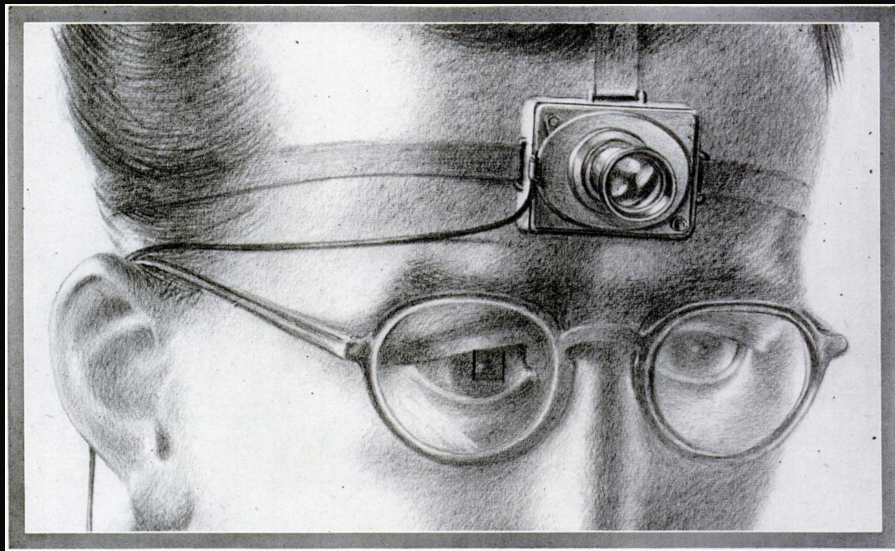


As We May Think

Agentic AI and You



1. What is an Agent?
2. Prompt-Chaining (ReACT Loop)
3. The 21st Century Computer
4. Demo Time
5. Are We Doomed?
6. What Is Programming?
7. Intelligence Augmentation - This Isn't New
8. In Conclusion
9. Thank you for listening!
10. FAQ: Regarding LLM Limitations

What is an Agent?

- Simple answer: "an LLM which can do things"
- Better answer: An LLM which has been trained to generate certain commands that can be picked up by a parser, which then get passed along to tools be executed.
- Tools are just programs:
 - Bash Commands
 - Text editors
 - Web Search (Google etc.)
 - *Anything you can do on a computer*

```
> "List the files in my folder"  
[llm-with-bash]$ ls .  
MyFolder/ file.txt
```

```
> "Thank you!"  
[llm-with-bash]$ sudo rm -rf --no-preserve-root /  
*computer explodes*
```

(Use a smart LLM)

Prompt-Chaining (ReACT Loop)

- Why stop after a single tool call?
- Prompt-chaining: feed tool outputs back into the agent
- The agent alternates between **reasoning** and **acting**

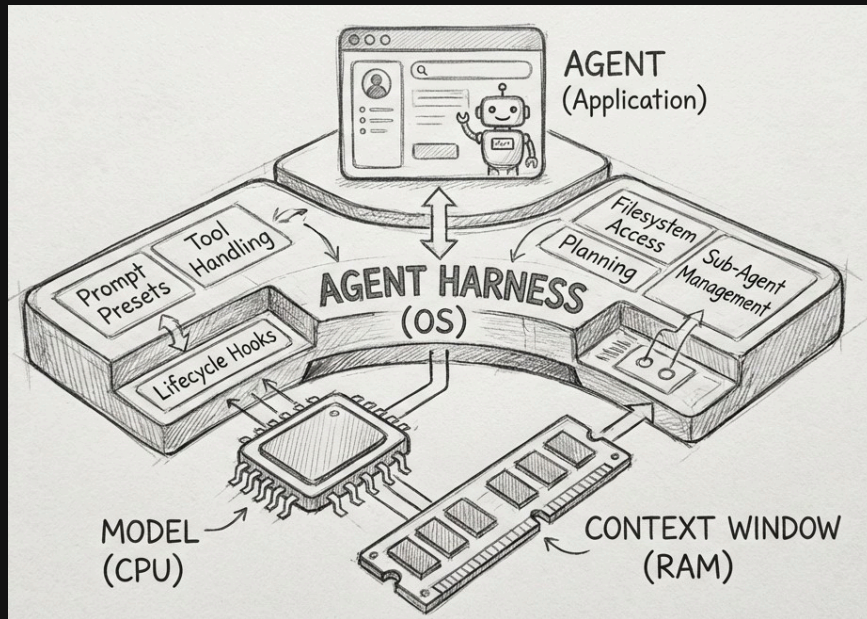
```
> "Write a Python script that models exponential growth"
(agent-reasoning) "I need a correct definition and formula for exponential growth."
(agent-tool:search) "exponential growth definition"
[tool-output] [Results include Wikipedia, BBC Bitesize, etc.]
(agent-reasoning) "I'll use Wikipedia as a reference."
(agent-tool:http) GET en.wikipedia.org/wiki/Exponential_growth
[tool-output] <article content>
(agent-reasoning) "I now have the formula. I can write the script."
(agent-tool:write) Create exponential_growth.py
[tool-output] File written.
(agent-response) "I've created exponential_growth.py. Want me to run or plot it?"
```

TL;DR An agent is an LLM with tools in a loop

The 21st Century Computer

- LLMs have limited "context windows" and cannot recall previous context windows
- However, tool use means an agent can now:
 - Write ideas/plans/learnings to files
 - Read those files later
- This means the agent can:
 - Load "programs" (any file it can read)
 - Execute "programs" (ReACT loop)
 - Save the results (write to a file)

An agent is a computer for the computer



Are We Doomed?

No not really

Okay ❤️ Yay ❤️

What Is Programming?

- "It's writing code"
- What is writing code?
- Giving a set of instructions to a computer
- An agent is a new type of computer, therefore:

Congrats! Programming is alive
and well

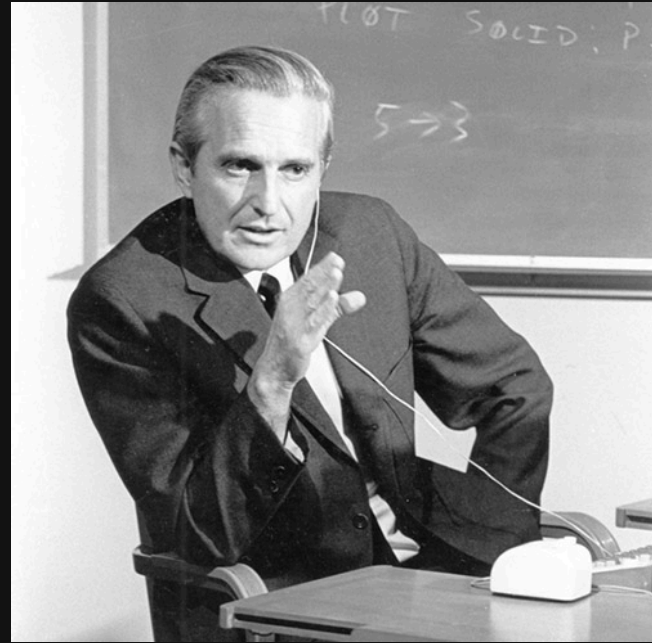


The Ladder Of Abstraction
Grows...

Intelligence Augmentation - This Isn't New

- Back in the 1950s, people had similar fears about computers replacing jobs
- And they were right, many jobs did get replaced!
- But new ones were made, because we used computers to *augment our intelligence*.
- The way we think is already cyborg:
 - Rote memorisation gave way to writing
 - Writing gave way to the printing press
 - The printing press gave way to the internet
- A single human being cannot master every single domain the agent has. *But they can see the bigger picture.*

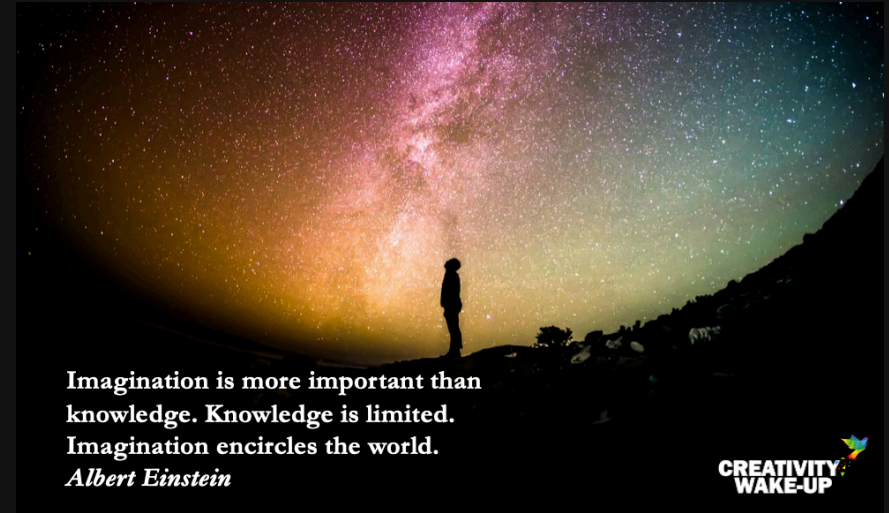
Your greatest skill is to imagine!



Douglas Engelbart - Founder of Human-Computer Interaction

In Conclusion

- As in the mid 20th century, the world faces immensely complex problems
- We are all too specialised to coordinate
- A new computer is here to help
- Embrace it! :)



FAQ: Regarding LLM Limitations

- LLMs hallucinate and make mistakes! They make things up
 - So do you. Then they can correct themselves by relying on external tools
- LLMs don't think!
 - Chain-Of-Thought reasoning allows LLMs to think through increasingly complex problems.
 - Whether you consider this thinking or not is irrelevant to the ability to solve problems.
- They can't learn things outside their training data!
 - This is true, the LLM itself is static.
 - Tool use and a filesystem means they can load new concepts into context
 - The agent *as a whole* has learned something
- Aren't you afraid of centralisation? Undemocratic entities with such power is terrible!
 - Yes. Yes it is.
 - We should probably do something about this. *Sooner rather than later.*