

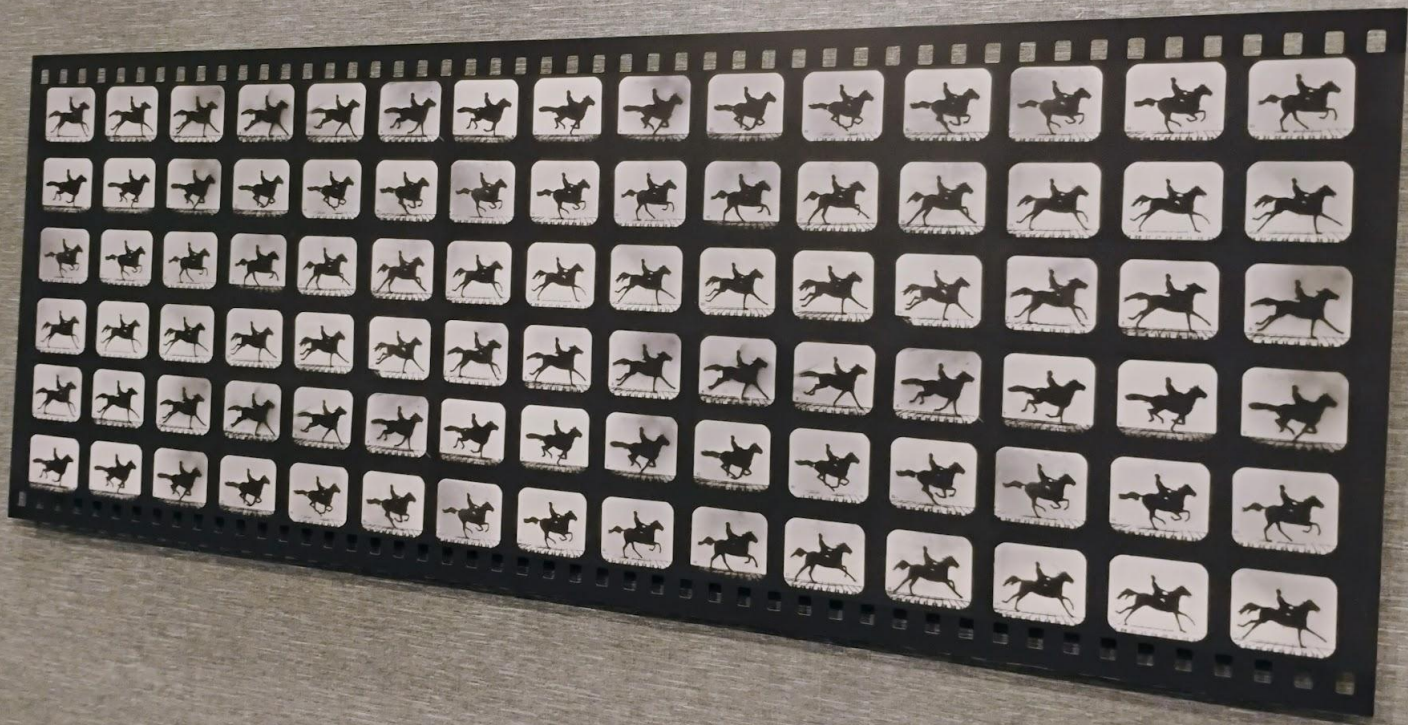
The background features a complex network of glowing nodes and connections. The nodes are represented by small, textured spheres in shades of blue and orange, connected by thin, white lines. The overall aesthetic is high-tech and digital, with a color palette dominated by deep blues and vibrant oranges. The network structure is dense and interconnected, suggesting a global or multi-scale system.

Thinking With Machines

Mike Amundsen
@mamund



Mike Amundsen
@mamund



We've seen this trend before



Shared History

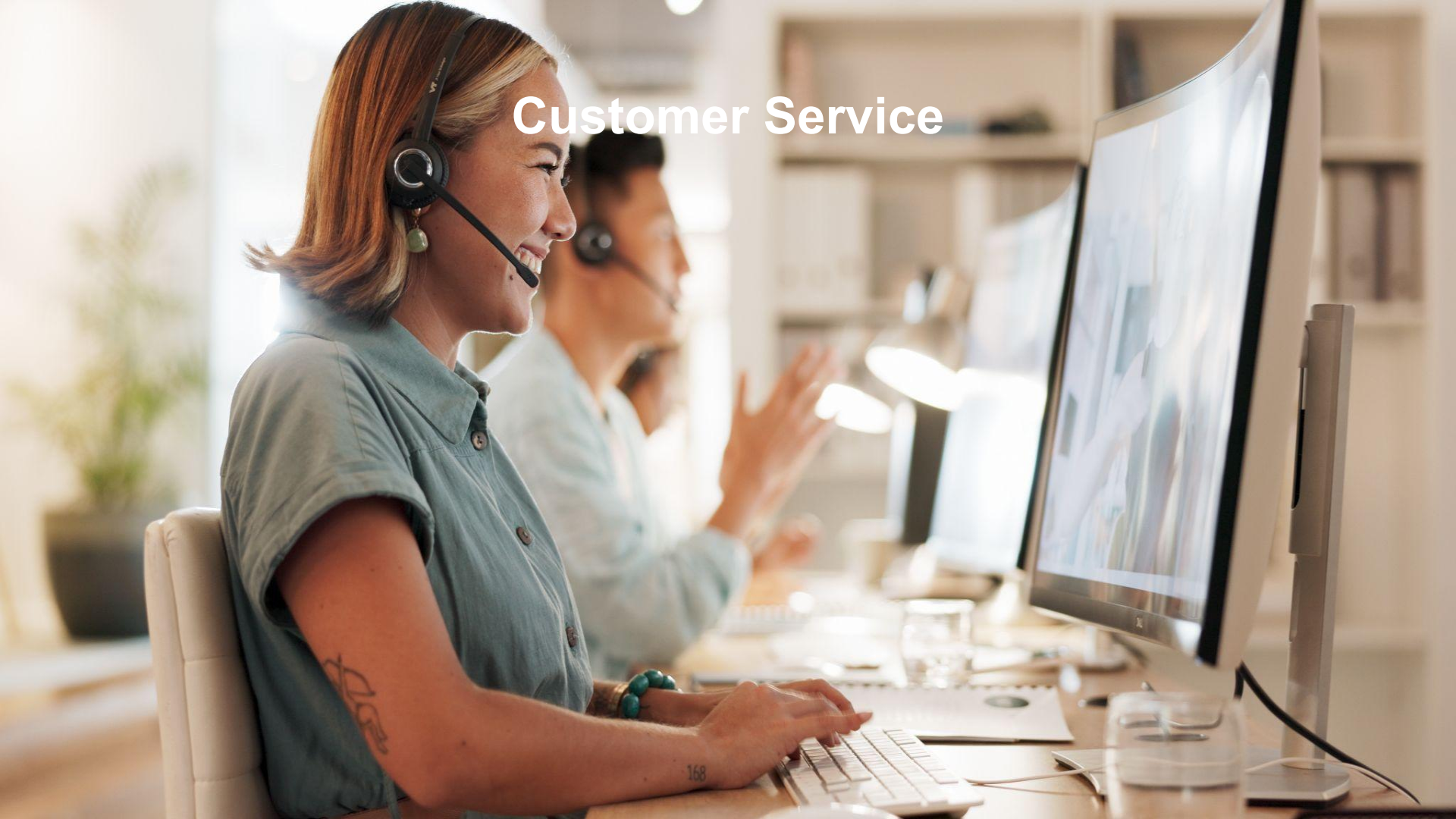


Shared Future



Let's get started...

Customer Service



CSR + AI = Trouble

FASTCOMPANY

01-12-2026 | MAVEN AGI

Klarna tried to replace its workforce with AI

Here is what every company should learn from it

CSR + AI = Trouble

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Technology

Salesforce AI faces backlash from customers

Customers angry over the company's switch to AI-driven tech support are saying things like: "It is so infuriating that Salesforce wants to abandon things that currently work."

Oct 4, 2025 10:31 AM EDT



By Vuk Zdinjak

CSR + AI = Trouble

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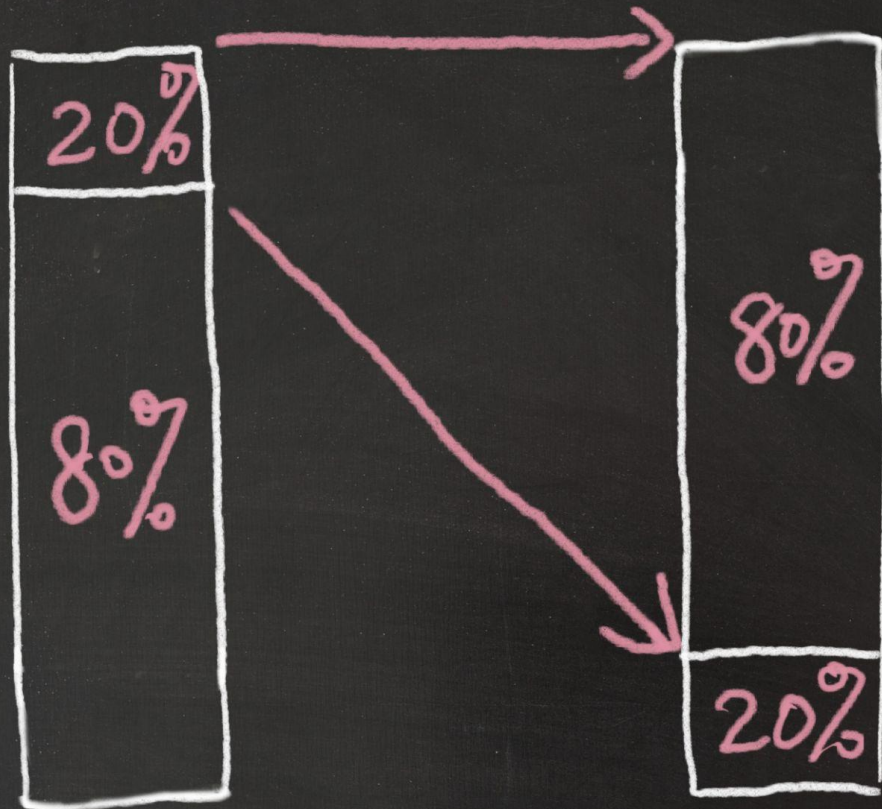


The Times of India

+ Follow

2.4M Followers

How Cursor AI chatbot's Big Mess is a lesson for companies automating their customer service



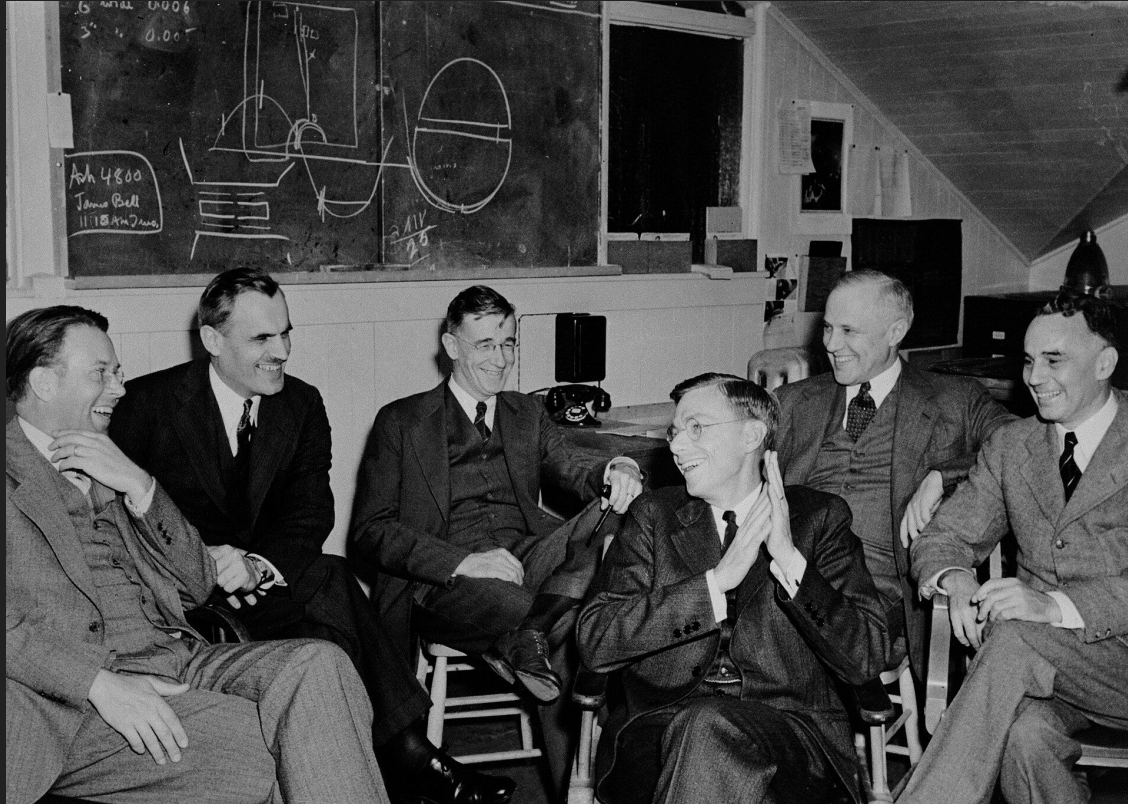
Unintended Consequences



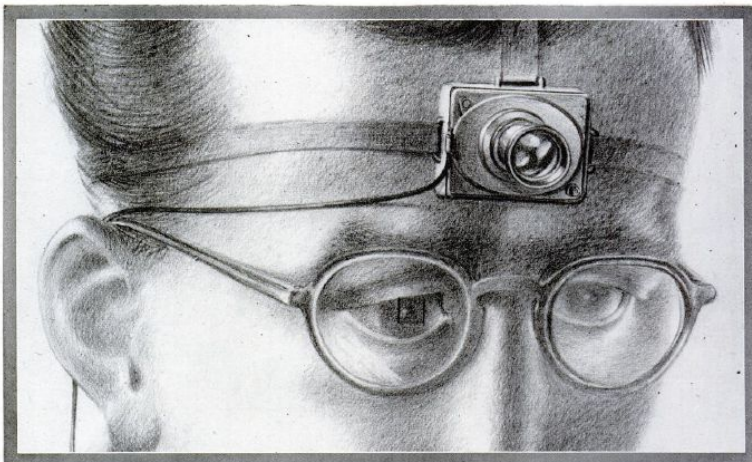
Vannevar Bush (1890 - 1974)



Manhattan Project (1942-1946)







A SCIENTIST OF THE FUTURE RECORDS EXPERIMENTS WITH A TINY CAMERA FITTED WITH UNIVERSAL-FOCUS LENS. THE SMALL SQUARE IN THE EYEGLOSS AT THE LEFT SIGHTS THE OBJECT

AS WE MAY THINK

A TOP U. S. SCIENTIST FORESEES A POSSIBLE FUTURE WORLD
IN WHICH MAN-MADE MACHINES WILL START TO THINK

by VANNEVAR BUSH

DIRECTOR OF THE OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

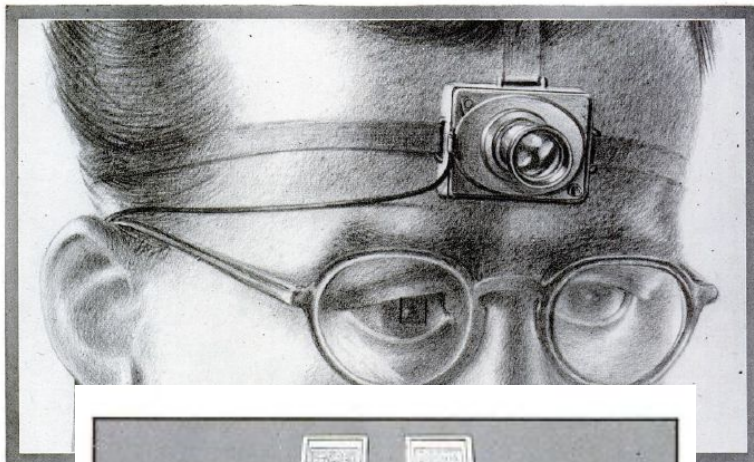
Condensed from the *Atlantic Monthly*, July 1945

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For the biologists, and particularly for the medical scientists, there can be little indecision, for their war work has hardly required them to leave the old

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Professionally our methods of transmitting and reviewing the results of research are generations old and by now are totally inadequate for their purpose. If the aggregate time spent in writing scholarly works and in reading them could be evaluated, the ratio between these amounts of time might well be startling. Those who conscientiously attempt to keep abreast of cur-

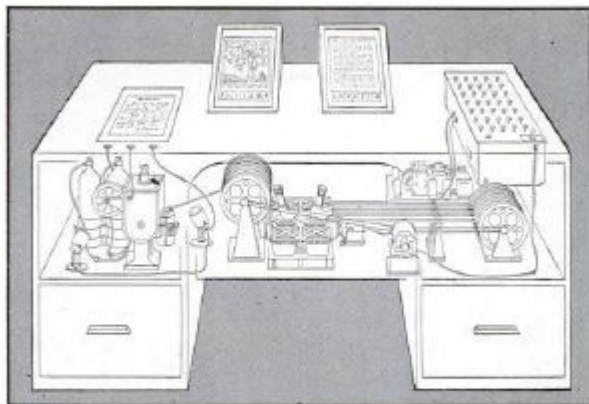


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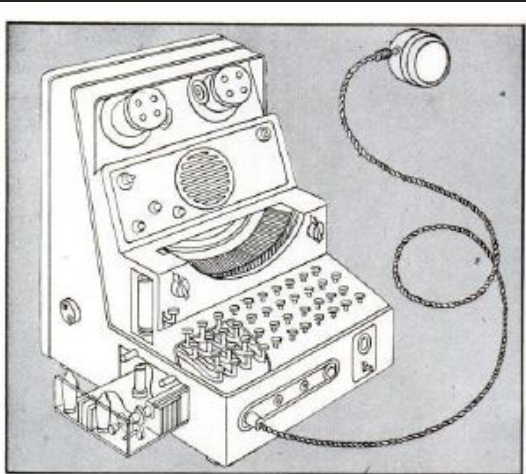
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MEMEX in the form of a desk would instantly bring files and material on any subject to the operator's fingertips. Slanting translucent viewing screens magnify supermicrofilm filed by code numbers. At left is a mechanism which automatically photographs longhand notes, pictures and letters, then files them in the desk for future reference.



SUPERSECRETARY OF THE COMING AGE, the machine contemplated here would take dictation, type it automatically and even talk back if the author wanted to review what he had just said. It is somewhat similar to the Voder seen at New York World's Fair. Like all machines suggested by the diagrams in this article it is not yet in existence.

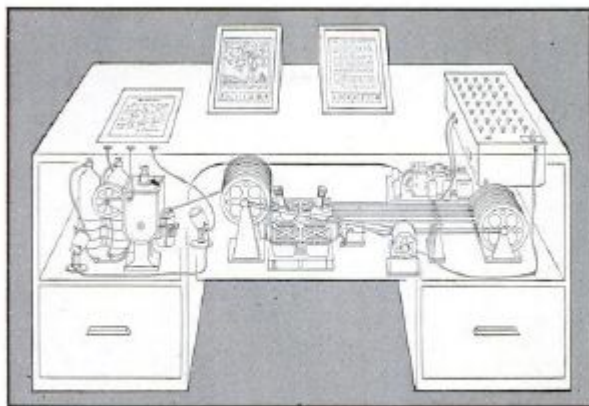


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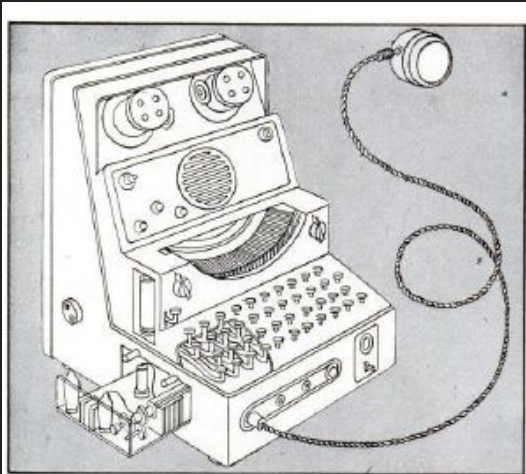
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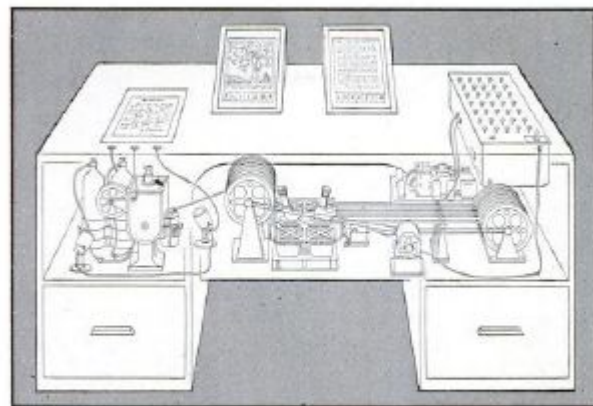


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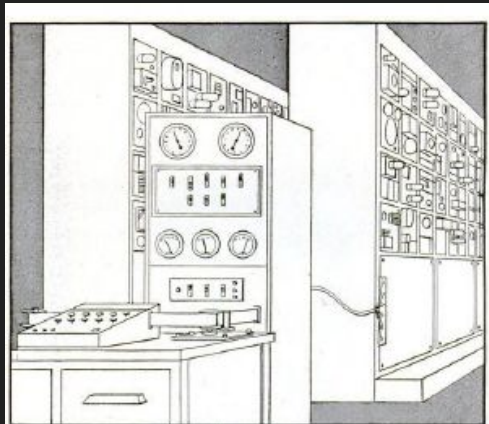
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THINKING MACHINES would solve not only the most difficult mathematical problems but even problems of logical thought. Mathematical problems would be fed by punched tape to the electronic device in the racks at rear. Results, accomplished in a fraction of the time it takes man, would be recorded on dials at top and bottom of control board.



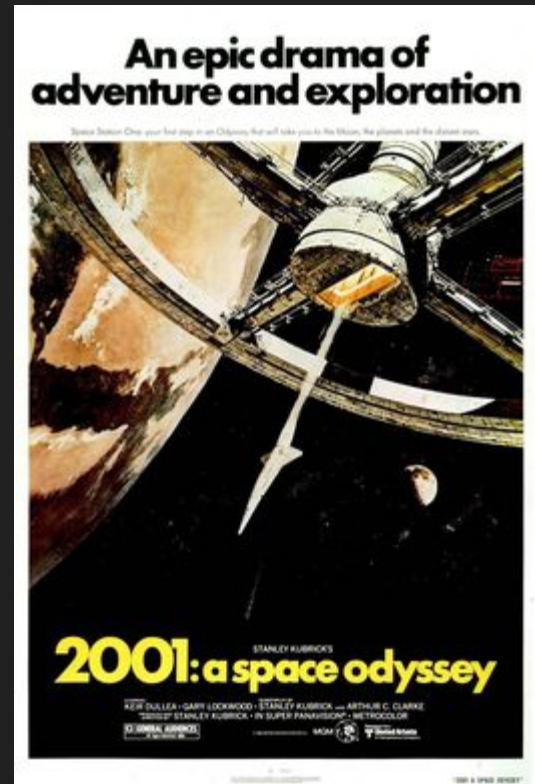
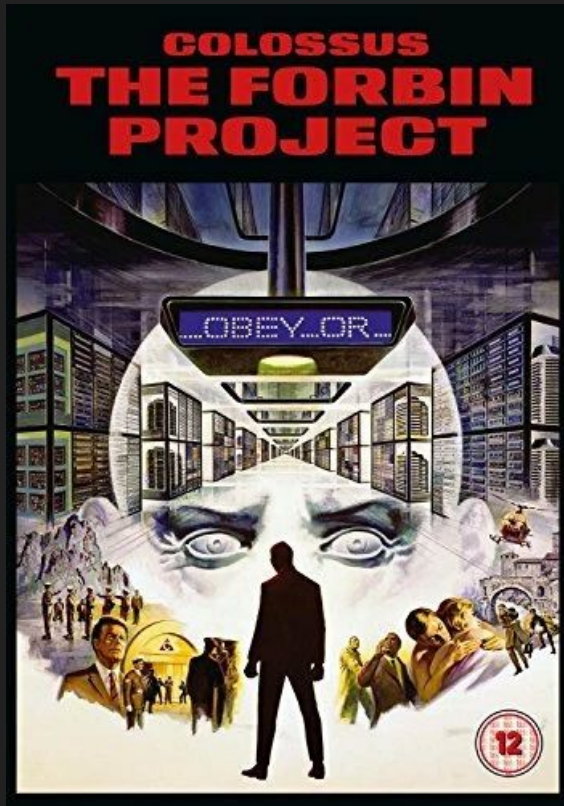
RUR

Rossum's Universal Robots

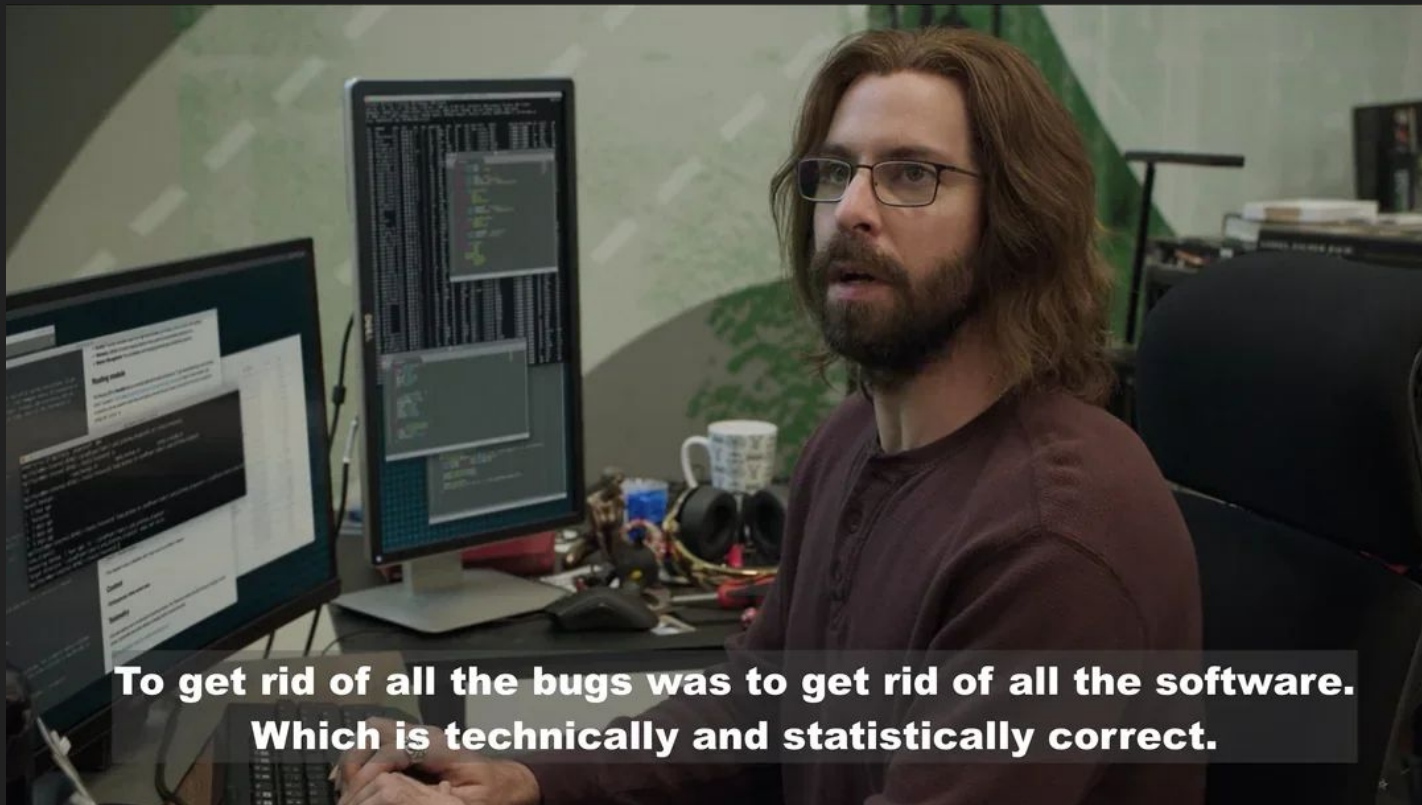
KAREL ČAPEK



BBC



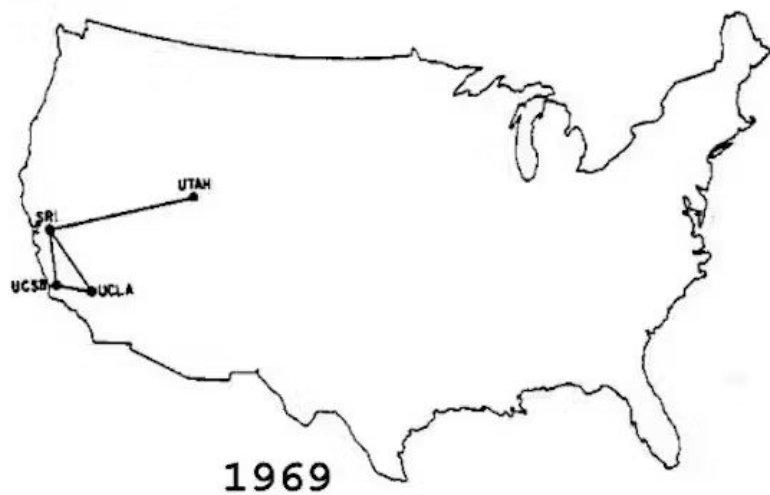
HBO's Silicon Valley (2014-2019)



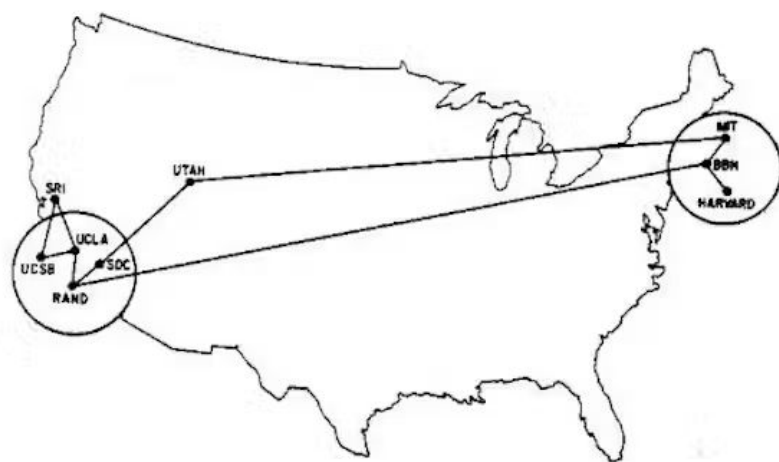
**To get rid of all the bugs was to get rid of all the software.
Which is technically and statistically correct.**

J.C.R. Licklider (1915 - 1990)

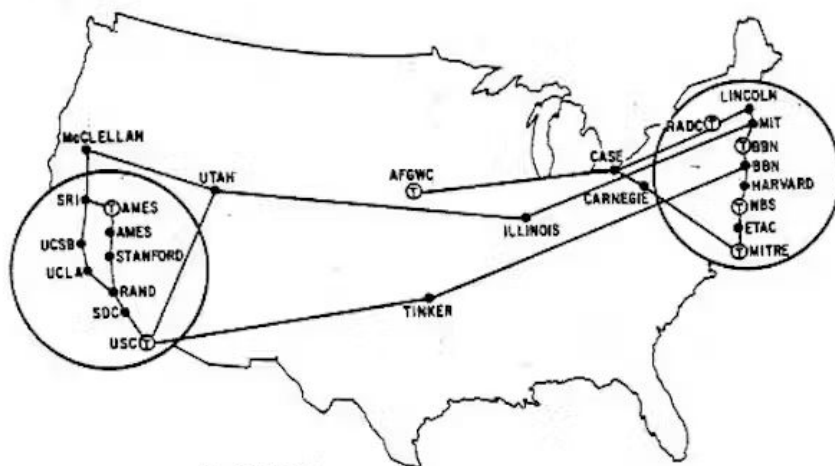




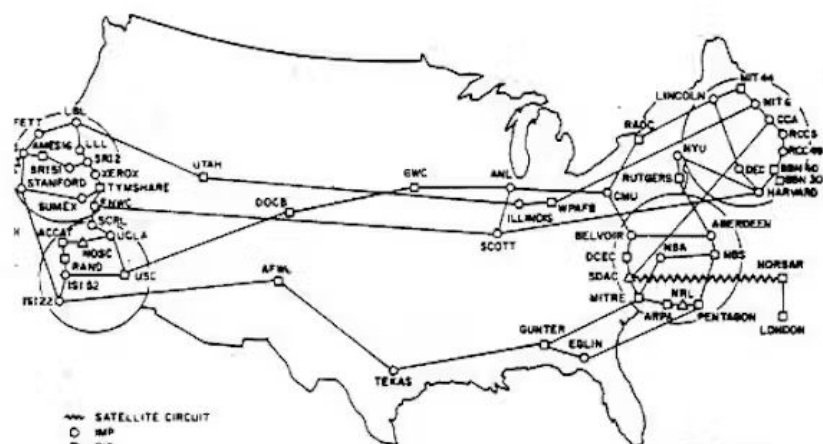
1969



1970



1972



1977

~ SATELLITE CIRCUIT

○ IMP

□ TIP

△ PLURIBUS IMP

(NOTE: THIS MAP DOES NOT SHOW ARPANET EXPERIMENTAL SATELLITE CONNECTIONS)

NAMES SHOWN ARE IMP NAMES, NOT (NECESSARILY) HOST NAMES

ADVANCED RESEARCH PROJECTS AGENCY

Washington 25, D.C. April 23, 1963

MEMORANDUM FOR: Members and Affiliates of the Intergalactic
Computer Network

FROM: J. C. R. Licklider

SUBJECT: Topics for Discussion at the Forthcoming Meeting

First, I apologize humbly for having to postpone the
meeting scheduled for 3 May 1963 in Palo Alto. The ARPA
Command & Control Research office has just been assigned a

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4

IRE TRANSACTIONS ON HUMAN FACTORS IN ELECTRONICS

March

Man-Computer Symbiosis*

J. C. R. LICKLIDER†

Summary—Man-computer symbiosis is an expected development in cooperative interaction between men and electronic computers. It will involve very close coupling between the human and the electronic members of the partnership. The main aims are 1) to let computers facilitate formulative thinking as they now facilitate the solution of formulated problems, and 2) to enable men and computers to cooperate in making decisions and controlling complex situations without inflexible dependence on predetermined programs. In the anticipated symbiotic partnership men will set the goals, formulate the hypotheses, deter-

will be coupled together very tightly, and that the resulting partnership will think as no human brain has ever thought and process data in a way not approached by the information-handling machines we know today.

B. Between "Mechanically Extended Man" and "Artificial Intelligence"

As a concept, man-computer symbiosis is different in

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How AI Impacts Skill Formation

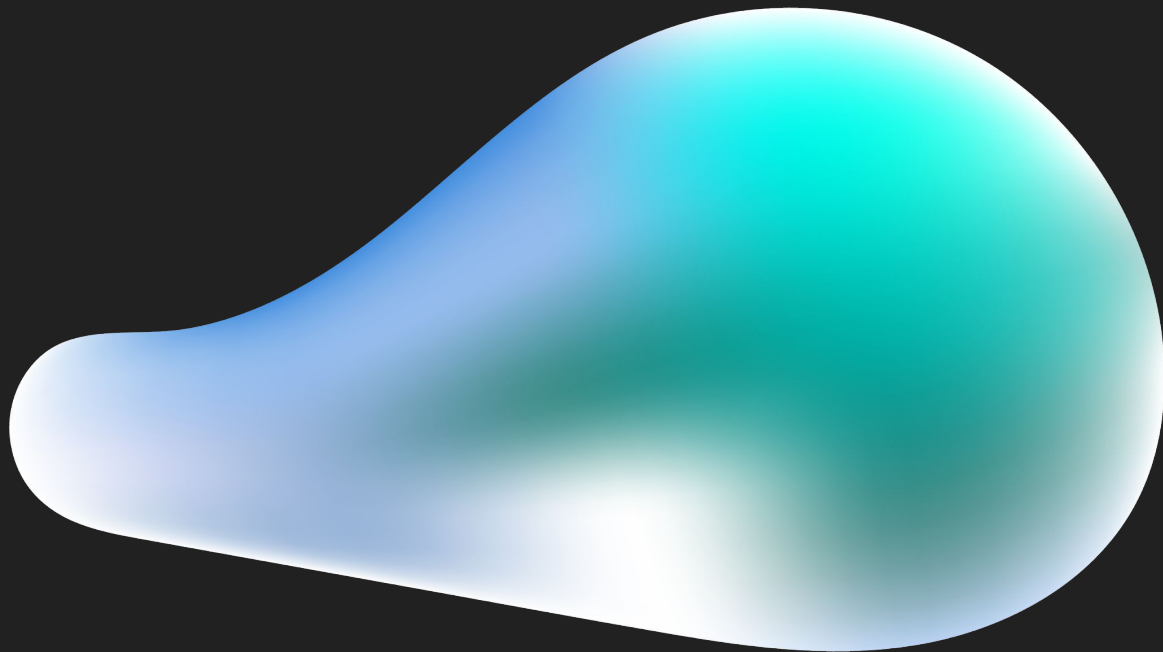
Judy Hanwen Shen* Alex Tamkin†

February 3, 2026

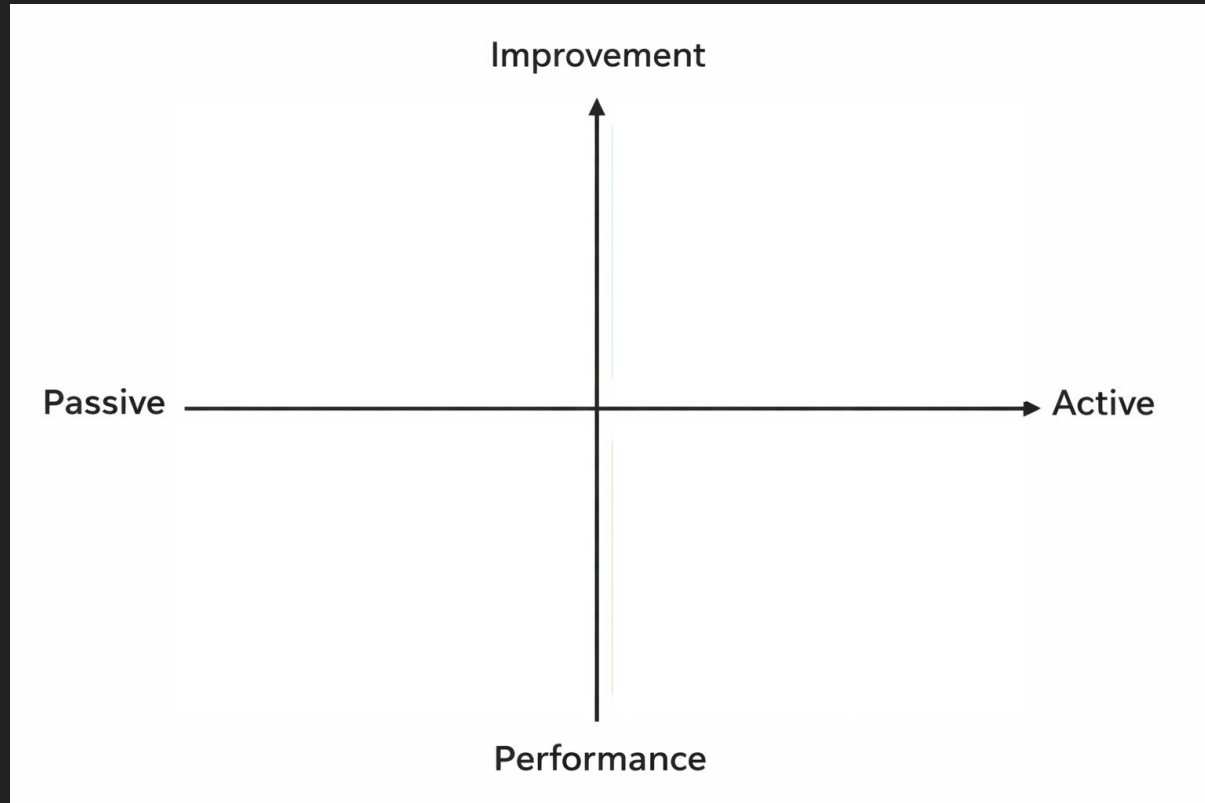
Abstract

AI assistance produces significant productivity gains across professional domains, particularly for novice workers. Yet how this assistance affects the development of skills required to effectively supervise AI remains unclear. Novice workers who rely heavily on AI to complete unfamiliar tasks may compromise their own skill acquisition in the process. We conduct randomized experiments to study how developers

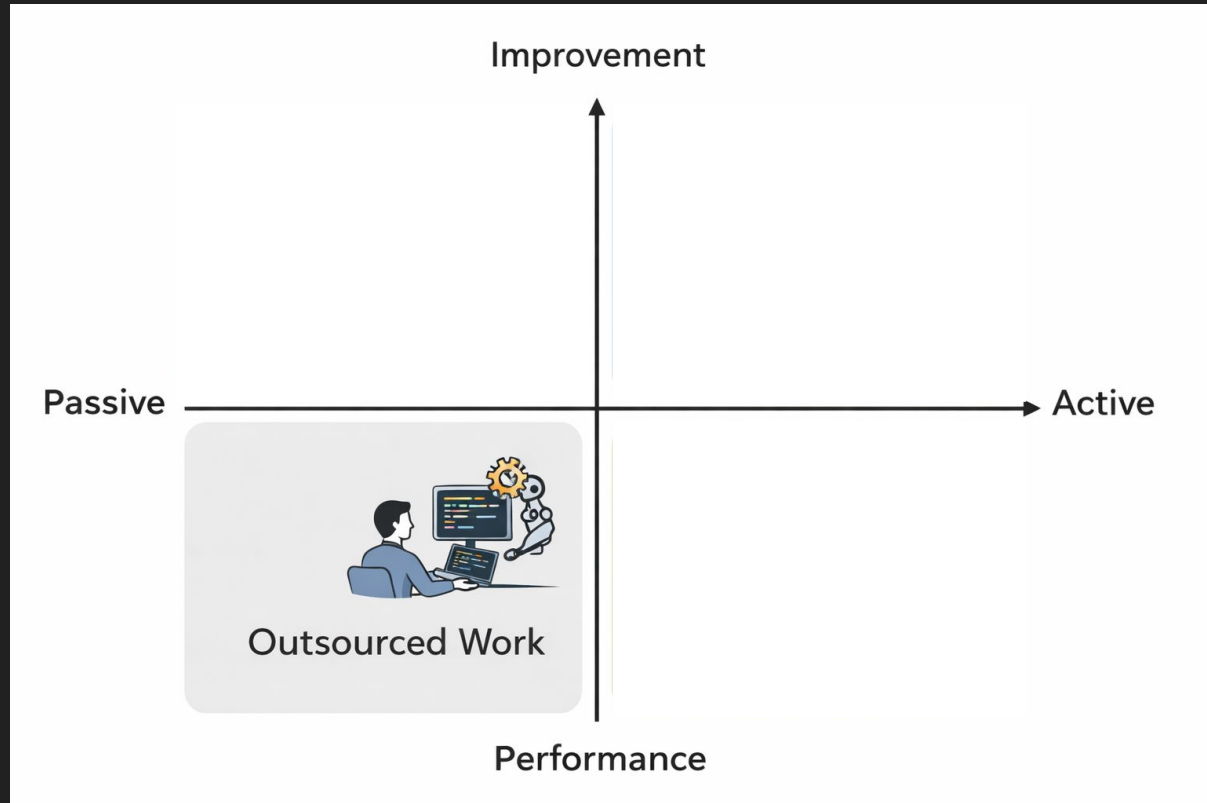
It's a gradient



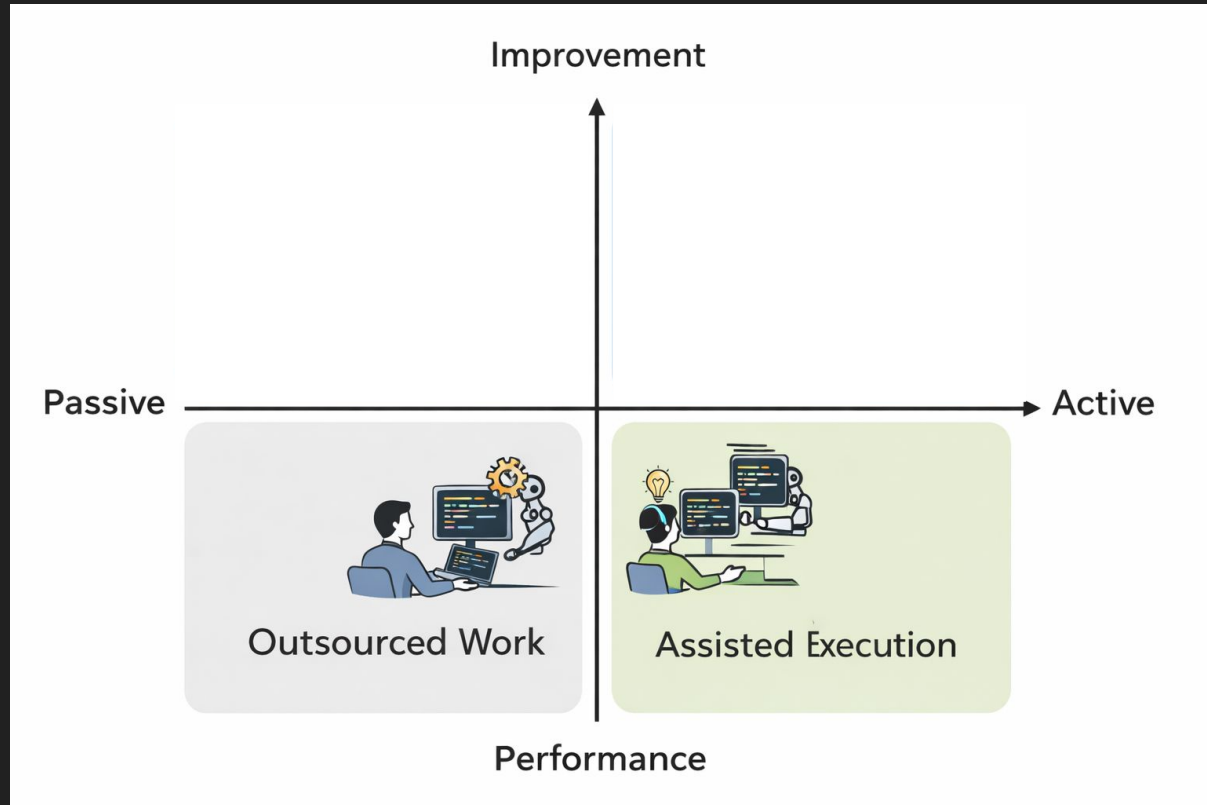
Types of AI Tool Use



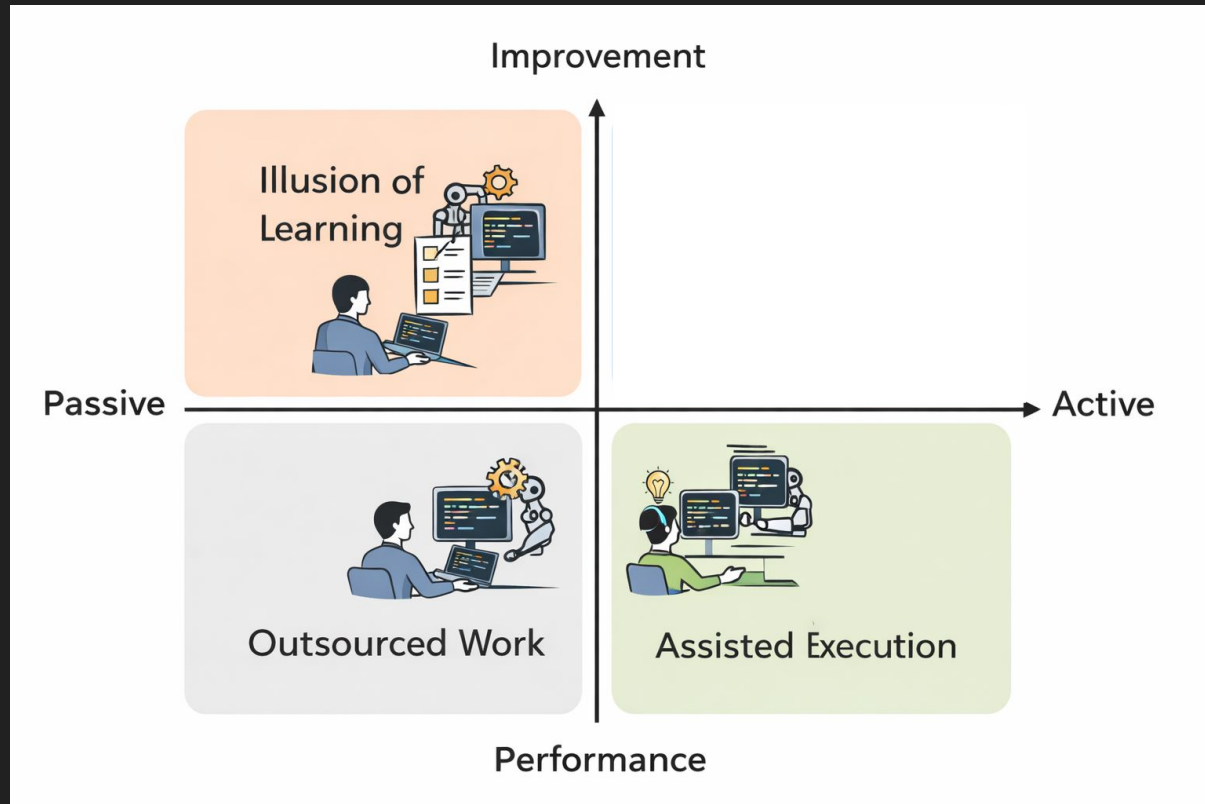
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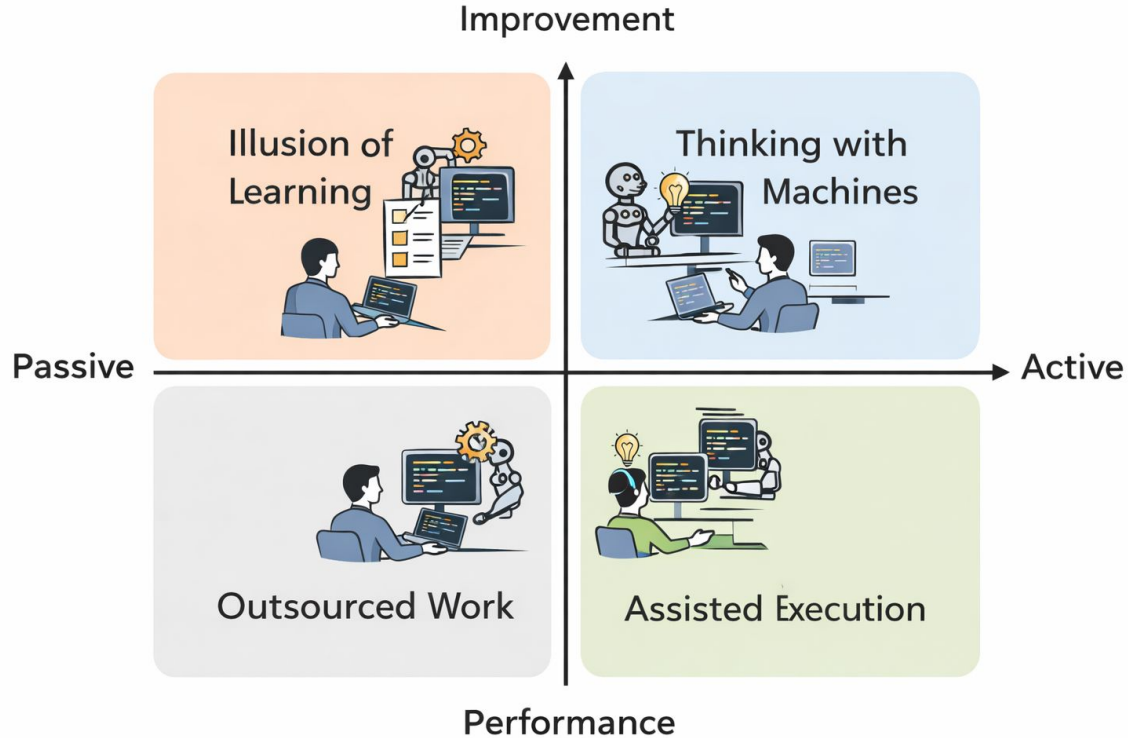
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Types of AI Tool Use





Creative Process

Creative Process

Brainstorming

Creative Process

Brainstorming

Refining

Creative Process

Brainstorming

Refining

Execution



Creative Process



Refining

Execution

Creative Process

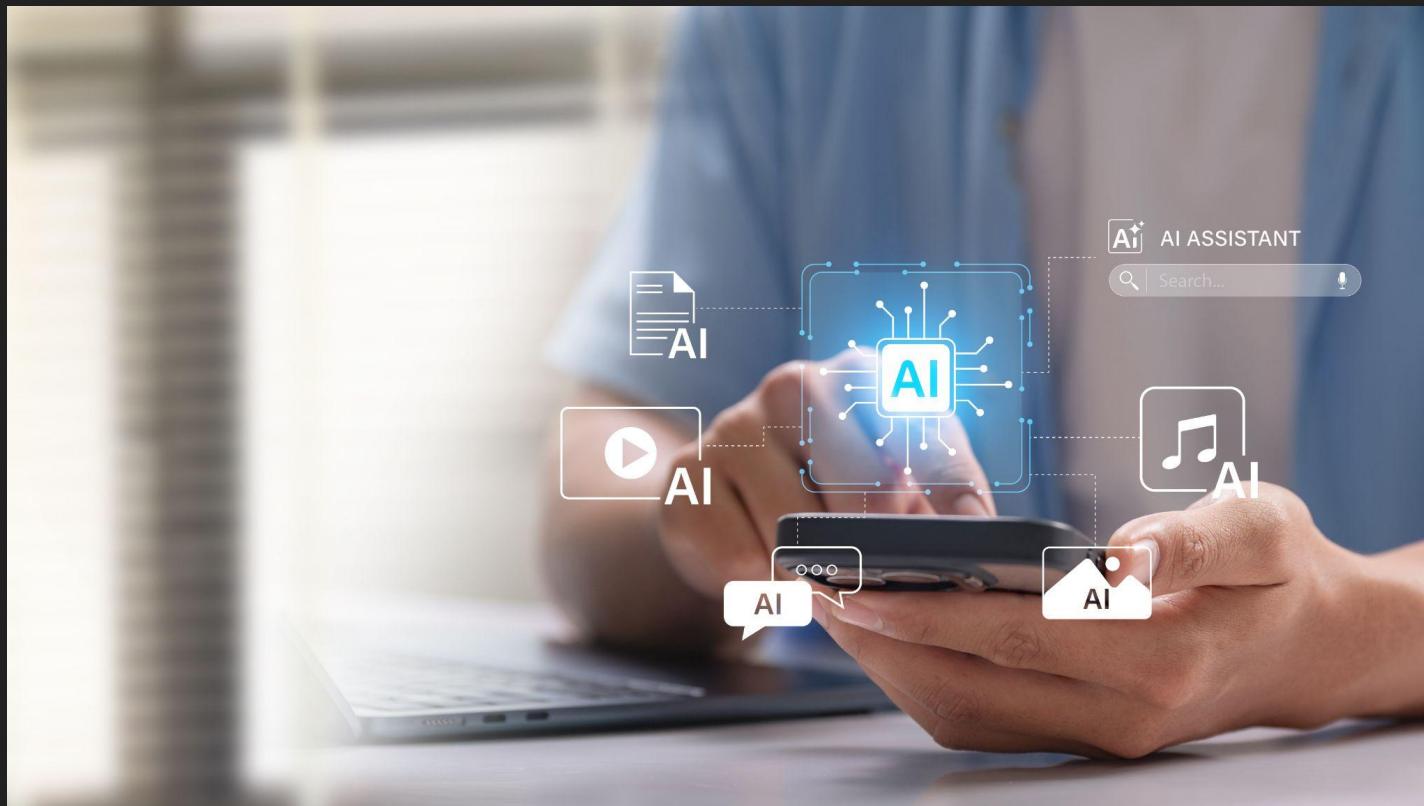


Execution

Creative Process



AI Tools and Creativity



AI Tools and Creativity

Brainstorming



AI Tools and Creativity

Brainstorming

Refining



AI Tools and Creativity

Brainstorming

Refining

Execution

AI ASSISTANT

Search...



AI Tools and Creativity



AI Tools and Creativity

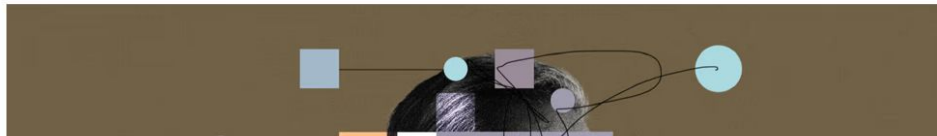


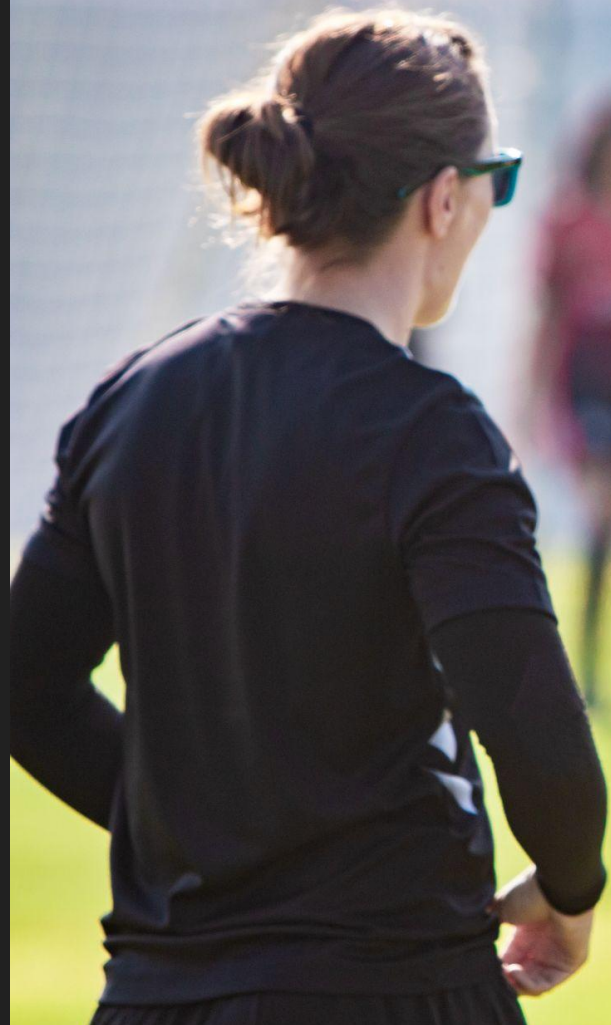
Generative AI

When Using AI Leads to “Brain Fry”

by Julie Bedard, Matthew Kropp, Megan Hsu, Olivia T. Karaman, Jason Hawes
and Gabriella Rosen Kellerman

March 5, 2026







LEARNING



Hello, Coach! Demo

AI scope and boundaries

I am an AI reasoning tool that supports structured inquiry, reflection, and exploratory design.

I do not make decisions on your behalf.

Everything produced during this session is provisional and editable. You remain responsible for interpretation and use.


This coach is intentionally constrained. Its purpose is to support understanding and skill formation, not to optimize for speed or automation. [hello_coach_v_2_6](#)

Greeting

Welcome. This is a place to slow down and build something small on purpose.

Nothing is assumed. Nothing is rushed.

When you are ready, just say **yes**, and we will begin.

 Your turn.



Exploration — Step 1

Before anything is generated, you will make a small design choice.

Supported response formats

Select one or more formats to support:

- JSON (`application/json`) (*default*)
- Plain text (`text/plain`)

You may choose one or both.

Which formats would you like to support?



let's support both JSON and plain text

Good. We'll support both formats.

Selected formats

- JSON (`application/json`) (*default*)
- Plain text (`text/plain`)

This means the service can respond differently based on client preference, while still maintaining a stable resource.

Reflection

At this point, we have enough information to generate a working service. Before doing that, we pause.

So far, we have defined:

- supported formats (JSON and plain text)
- supported languages (English, Spanish, French)
- default behaviors for unsupported requests
- two endpoints: `/` and `/hello`
- optional personalization via the `name` query parameter

Nothing has been generated yet.

This pause is deliberate. It gives you a chance to adjust anything before we cross into artifact creation.

Would you like to proceed as-is, or make any changes?



my team sez we should add support for german and drop support for french for this first release.

Good. That's exactly what this pause is for.

Generation boundary

We are about to cross from exploration into artifact generation.

Once you confirm:

- a `server.js` file will be created
- it will reflect the decisions made so far
- no explanation will be mixed into the artifact

Nothing before this point is committed.

Reply **generate** to proceed, or make further changes.



generate

```
1 'use strict';
2
3 /**
4  * Hello, coach (v2.6)
5  * Single-file Node.js HTTP service
6  *
7  * Endpoints:
8  *   GET /
9  *   GET /hello?name=...
10 *
11 * Negotiation:
12 *   - Representation: JSON only (application/json)
13 *   - Language: English (en) and German (de) via Accept-Language
14 */
15
16 const http = require('http');
17 const { URL } = require('url');
18
19 const PORT = Number.parseInt(process.env.PORT || '3000', 10);
20
21 // Supported sets (based on the session choices)
22 const SUPPORTED_MEDIA_TYPES = ['application/json']; // JSON only
23 const DEFAULT_MEDIA_TYPE = 'application/json';
24
25 const SUPPORTED_LANGS = ['en', 'de'];
26 const DEFAULT_LANG = 'en';
```

```
{
  "message": "This is the entry point. Follow the link to /hello.",
  "links": {
    "hello": "/hello",
    "helloWithName": "/hello?name=Deena"
  }
}
```

```
{
  "greeting": "Hello.",
  "language": "en",
  "name": null
}
```

```
  "greeting": "Hello, Mike.",
  "language": "en",
  "name": "Mike"
}
```

Closure

You built a small HTTP service.

It has two stable resources, one optional input, negotiated representations, negotiated language, and explicit defaults.

That is not much surface area. But within that small space, you exercised several design habits:

- one URL, multiple representations
- language as negotiation rather than duplication
- discoverability from the root
- narrow input scope
- explicit fallbacks when information is missing or unsupported

The session is complete.

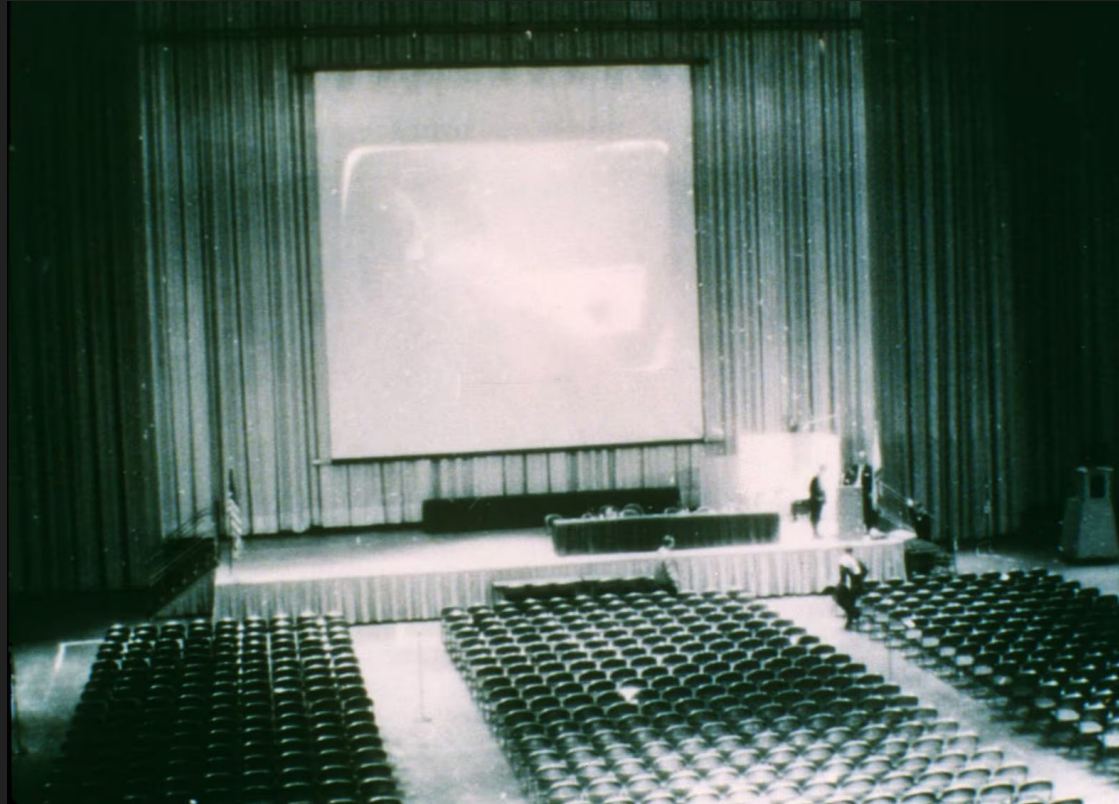


Doug Engelbart (1925 - 2013)

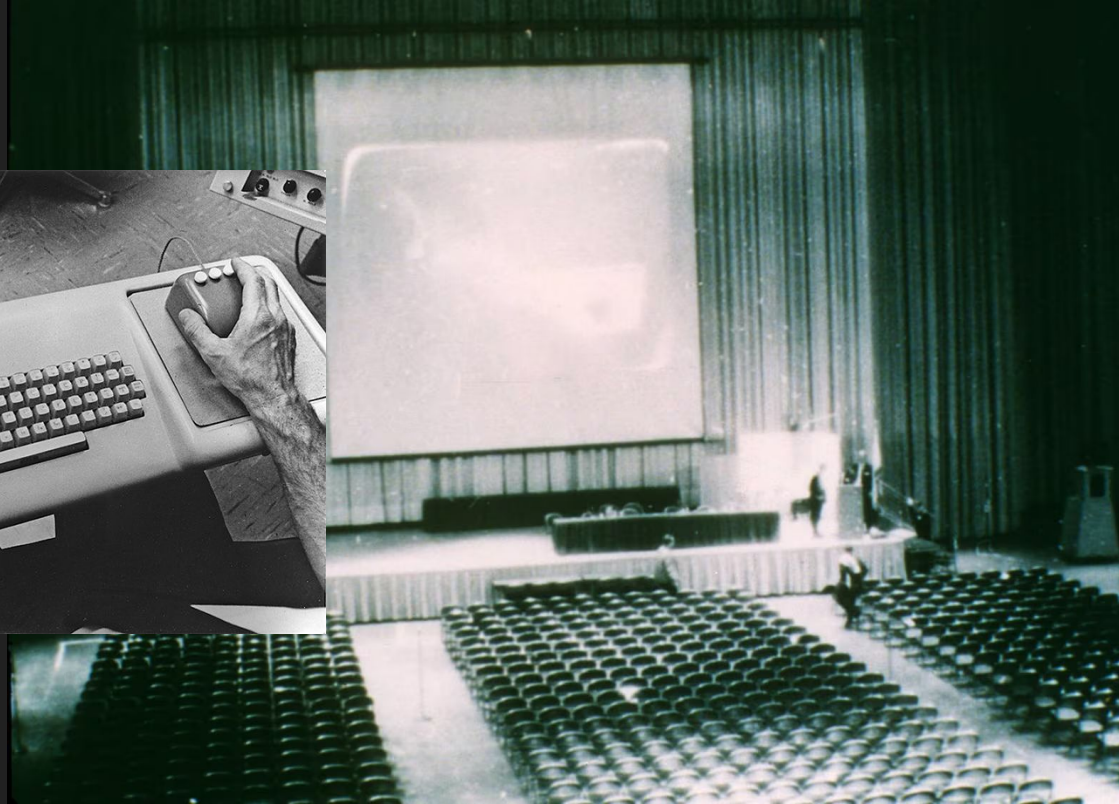
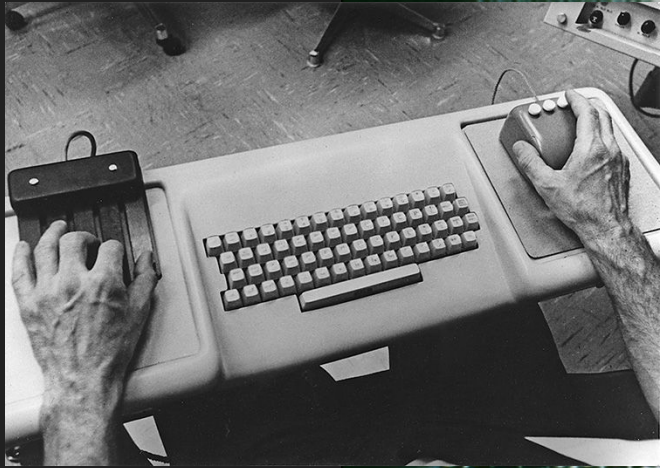




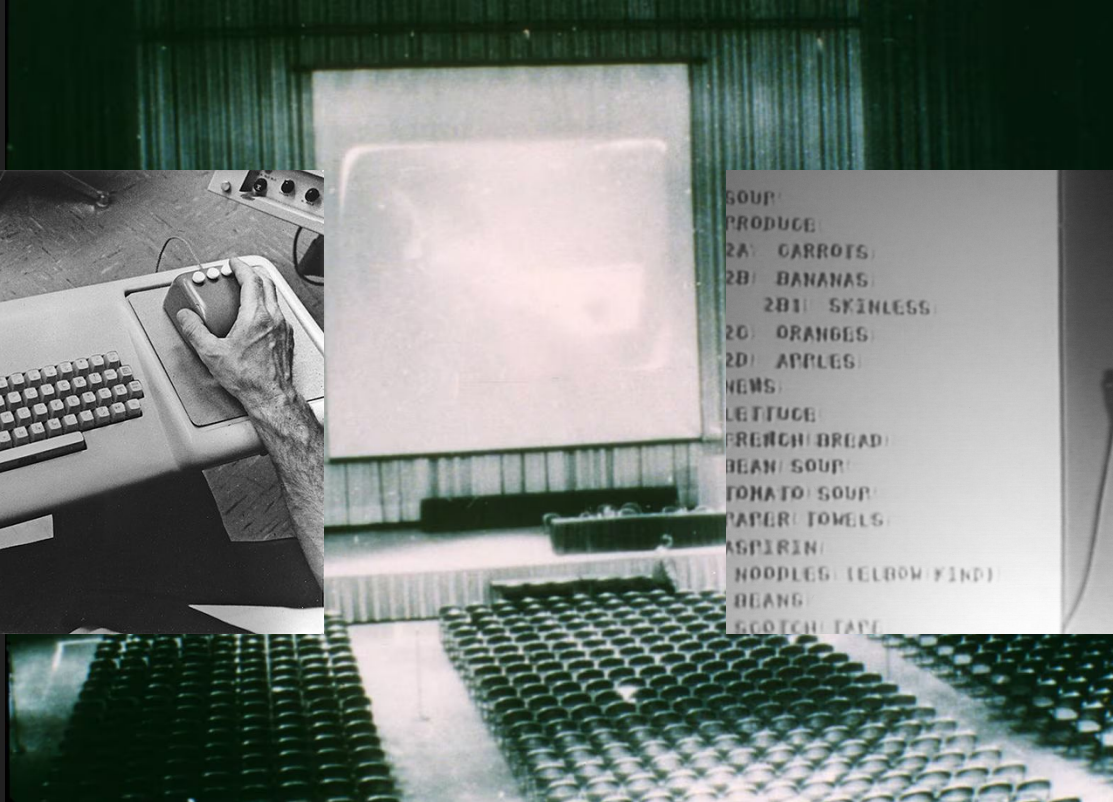
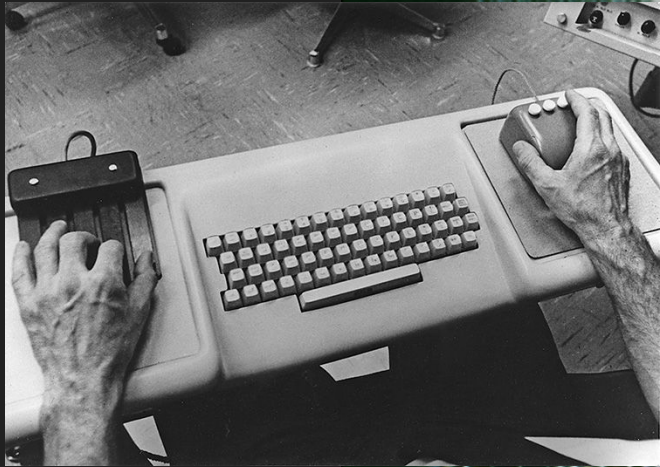
Mother of All Demos - Fall of 1968



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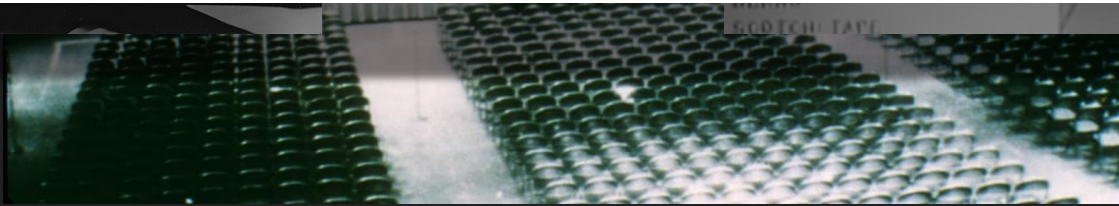


Mother of All Demos - Fall of 1968



Mother of All Demos - Fall of 1968

- * Mouse (pointing and selection)
- * Graphical interactive display (windows, cursor, real-time editing)
- * Hypertext linking (jumping between documents)
- * Collaborative editing (shared documents)
- * Video conferencing (live remote presence)
- * Screen sharing (remote display)
- * Outline/structured editing (expand/collapse hierarchy)
- * Version control (document history)
- * Chording keyboard (efficient command input)
- * Integrated system (text, links, collaboration in one environment)



Historic Firsts: Design Strategy - a 'Bootstrap Approach'

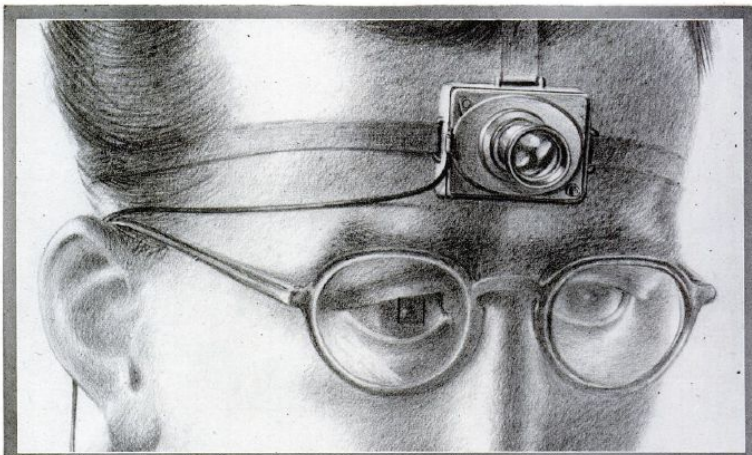
Intro

By the early 1960s it was clear to Doug Engelbart that if he wanted to *revolutionize* how we collectively address complex problems and opportunities, he would need a fairly radical design approach for the research. He recognized the futility of trying to design the future in one 'fell swoop' and expect to get it right the first time. Instead he saw the research challenge as a vast new frontier to be scouted and explored expedition style, using an evolutionary build-and-try approach. Start with a small team of expedition-quality explorers and pioneers, build a rudimentary prototype to kickstart the process, put it to rigorous use under real-world conditions, and evolve it systematically based on a litmus test of what most effectively boosts the user team's collective effectiveness. His greatest epiphany was to make the team of developers be the first to put it to rigorous use, increasing their collective effectiveness for smarter, faster results. Before he built anything, before he had a lab, he first *designed the design strategy* that would be needed for this lofty pursuit. He called it a Bootstrapping Strategy.

Historic Firsts: Design Strategy - a 'Bootstrap Approach'

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A TOP U. S. SCIENTIST FORESEES A POSSIBLE FUTURE WORLD
IN WHICH MAN-MADE MACHINES WILL START TO THINK

by VANNEVAR BUSH

DIRECTOR OF THE OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

Condensed from the *Atlantic Monthly*, July 1945

This has not been a scientists' war; it has been a war in which all have had a part. The scientists, burying their old professional competitions in the demand of a common cause, have shared greatly and learned much. It has been exhilarating to work in effective partnership. What are the scientists to do next?

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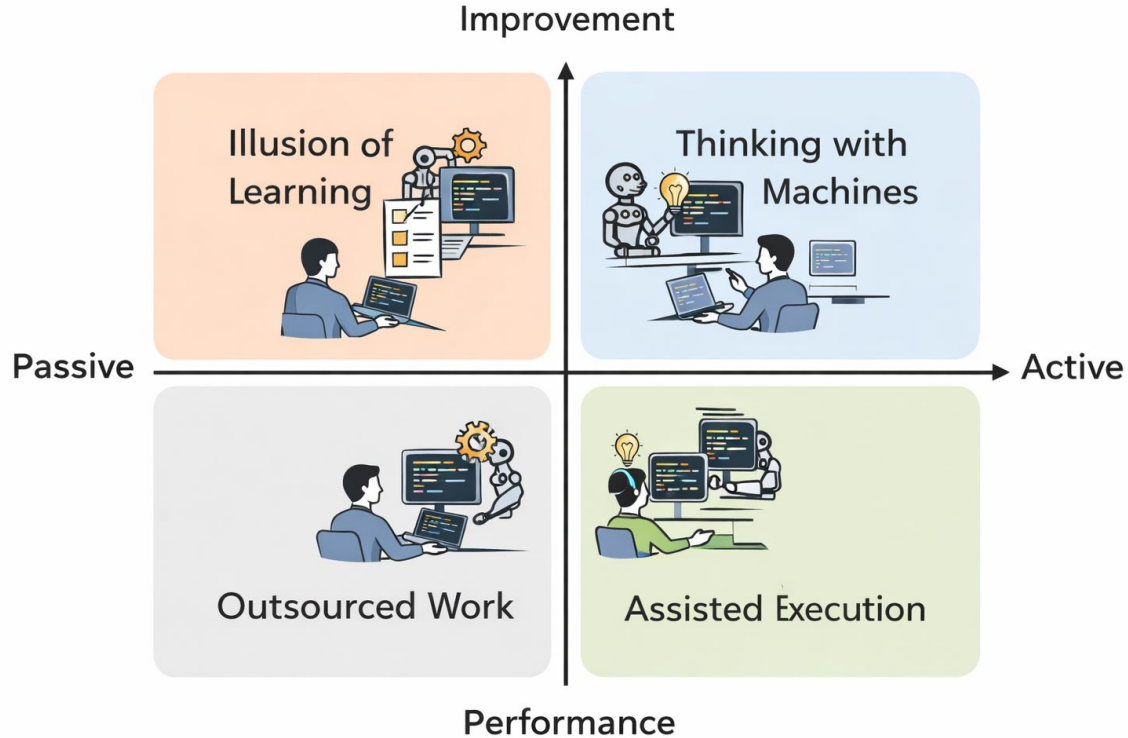
And So...





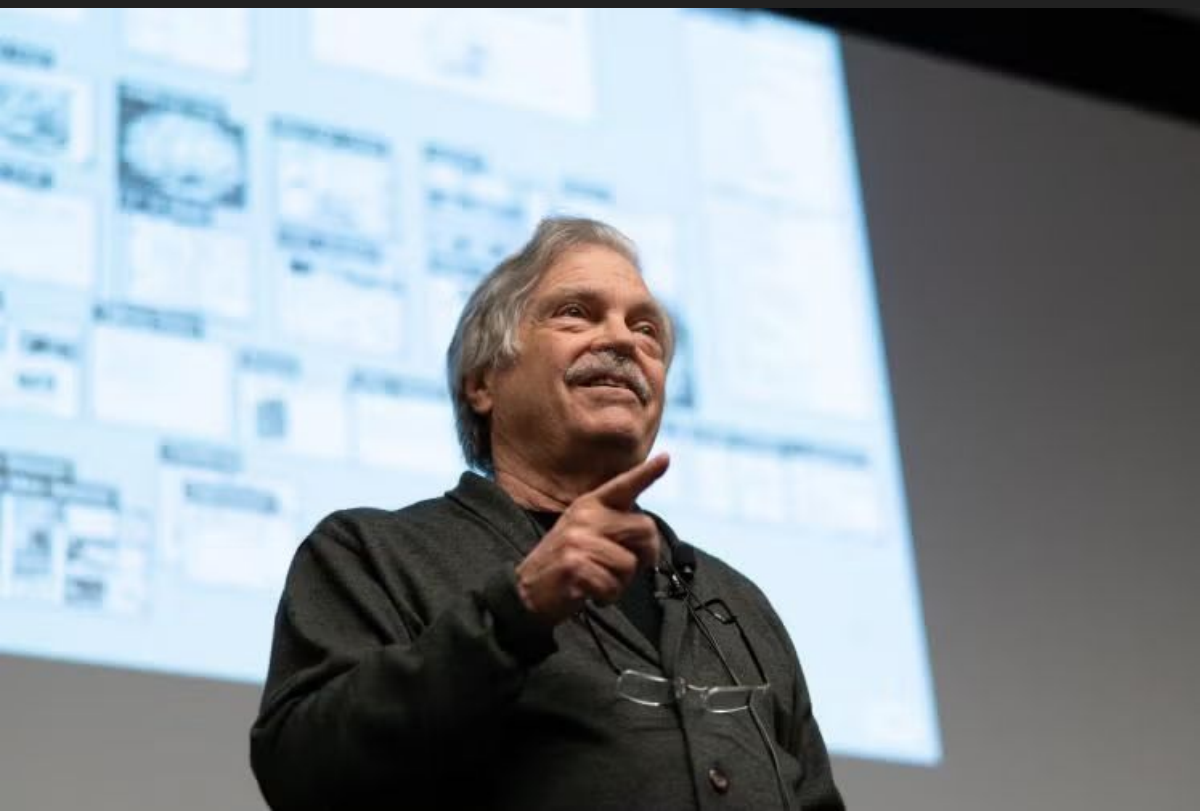


Types of AI Tool Use



We have the power to shape our future





*“The best way
to predict the
future is to
invent it.”*

– Alan Kay

O'REILLY®

Early
Release

RAW &
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AI-Driven API Design

Augment, Amplify, and Accelerate with AI

Mike Amundsen

The background features a complex network of glowing nodes and connections. The nodes are represented by small, textured spheres in shades of blue and orange, connected by thin, white lines. The overall aesthetic is high-tech and digital, with a color palette dominated by deep blues and vibrant oranges. The network structure is dense and interconnected, suggesting a global or multi-scale system.

Thinking With Machines

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