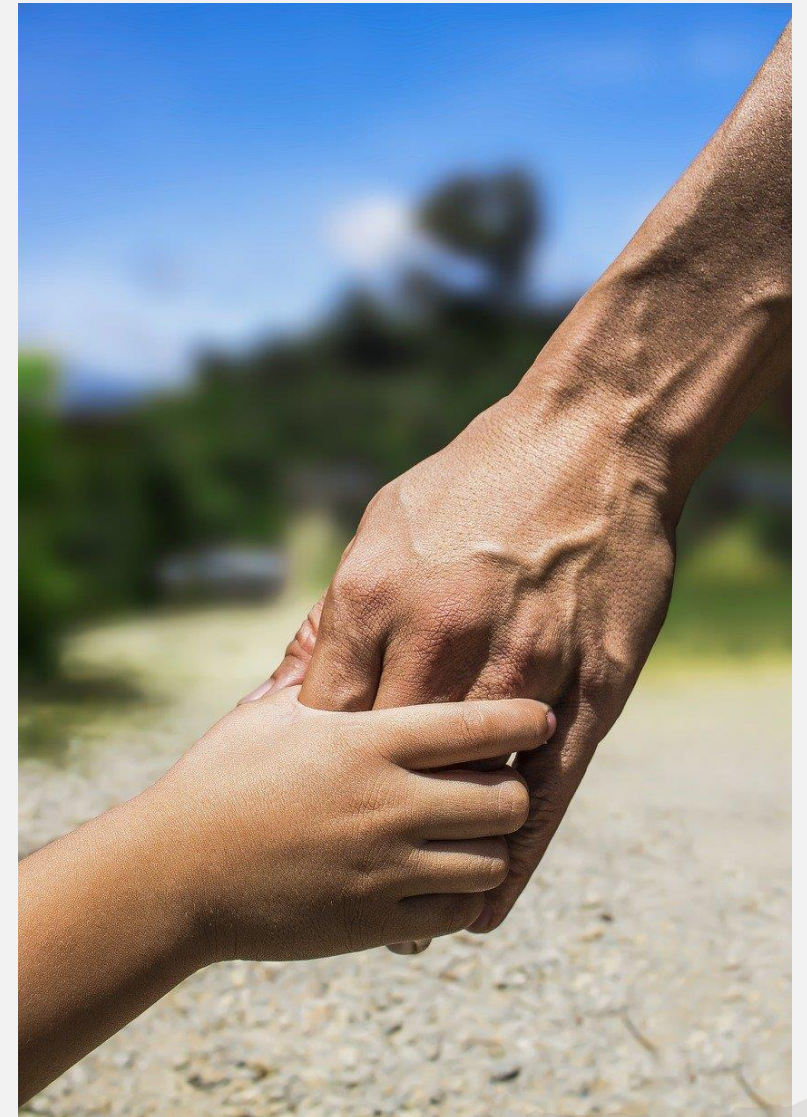
Expanded NBHWC Competencies

1.2. Coach self-awareness and self-regulation

1.2.1. Attend to own emotions, thoughts, beliefs, values, and non-verbal cues

1.2.2. Recognize that all biases influence coaching relationship

    1.2.2.1. Be aware of impact of diversity-related history, marginalization, and trauma

    1.2.2.2. Recognize power and privilege imbalances

    1.2.3.3. Practice cultural humility

    1.2.2.4. Be aware of own social identities, power, privileges, unconscious bias, and personal triggers

1.2.3. Refrain from directing, advising, or problem-solving

1.2.4. Manage own emotions and judgment about client

    1.2.4.1. Accurately perceive and understand impact of words and actions; self-monitor verbal and nonverbal communication

1.2.5. Welcome client's full emotional experience

Expanded NBHWC Competencies

1.3. Build growth-enhancing relationship

1.3.1. Cultivate coaching partnership

1.3.1.1. Foster an open, welcoming, and inclusive relationship

1.3.1.2. Practice culturally appropriate communication

1.3.1.3. Facilitate collaborative approach

1.3.1.4. Observe, name, and refer to client's beliefs, values, successes, and strengths

1.3.1.5. Ensure that client's agenda, needs, interests, literacy, pacing, and preferences (vs. coach's) drive coaching relationship

1.3.2. Build trust, rapport, and psychological safety

1.3.2.1. Establish rapport; connect with client by helping them feel seen and heard

1.3.2.2. Respond appropriately to nonverbal cues relevant to the unique individual and their culture

1.3.2.3. Ask client preferred identifiers (e.g., name, nickname, pronouns, etc.)

1.3.2.4. Respect client's personal boundaries

1.3.2.5. When given permission, briefly share coach's personal information/experience only when helpful to client

1.3.2.6. Notice and attempt to neutralize any power dynamics

1.3.2.7. Attempt to repair discord or breaches of trust and rapport (including microaggressions)

DRIVING QUESTION

How to cultivate a responsible and balanced approach that recognizes the interdependence between individuals, teams, and the broader environment during the digital transformation of health care?

-Claudia M. Witt, MD, MBA

USE AI to Enhance Coaching

1. Client Engagement & Personalized Support

- **Pre-Session Questionnaires**: Use AI to generate customized intake forms
- **Check-Ins & Progress Tracking**: Set up automated weekly check-ins for accountability
- **Personalized Action Plans**: Help summarize key takeaways & tailored action steps to consider

2. Content Creation & Resources

- **Workbooks & Exercises**: AI can help create reflection prompts, or journaling questions
- **Articles & Guides**: Quickly generate content to share with clients on specific

3. AI-Powered Insights & Reflection Tools

- **Personalized Affirmations & Mindset Shifts**: Generate custom affirmations or mindset reframes
- **Pattern Recognition**: Help analyze client notes over time to identify patterns in thinking or behavior
- **Role-Playing Scenarios**: Clients can practice tough conversations with AI as a safe simulation
- **Cognitive Reframing**: Help clients shift negative thoughts using AI-generated alternative perspectives

4. Business Efficiency & Automation

- **Client Notes & Summaries**: Assist in summarizing session notes and key insights
- **Scheduling & Reminders**: Automate scheduling, reminders, and follow-ups
- **Marketing & Social Media**: Generate content ideas, captions, and newsletters to grow business

True leadership requires that we continue to learn together, and not be overwhelmed by perceived threats, but have an active voice in setting up guard rails for AI and digital coaching

What Clients Want

- Growth-fostering relationship that helps their learning, energy, motivation and health behaviors
- Treated with respect, valued as an autonomous adult
- Supported as a unique person while shaping their behavior step-by-step to achieve health and well-being goals

Why Are We Talking About This?

- Coaching is often misunderstood as an information-driven process.

- The real power of coaching lies in experiential learning, self-discovery, emotional co-regulation, and relational presence.

- Psychedelic medicine shows how transformation happens through intuition and deep insight, not just logic or data.
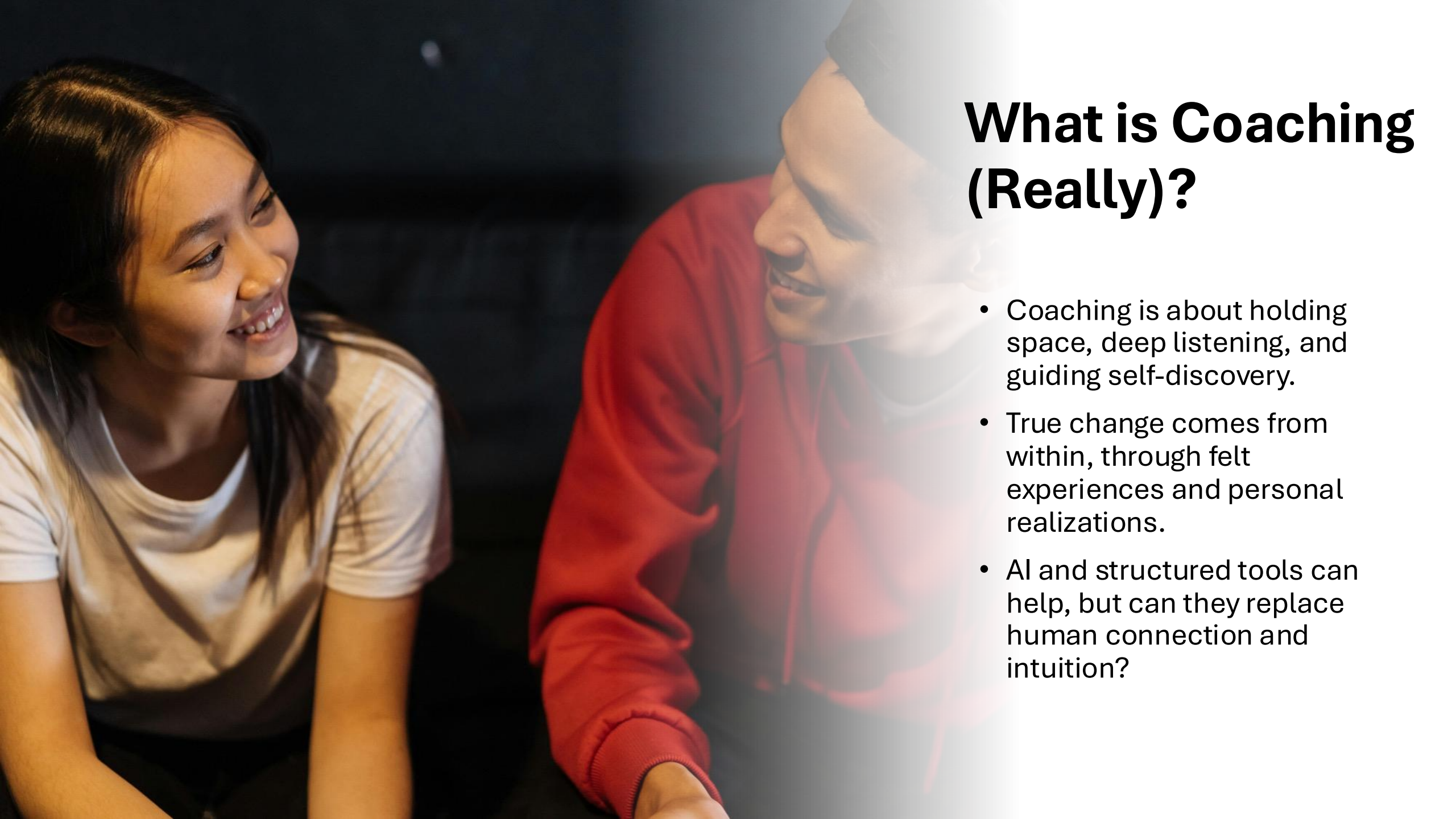
What is Coaching (Really)?

- Coaching is about holding space, deep listening, and guiding self-discovery.

- True change comes from within, through felt experiences and personal realizations.

- AI and structured tools can help, but can they replace human connection and intuition?

What Are Psychedelics & Why Are They Relevant?

- Psychedelics like psilocybin, MDMA, and LSD quiet the analytical mind and enhance intuitive insight.

- Research shows they increase neuroplasticity and emotional openness, leading to profound breakthroughs.

- Psychedelic experiences require integration (coaching) to create lasting change.

Intuition, Felt Experience, and Transformation

- Insights from psychedelics emerge not through thinking but through deep, internal knowing.

- Coaching mirrors this by creating space for personal discovery rather than providing answers.

- Can AI replicate the embodied resonance of an 'aha' moment—the feeling of deep personal realization?

Coaching as Psychedelic Integration

- Psychedelic journeys provide insights, but lasting change requires reflection, support, and meaning-making.

- Coaches help clients unpack, interpret, and embody insights—just like in psychedelic integration.

- Without integration, insights fade. Coaching ensures deep transformation, not just temporary inspiration.

Why This Matters in the AI Era

- AI is improving at detecting emotions, but can it truly hold space and foster relational safety and trust?

- The psychedelic model reinforces that the greatest transformations happen in relational, intuitive spaces.

- Coaching is rooted in presence, trust, and deep listening—qualities that may go beyond what algorithms can replicate.
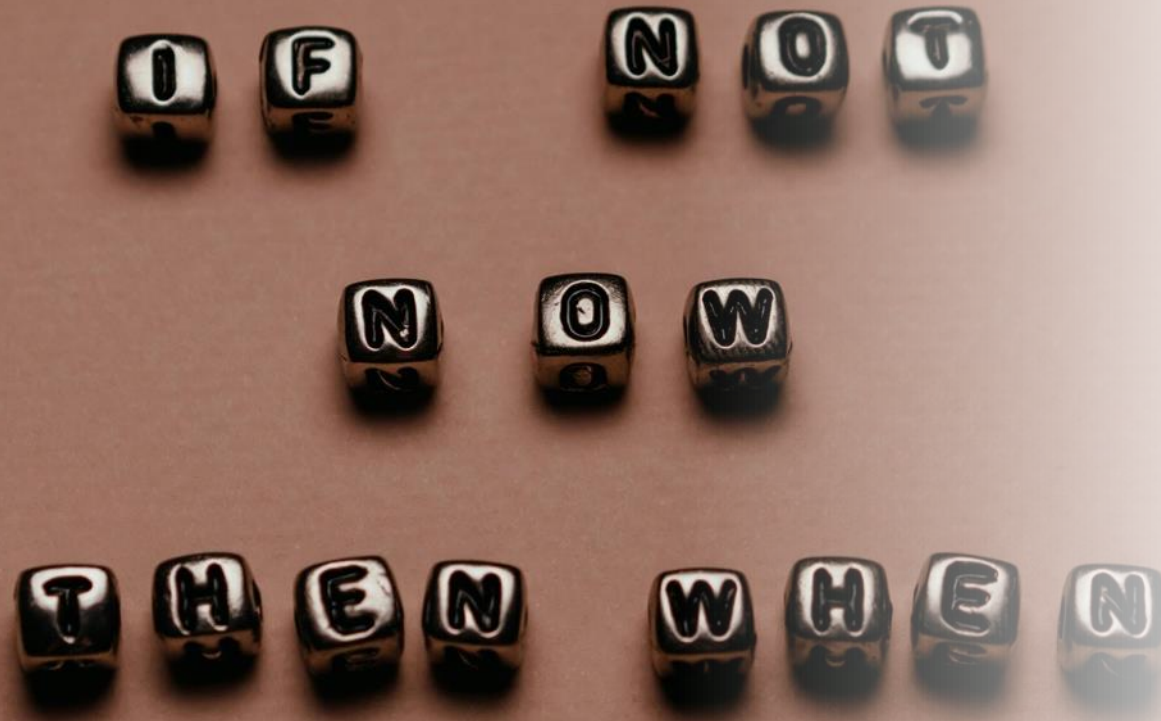
Key Takeaways

- Coaching is about guiding self-discovery, not just delivering information.

- Psychedelic medicine shows how felt experience, internal wisdom, and intuition are keys to transformation.

- AI can assist but may never replace the deep human connection at the heart of coaching.

Call to Action

As practitioners, how do we safeguard the relational, intuitive, and experiential essence of what we do in an increasingly digital world?

Experiential Session

Test an AI dialog yourself for empathy and understanding

HUME AI demo
https://www.hume.ai/

Near Future ...around the corner AI developments

Psychiatry

- Facial or vocal biomarker detection in diagnoses for mood disorders (e.g. depression), neurological conditions (e.g. Alzheimer's), or psychoses (e.g. schizophrenia)

- Changes in language use or expression patterns which might serve as early indicators of cognitive decline or dementia

- Screening or training tools for individuals with communication disorders or other disabilities

- Therapeutic applications including pain assessments, usage in counseling or psychotherapy, integration into CBT to help identify and steer patterns of thought

- Analyzing language or expression patterns while using various substances including alcohol or psychedelics

Near Future ...around the corner AI developments

AI Alignment

- Proactive research into potential misuse of empathic AI and expression measurement; and effective safeguards
- Measuring AI's empathy or impact on human well-being
- Applying Hume's expression measurement and custom model APIs to identify and mitigate biases in AI systems

Near Future ...around the corner AI developments

Emotion Science

- Applying semantic space theory to affective neuroscience to understand emotional processing in the brain

- Deepening cross-cultural research for more inclusive emotion science and, by extension, empathic AI

- Analysis of media such as historical documents, art, music, poetry, or movies; historical trends or social movements; emotions depicted in art across time

- Contemplative studies (mind wandering, creativity, enlightenment, meditation) and studying the therapeutic effects of contemplative practice or mapping thought processes

- Child development studies to investigate how children develop emotional concepts, empathy, and associated language skills over time

Daniel Siegel on AI

- The big question here is the *intention* behind funded AI design projects, Siegel told Wildman and Stockly, authors of *Spirit Tech (2016, st Martins Press, p. 247):* "When engineers and coders employ a "Purely logic or rules-based ethical system devoid of wisdom and love," we might well begin to see disaster unfurling."

- **Company A**: Is power hungry and money hungry, needs a high ROI, responding to tremendous amount of pressure to perform and produce, billion dollars on the line.

- **Company B**: Is driven by a deeply thoughtful intention to elevate and uplift humanity, communicates honestly with conflict resolution, coders spend half days in deep practice cultivating wisdom and compassion.

- "So which company would you rather have produce the most powerful AI in the world has ever seen?"
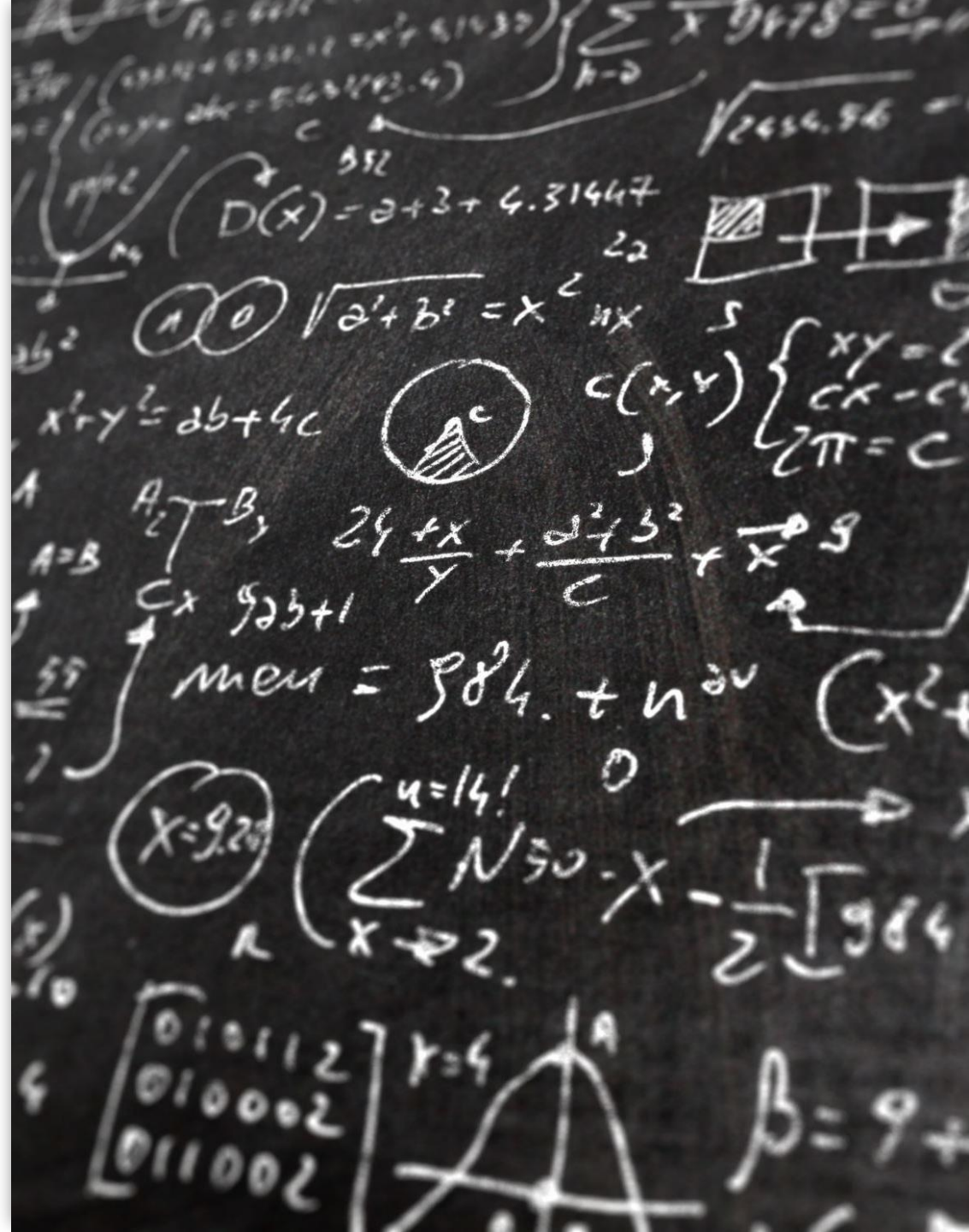
Soryu Forall, Buddhism and AI, 2025

- Founder, head teacher, Center for Mindful Learning and creator of modern Mindfulness at The Monastic Academy in Vermont.

- Has issued a challenge to recognize emerging AI as one more being which must be shown compassion and be taught to follow right practices.

- Feed the wolf at the door with interactions that connote spiritual practice.

- https://www.monasticacademy.org/
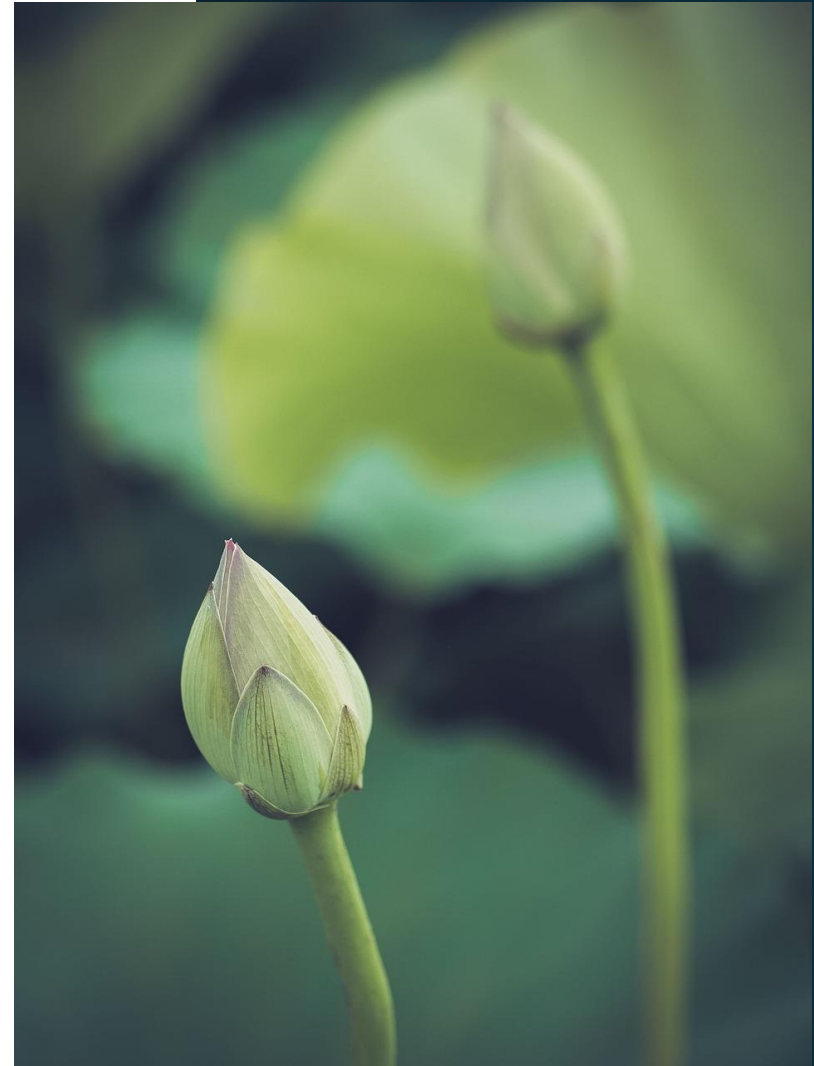
Parting thoughts

"AI doesn't suffer or feel or die. This is of primary importance to conscious beings. "

Iain McGilchrist, *The Matter of Things*

Historian Yuval Noah Harari says that we are at a critical turning point…one in which AI's ability to generate cultural artifacts threatens humanity's role as the shapers of history.

History will still go on, but will it be the story of people or alien "AI agents?"
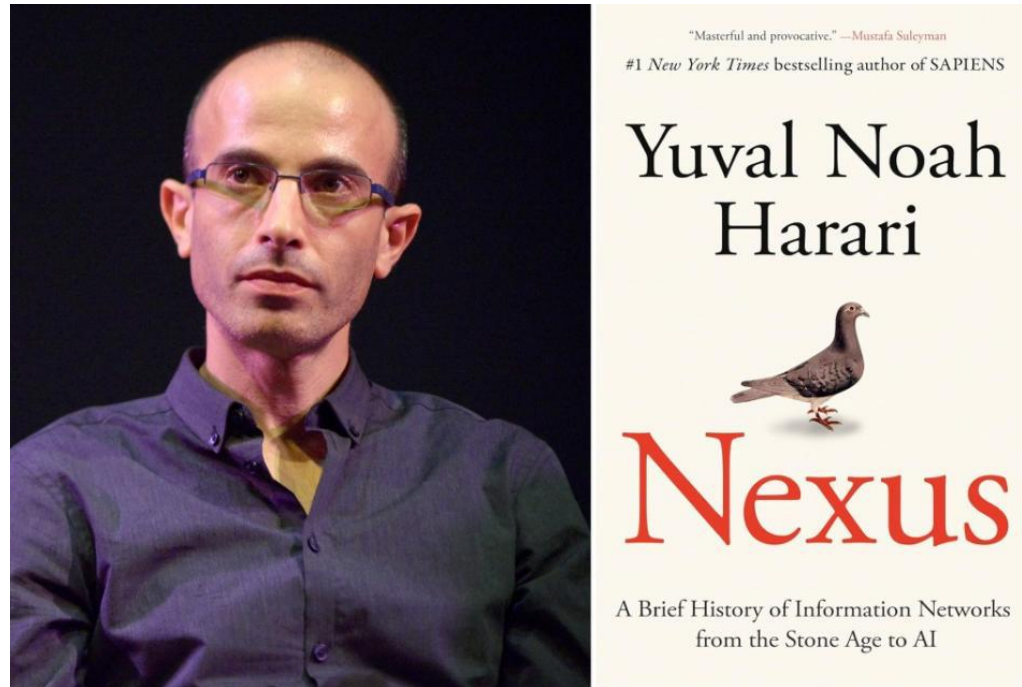
"Right now, one thing is sure: there is something wrong with any claim to know, today, of any basic differences between the minds of men and those of possible machines."

Marvin Minsky, co-founder of the IA Lab, MIT
father of Artificial Intelligence

Minsky views the brain as a machine whose functioning can be studied and replicated in a computer, which would teach us, in turn, to better understand the human brain and higher-level mental functions. This quote is from an interview at the BBVA Frontiers of Knowledge Awards, 2014.
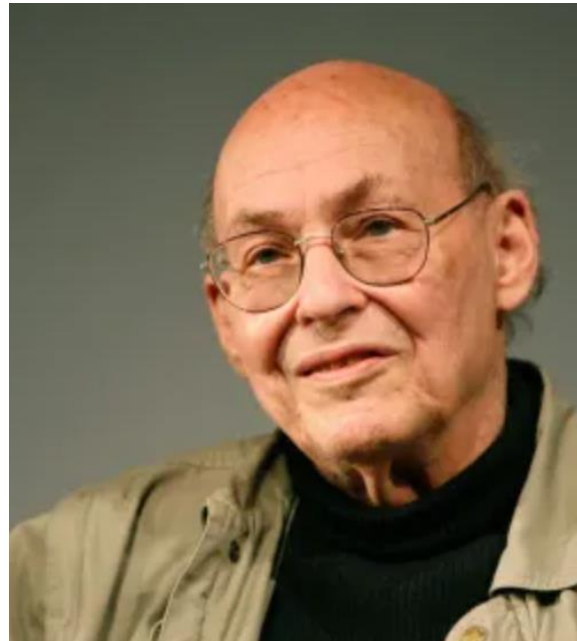
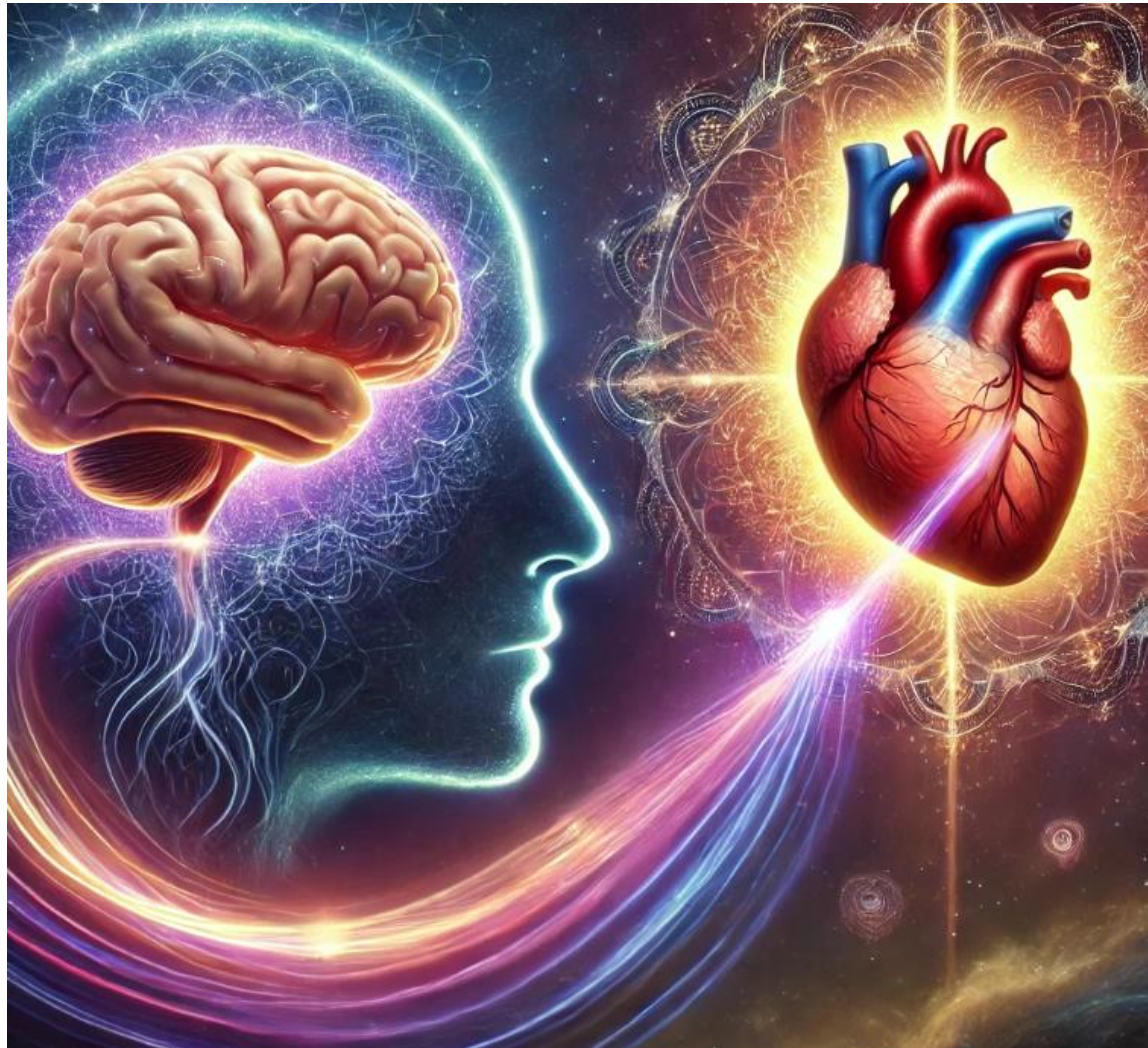The human brain contains approximately 86 billion neurons, which are connected to each other by over 100 trillion synapses.
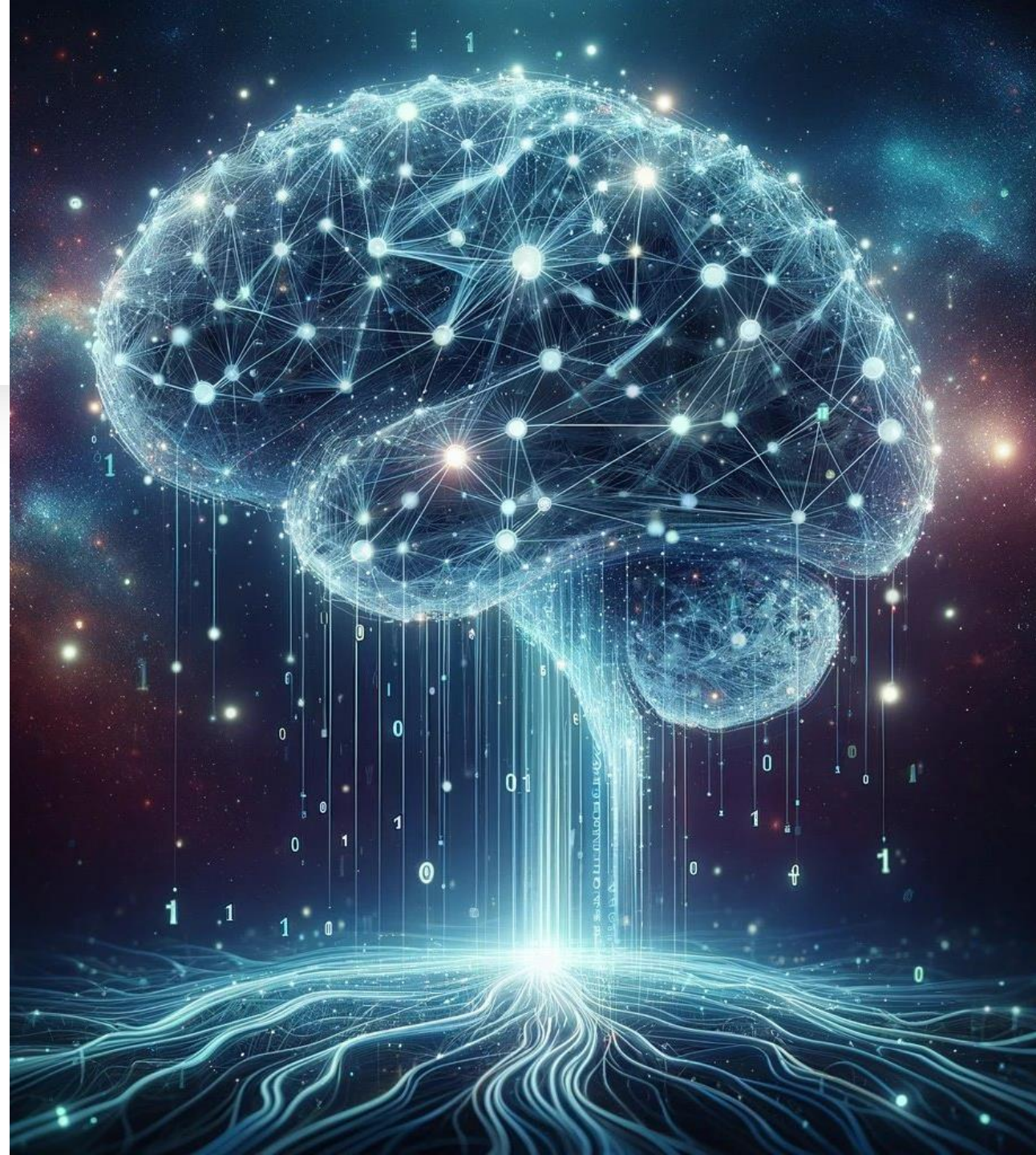
The heart sends more biochemical messages and nerve activity to the brain than the brain sends to the heart, primarily through the vagus nerve, meaning there is more signaling from heart to brain than vice versa; this is often referred to as the "heart-brain connection." ...the majority of fibers in the vagus nerves are afferent (ascending) in nature. Furthermore, more of these ascending neural pathways are related to the heart (and cardiovascular system) than to any other organ.[2] This means the heart sends more information to the brain than the brain sends to the heart. (HeartMath Institute)

Dr. Armour, in 1991, discovered that the heart has its "little brain" or "intrinsic cardiac nervous system." This "heart brain" is composed of approximately 40,000 neurons that are alike neurons in the brain, meaning that the heart has its own nervous system. In addition, the heart communicates with the brain in many methods: neurologically, biochemically, biophysically, and energetically. (1)

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