



Understanding Digitalization, AI & Machine Learning

A Guide for Psychologists

Presented by: Robert Peterson

A close-up photograph of a person's hand clicking a computer mouse on a wooden desk. To the right of the hand is a large, three-dimensional '@' symbol made of cardboard. The text 'Who remembers the first time you logged onto the Internet?' is overlaid in white on the right side of the image.

**Who remembers
the first time
you logged
onto the
Internet?**

Definition of Terms

- AI – Artificial Intelligence
- ML – Machine Learning
- Wearables – smart watches, any electronic device that gives information to your health status
- Neural Networks – Using several individual interconnected items that signal one another similar to neuroscience and how the nervous system works

Why This Matters for Psychology



- Psychology is increasingly intersecting with technology
Digital tools impact mental health, behavior tracking, therapy delivery
- AI & ML are transforming diagnosis, assessment, and intervention models
- “Will AI replace Medical Doctors?? No but Medical Doctors with AI will” Dr. Bill Morice Mayo Clinic, CEO Mayo Clinic Laboratories



What is Digitalization?

- Definition: Converting analog processes to digital systems
- Examples: Paper notes to EHRs, in-person sessions to teletherapy
- Benefits: Efficiency, access, scalability, data collection

The Digital Landscape



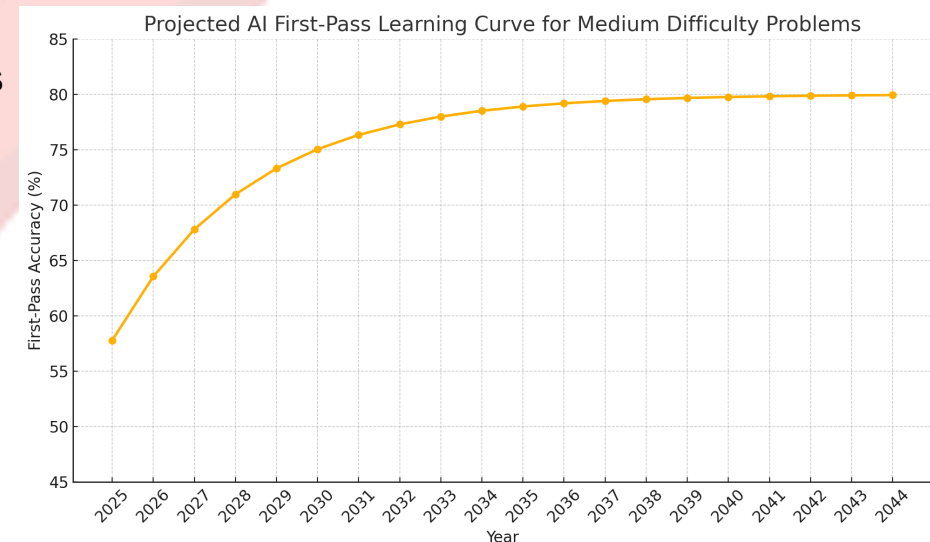
To the Elephant (Memory Master):

- **Digital** = Shared herd memory over invisible waves.
- **AI** = A system that knows migration routes better than the matriarch.
- **ML** = Learns to optimize watering hole visits over generations.

What do tech experts say
about AI?

Assumption: Good questions > great answers

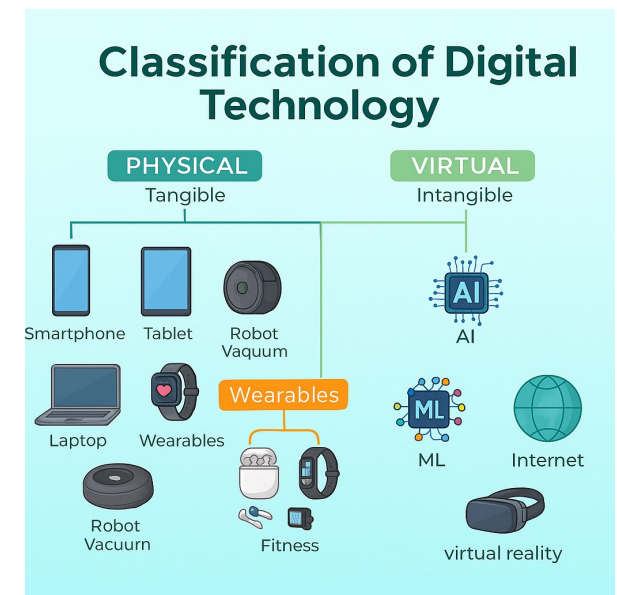
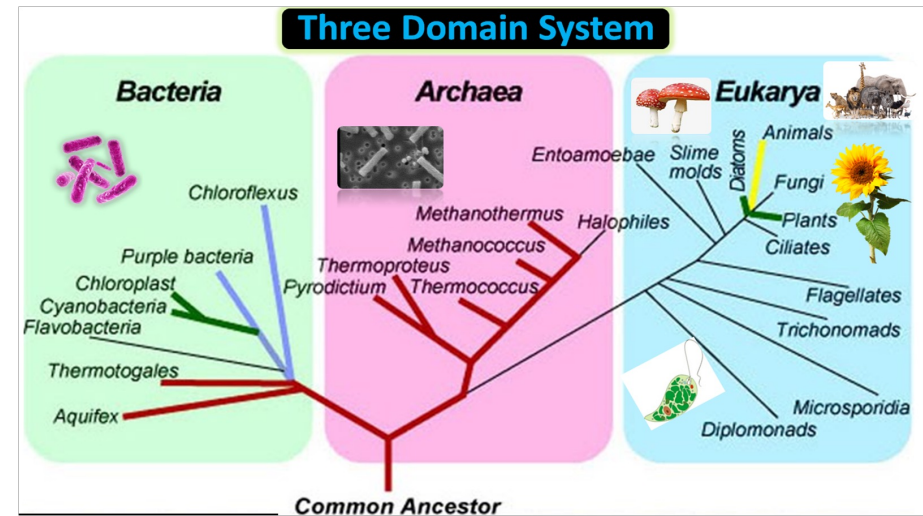
- The top AI models currently manage
 - ~ 53% at first pass on medium-difficulty problems
 - ~ 0% high difficulty problems
 - ...On which human experts routinely excel (Caiwei Chen, *MIT Technology Review*, 2025)
- “In real-world, application-driven environments – especially with AI agents – unreliability, hallucinations, and brittleness are ruinous. One wrong move could spell disaster when money or safety are on the line.” (Zihan Zheng, *N. American Coding Olympiad Finalist*, 2025)



THE APPS AR
ALGORITHM
INDUSTRY 4.0
ROBOTICS
BIOCHAIN
MACHINE
LEARNING
PREDICTIVE ANALYSIS
DATA MINING
VOICE RECOGNITION
ARTIFICIAL INTELLIGENCE
NET NEUTRALITY
BIOMETRICS
DEEP LEARNING
SMART CITIES
ZETTABYTE
CLOUD
BIG DATA
NEURAL NETWORK
5G
VR

Synonyms?

Digital Comparisons



Wearables and Digital Psychology

- Smartwatches, fitness trackers, digital mental health tools
- Real-time physiological & behavioral data (sleep, heart rate, mood)
- ML detects patterns for early intervention (e.g., signs of depression)



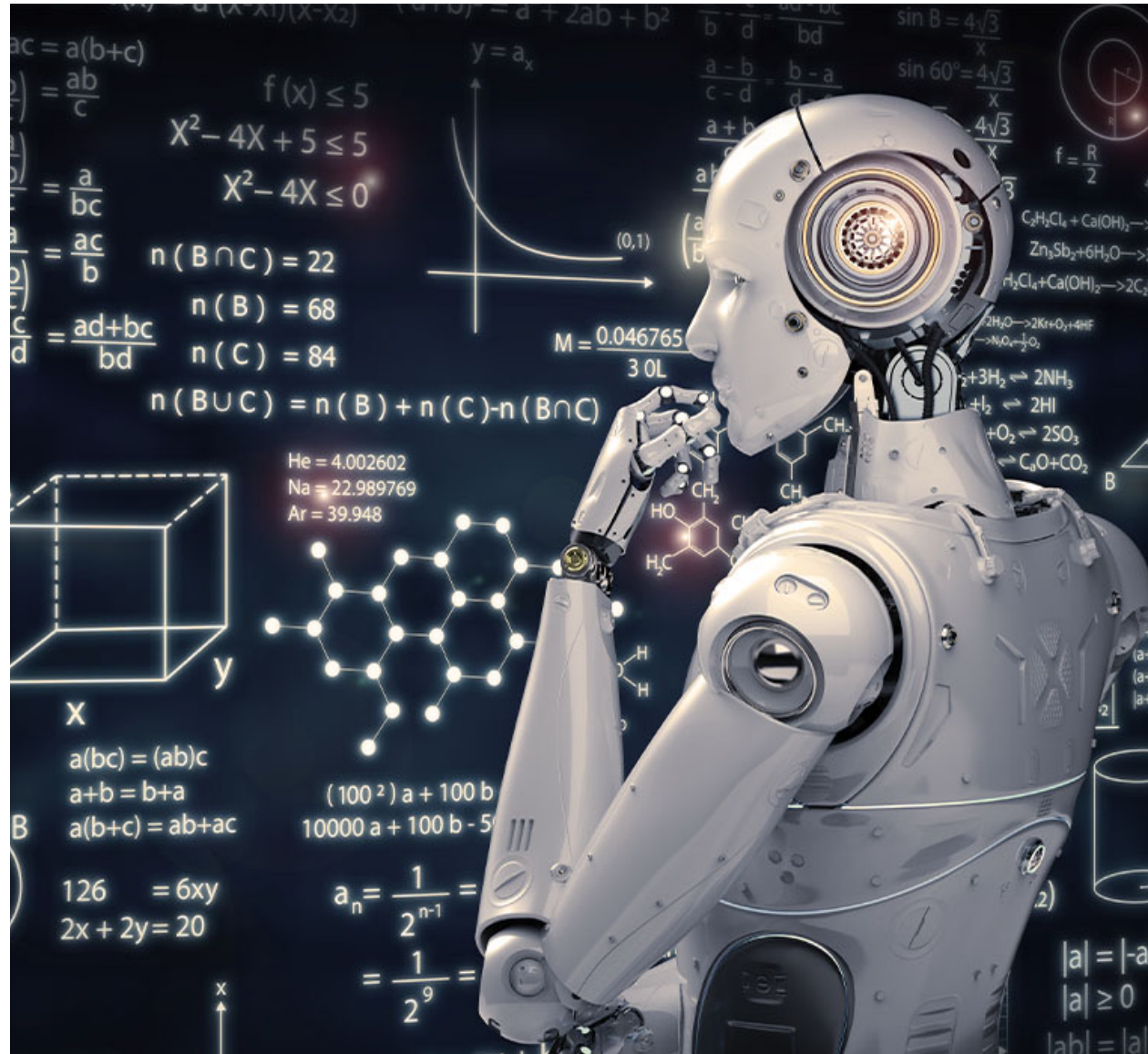
Artificial Intelligence (AI)

- AI: Simulated human-like intelligence by machines
- Closed Captioning
- Translators
- Examples in psychology:
 - Chatbots for mental health (e.g., Woebot)
 - AI-driven behavioral predictions
 - Decision support in diagnostics



Machine Learning (ML)

- Subset of AI: Systems learn from data
- Instead of being explicitly programmed, ML models improve over time
- Example: Predicting relapse risk using therapy session transcripts



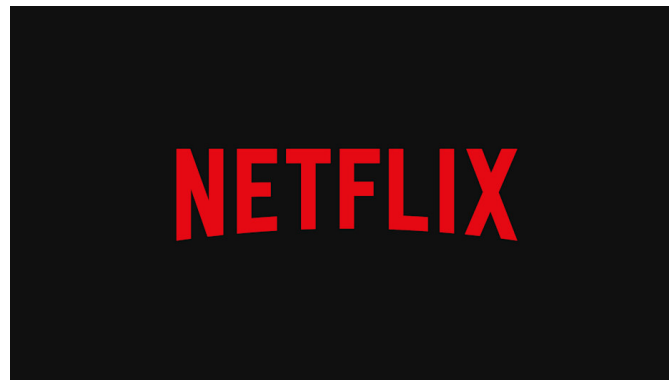
Types of Machine Learning (ML)

1. ML powers many modern AI applications like:

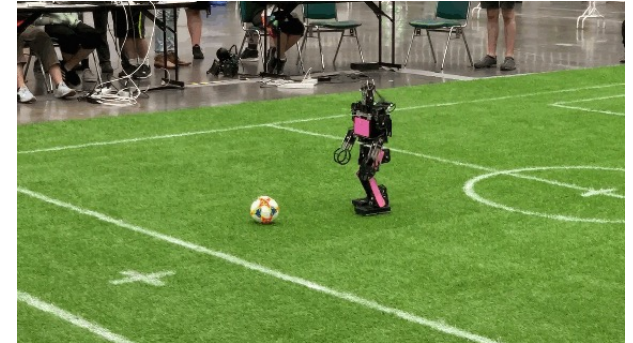
- Voice assistants (e.g., Siri, Alexa)
- Recommendation systems (e.g., Netflix, Amazon)
- Autonomous vehicles
- Mental health apps (e.g., predicting emotional states)



Google Maps



There are many forms of ML and intelligence level



ANIMAL KINGDOM

All living animals

GREAT APES

apes, gorillas, orangutans,
humans

HOMO SAPIENS

ARTIFICIAL INTELLIGENCE

A program that can sense, reason,
act, and adapt

MACHINE LEARNING

Algorithms whose performance improve
as they are exposed to more data over time

DEEP LEARNING

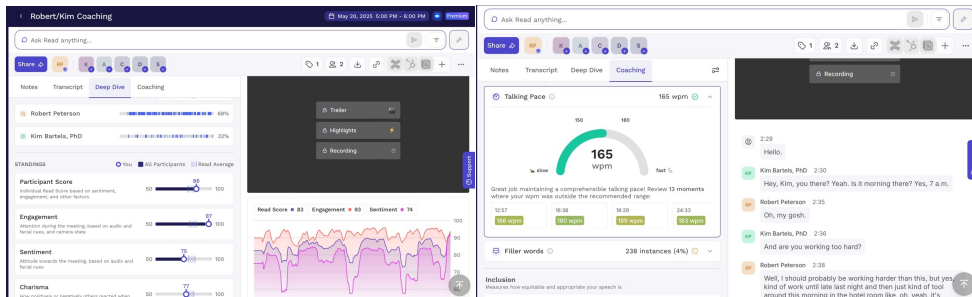
Subset of machine learning in
which multilayered neural
networks learn from
vast amounts of data

How AI & ML Work Together

- AI is the broader concept; ML is one method used to create AI
- Analogy: AI is the goal (like mental wellness), ML is the therapy plan
- In psychology: ML helps AI analyze speech, text, biometrics, outcomes

What can AI do?

- Ability to provide a transcript
- Analyze speech patterns
- Engagement analysis



The screenshot displays the Read app interface for a coaching session titled "Robert/Kim Coaching" on May 20, 2025, from 5:00 PM to 6:00 PM. The interface is divided into several sections:

- Summary:** A section on the left showing a "Summary" of the coaching session. It includes a "Read Score" of 83, "Engagement" of 93, and "Sentiment" of 74. The summary text reads: "Kim Bartels provided feedback on Robert Peterson's job proposal, noting improvements in compensation and responsibilities. Robert is preparing a slide presentation for a startup event and is considering customer confidentiality in his proposal. He expressed concerns about how to handle potential dissatisfaction from the company regarding monetary expectations or responsibilities. Kim advised him to listen carefully to feedback and create space for the company to express their thoughts, emphasizing the importance of a well-structured proposal while remaining open to negotiation. Robert shared his strategy for pitching responsibilities and compensation, drawing from a recent experience at a startup incubator. He discussed the appropriate compensation percentage and the need for negotiation flexibility. Kim encouraged him to remove identifying information from his presentation to protect confidentiality and to keep compensation details open for future negotiations. They also discussed potential staffing resources for a project and the importance of focusing on business growth and venture capital strategies to align with the interests of his counterparts. Kim"
- Highlights:** A section on the right showing "Highlights" of the coaching session. It includes a "Read Score" of 83, "Engagement" of 93, and "Sentiment" of 74. The highlights text reads: "Robert Peterson will prepare a slide presentation to showcase his ideas and approach for the startup. Robert Peterson will redact customer names from the document before sharing it with potential employers. What should Robert Peterson do if the potential employer's expectations differ from his presentation? How can Robert Peterson effectively present his ideas without overwhelming the potential employer? What should Robert Peterson do if he feels the conversation is not going as planned?"
- Transcript:** A central section showing a transcript of the coaching session. The transcript includes a "Hello." and a "Hey, Kim, you there? Yeah. Is it morning there? Yes, 7 a.m." followed by a "Oh, my gosh." and a "Well, I should probably be working harder than this, but yes, kind of work until late last night and then just kind of tool around this morning in the hotel room like, oh, yeah, it's supposed to be 7 a.m., not 8 a.m. As yesterday. So."

How to get into AI?



What do tech experts say about AI?

Are AI models "good"?

- "Solid in different ways" (Caiwei Chen, *MIT Technology Review*, 2025)
- How are AI models evaluated?
 - Benchmarks > measurement tool for AI
 - Fixed set of questions for evaluation
 - "Teach to the test" – high scores x models ~~improvements~~
 - Knowledge v. intelligence
 - Widespread data contamination (questions and answers)
 - Benchmarks "ceiling out"
 - >90% accuracy statistical noise is *not* model improvement

Is Gemini or DeepSeek better than ChatGPT?

Is the Anthropic (safety focused) model worthwhile?

DO benchmarks mean anything in AI?

Do assessments like LiveCodeBench Pro adequately address ceiling and floor problem?

Do user questions like LMarena solve benchmark issues via comparison?





ChatGPT

Version	Model	Key Features	Limitations	Pro Subscription	Release Period
1.0	GPT-3.5	Basic QA, summary, conversation	Weak reasoning, no tools	No Pro tier	Nov 2022 – Jan 2023
2.0	GPT-3.5-Turbo	Faster, cheaper, same base capability	No vision or interactivity	\$20/month	Feb 2023
3.0	GPT-4	Strong reasoning, early memory rollout	Slower, expensive	\$20/month	Mar-May 2023
4.0	GPT-4 Turbo	Tools, images, memory, custom GPTs, 128K context	Still hallucinates, limited autonomy	\$20/month	Nov 2023 - Present
5.0	GPT-5	AI agent capabilities, stronger multimodal fluency	Not yet released.	\$20-40/month	Expected Jul 2025

Ethical and Practical Considerations



- Privacy and consent
- Algorithmic bias and fairness
- Therapist–AI collaboration, not replacement
- Importance of human oversight



The great divide

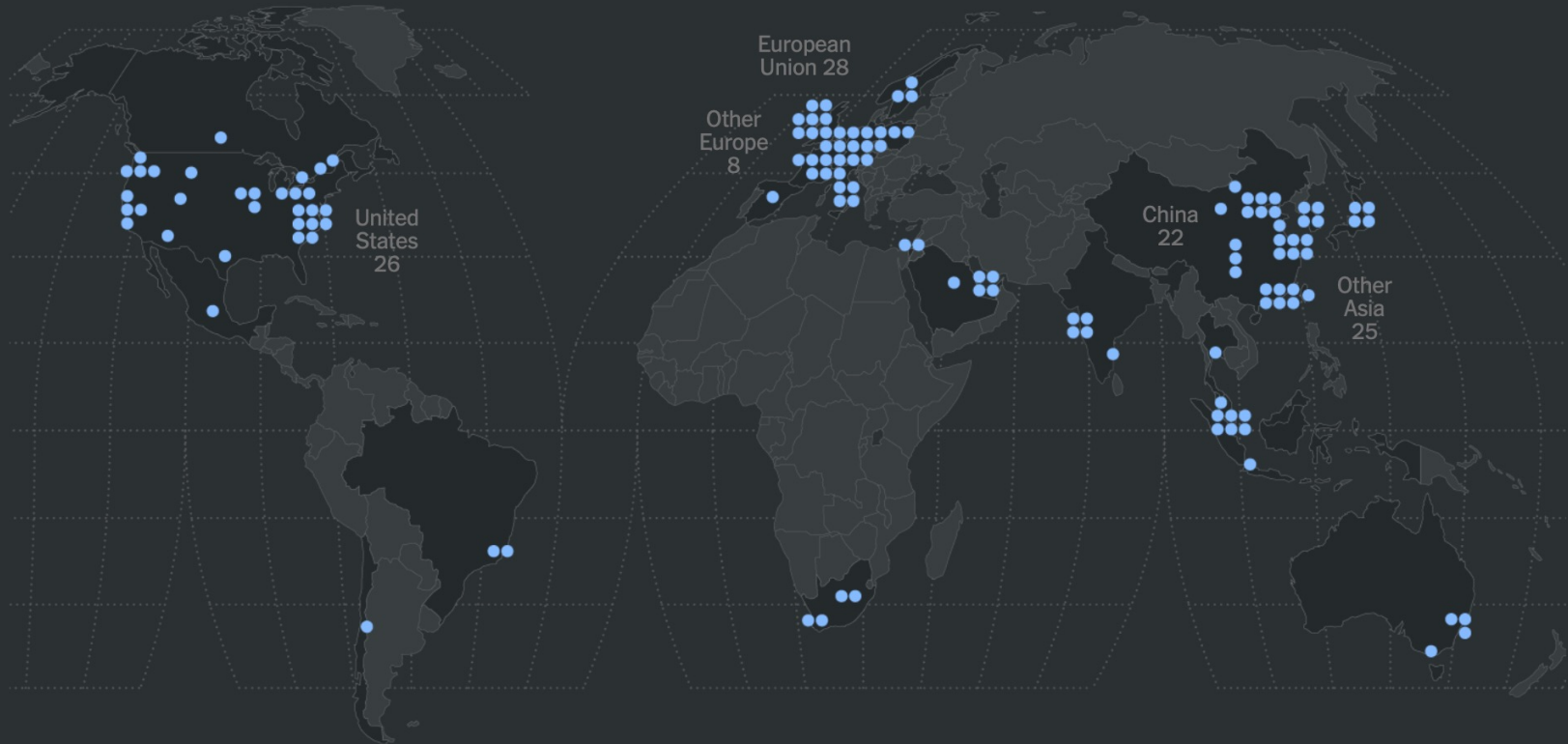
AI Have & Have Nots

What are psychologists
saying about AI?

The Global A.I. Divide

WHERE A.I. DATA CENTERS ARE LOCATED

Only 32 nations, mostly in the Northern Hemisphere, have A.I.-specialized data centers.



Source: Oxford University • Note: Count of data centers in China excludes facilities in Hong Kong and Taiwan.

Tech Layer



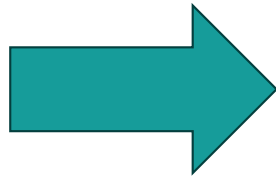
Digital

AI

Machine Learning

Wearables

Combined Impact



Psychological Concept



Communication, attention, awareness

Decision-making, modeling cognition

Learning through feedback, behaviorism

Self-tracking, biofeedback, emotional insight

Enhanced self-regulation, habit formation,
predictive behavior change

The Future of Psychology + Technology

- Personalized mental health care
- Scalable solutions for underserved populations
- Real-time monitoring and adaptive interventions
- Psychologists shaping responsible AI design
- *Thinks with you not for you -
Anthropic Claude AI*



How Psychologists Can Engage

- Learn the basics of data and algorithms
- Collaborate with technologists on tool development
- Use digital tools as adjuncts, not replacements
- Advocate for ethical standards in AI



Simple right?

Q&A / Discussion

- Open floor for questions
- Invite feedback, concerns, and collaboration ideas

