AI primer

- What can you do that AI cannot do?
- What can students do now that they could not pre-AI?
- Not about what AI can do, but what it **cannot** do...

New terms:

- Artificial Intelligence (AI)
- Machine learning (ML)
- Neural networks: “neural nets”
- Artificial general intelligence (AGI)
- Cloud computing
- Quantum computing
- Generative AI: GPT: Generative Pre-trained Transformer
- Large language models (LLM)

Phase I: Finger counting to AI: how did we get here?

This summary was created entirely by a human, without AI

1. Fingers: digits, counting to ten (ten fingers, ten toes)
2. Digits to binary 1 or 0, heads or tails
3. Symbols to binary: letters as 1 or 0
4. Binary + logic = computing (and/or, if/then)
5. Cloud computing: computers elsewhere, trading 1/0
6. Quantum computing: no longer 1 or 0, could be any combination, parallel processing, many answers
7. Sequential, linear brains: neural nets: potentiate what is learned, new pathways
8. Neural nets in computing: "scoring" instead of potentiated pathways
9. Machine learning: give it data, tell it a goal, seek that goal (chess, X-rays), recognize patterns, pattern prediction
10. Artificial intelligence: give it huge amounts of data (e.g. the web), notice patterns, large learning models: LLMs (e.g. GPT), repeat patterns seen that match (pattern matching) generative AI like GPT: Generative Pre-trained Transformer
11. Artificial general intelligence: learning to learn: AI + neural nets + machine learning + cloud computing + eventually quantum computing, perhaps equal or exceeding human intelligence

Generative AI is a subset of machine learning in which systems are trained on massive information sets – often including personal information – to generate content such as text,

computer code, images, video, or audio in response to a user prompt. This content is **probabilistic** , and may vary even in response to multiple uses of the same or similar prompts...:"

What these lack:

- Context, humor, irony, spontaneity
- GPT can tell you all about Athens and Sparta, but only a teacher will introduce the simile between China and the US (context).
- AI seems "smart" because it can combine things humans have created on request, seeing possible links (pattern matching), but **only** what is requested.
- Artificial general intelligence (AGI) will have the ability to go beyond pattern recognition, not independent thought, but flexibility not seen in AI: teaching a robot to throw a ball is very difficult, even with Machine learning (ML).
- Artificial general intelligence (AGI) will enable this to happen faster, with more data, and with Quantum Computing, much faster than linear brains like ours can match.

TRY IT OUT——

Examples: GPT4

- Make me a photo of a planet
- Hello, I want to learn how to code in python, how should I start? Give me a breakdown that I can understand
- Explain relativity like I'm: 5 years old,
- Now explain it like I'm a graduate student in physics
- Make me an image that represents chemistry
- Dolphin and human surfing
- SORA. https://www.youtube.com/watch?v=2fAPgOCjToA
- Otter on a plane: https://www.oneusefulthing.org/p/prophecies-of-the-flood?utm_source=substack&utm_medium=email#media-4977884d-b628-4b1e-b90f-d4f6403b82de

- Surprise yourself! https://openai.com/

Phase II: how students see this

1. The "new google": faster, more direct, simpler to use
2. Drop pdf to read, "Explain to me what this is"
3. GPT4: "make me a photo of a planet"
4. Good for creating drafts, formal emails
5. "Prompt engineering"-learning to ask-Iliad article
6. Paraphraser-changes AI generated text into their "voice"
7. "Show the steps" is commonly used for homework (good/bad)
8. Three phase exploration: problem, answer, solution
9. Create an environment where they can use the tools, and learn

10. Example: testing at Cal Poly vs. HPA
11. Synthesis of process and thinking, not recall
12. AI will enhance this, not prevent it
13. 22 year old mind in college different from 14 year old HPA student
14. Content with **context** is important (only teachers can provide this)
15. Test questions: math, science, history examples
16. “show your work”
17. M.D. vs. engineer: recall vs. creation
18. Essay example: general topic, ask for central claim, outline the claim, rewrite in your voice
19. Ideas from GPT, prose from the student
20. Options: embrace AI essays OR separate AI assisted from pure human work

Possible uses in education:

- Personalized study guides, homework, tutors
- Curated learning: teacher+AI
- Truly differentiated learning (advanced and those needing assistance)

Educational Issues:

- Only as good as the data fed in: biases (e.g. only white doctors)
- Statistical so there is no “zero probability”=>hallucinations
- College students should go into applied statistics and machine learning (ML)
- Prompt engineering should be required for all students

HPA response: Magic School

HPA Challenge: lower anxiety and fear among faculty about using AI

1. Simple platform with templates
2. Collaboration with single platform (sharing)
3. Ability to discern early-adopters. advanced users (feed the beast, teams)

TRY IT OUT——— https://student.magicschool.ai/s/join?joinCode=yqoZ8Q

Phase III: Past present and future

1. what is “generative” AI? When?
2. where it is going: large language model learning
3. text, audio, video (SORA demo)
4. getting smarter: all AP, SAT answers included (free)
5. everything on google docs, amazon scanned books, libraries
6. live images from all security cameras, videos, youtube
7. criteria testing vs. synthesis evaluation?
8. how can we prepare our kids?

Phase IV: What is possible?

1. Personalized study guides, homework, tutors
2. Curated learning: teacher+AI
3. Local GPT: Tailwind
4. Why a local GPT server?
    1. our documents
    2. guardrails
    3. speed
    4. privacy
    5. green-solar powered!

TRY IT OUT———

What’s next:

1. RLHF Reinforcement learning with human feedback
2. Self driving vehicles-first large mechanical impact
3. Natural language entropy https://www.youtube.com/watch?v=5eqRuVp65eY
4. GPT4: o1, o3=AGI? December 2024 (!)

Migrated from Apple Server Wiki. Original page ID: 12E7r4

Revision #2
Created 2026-09-29 15:59:25 UTC by Admin
Updated 2026-09-29 16:21:56 UTC by Admin