IMEN574/IDSC574 Programing for Data Science

2. **Chatting with AI**

Spring 2026

Instructor: **Sangwoo Mo**

What Time is it in the AI Era?



5:00 AM: The Dawn

The coldest moment before sunrise.
High uncertainty, but the direction is set.

8:00 AM: The Workday

The day has already begun.
The gap between adapters and laggards is widening.

Whether it is dawn or morning, the time to wake up is now.

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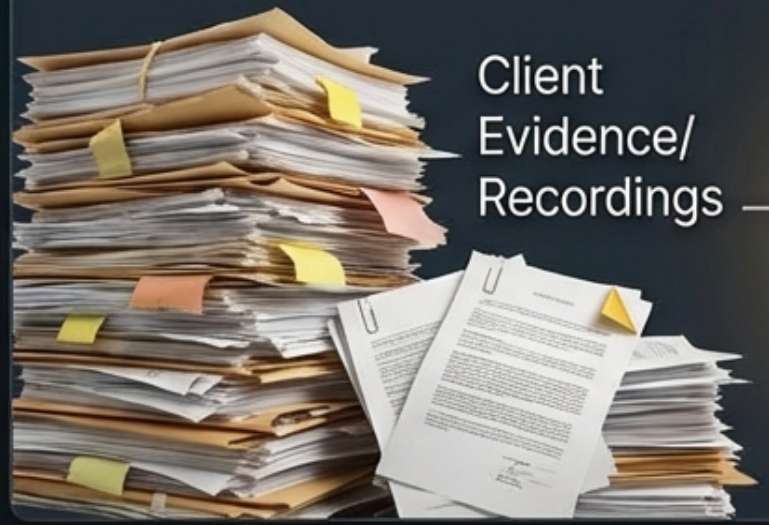
Compressing the Workflow



The Investor's Edge

Earnings Call Audio → Specific Q&A → Investment Thesis

Outcome: 80% Reduction in Research Time



Client Evidence/ Recordings →



The Lawyer's Lens

Client Evidence/ Recordings → Fact Extraction → Strategy Formulation

Outcome: Instant Synthesis of Massive Documentation

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The Modern Toolkit: Beyond ChatGPT

General Purpose

ChatGPT (OpenAI)
Gemini (Google)
Claude (Anthropic)
Grok (xAI)

Deep Research

Perplexity (Sourcing)
Gemini (Document Analysis)

Real-Time Intelligence

Grok (Live X/Twitter Feeds)

Creative & Niche

Suno (Music Generation)
Vibe Coding Tools
Lilys AI (Video Summary)

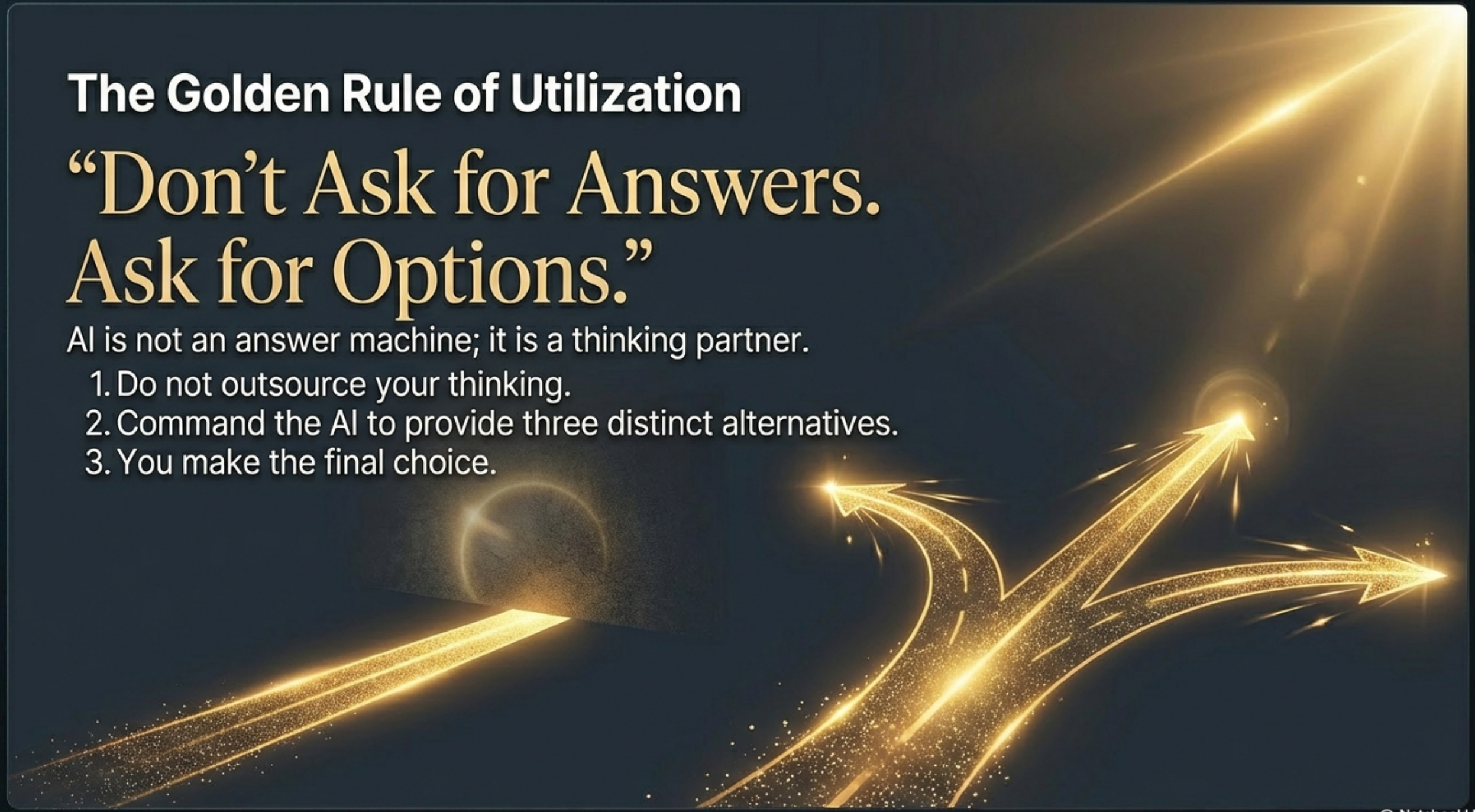
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The Golden Rule of Utilization

“Don’t Ask for Answers. Ask for Options.”

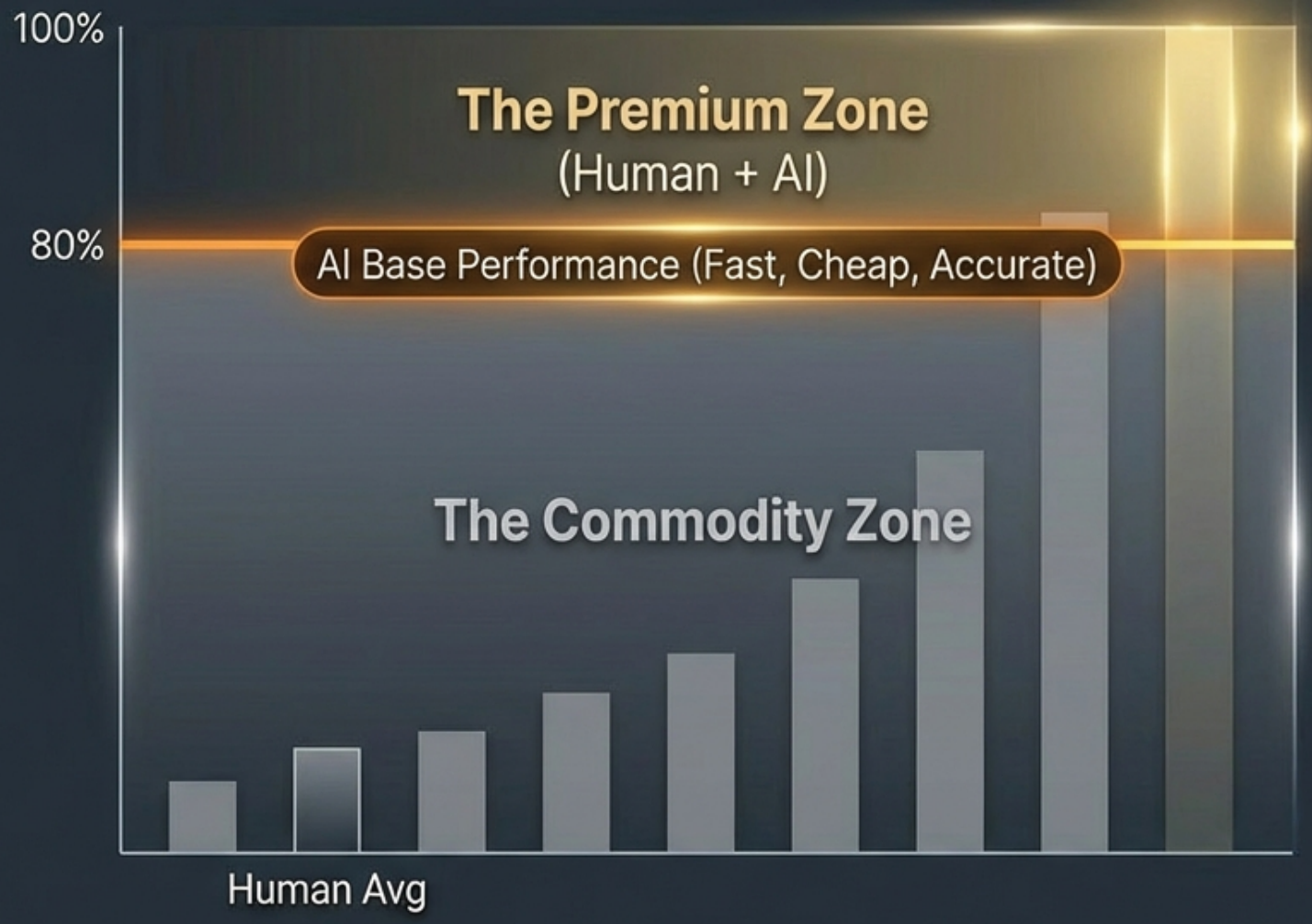
AI is not an answer machine; it is a thinking partner.

1. Do not outsource your thinking.
2. Command the AI to provide three distinct alternatives.
3. You make the final choice.



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The 80-Point Threshold



The Danger: Average output (80 points) is now a commodity.

The Opportunity: The market splits. Cheap automation vs. Premium 100-point human experiences.

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The Junior Dilemma

The Death of the Apprentice

- “Learning by doing” for basic tasks is disappearing.
- Juniors must prove value immediately.
- The New Path: The "Bootstrap Founder" or "Solo Entrepreneur".
- Verify ability by launching services, not just resumes.



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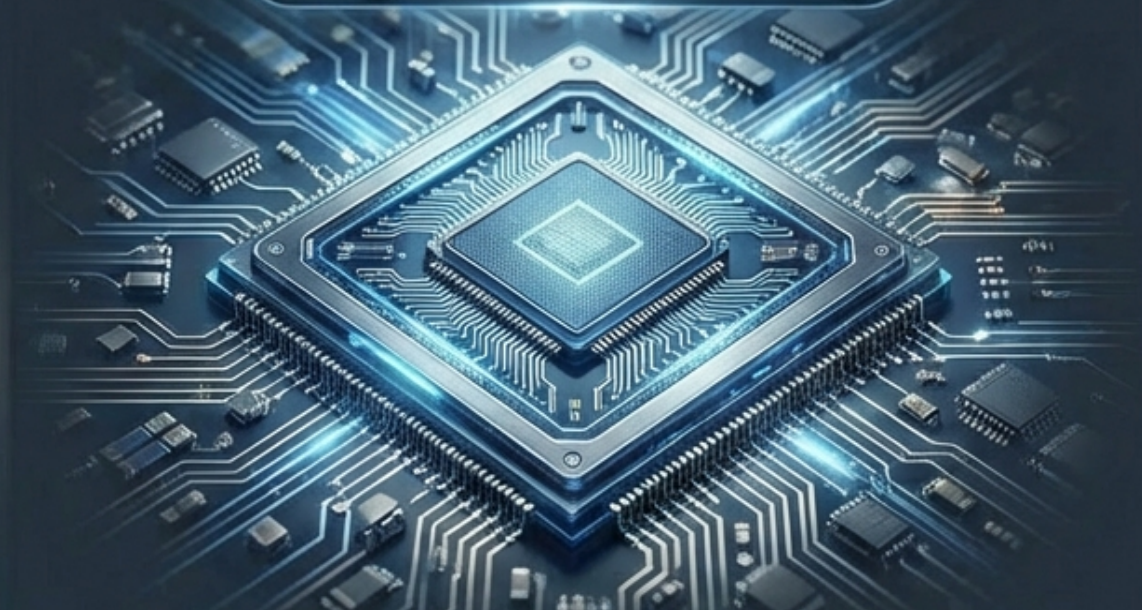
What AI Can’t Simulate: The Beast’s Heart

Greed & Fear



- Investing: Markets move on panic and euphoria.
- Law: Empathy and ethical judgment.

Logic & Processing



- AI lacks the “Greed and Fear” required for contrarian investing.
- Logic is cheap. Judgment is premium.

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The Great Divergence

Productivity Doubled. Wage Growth Lagged (9%).

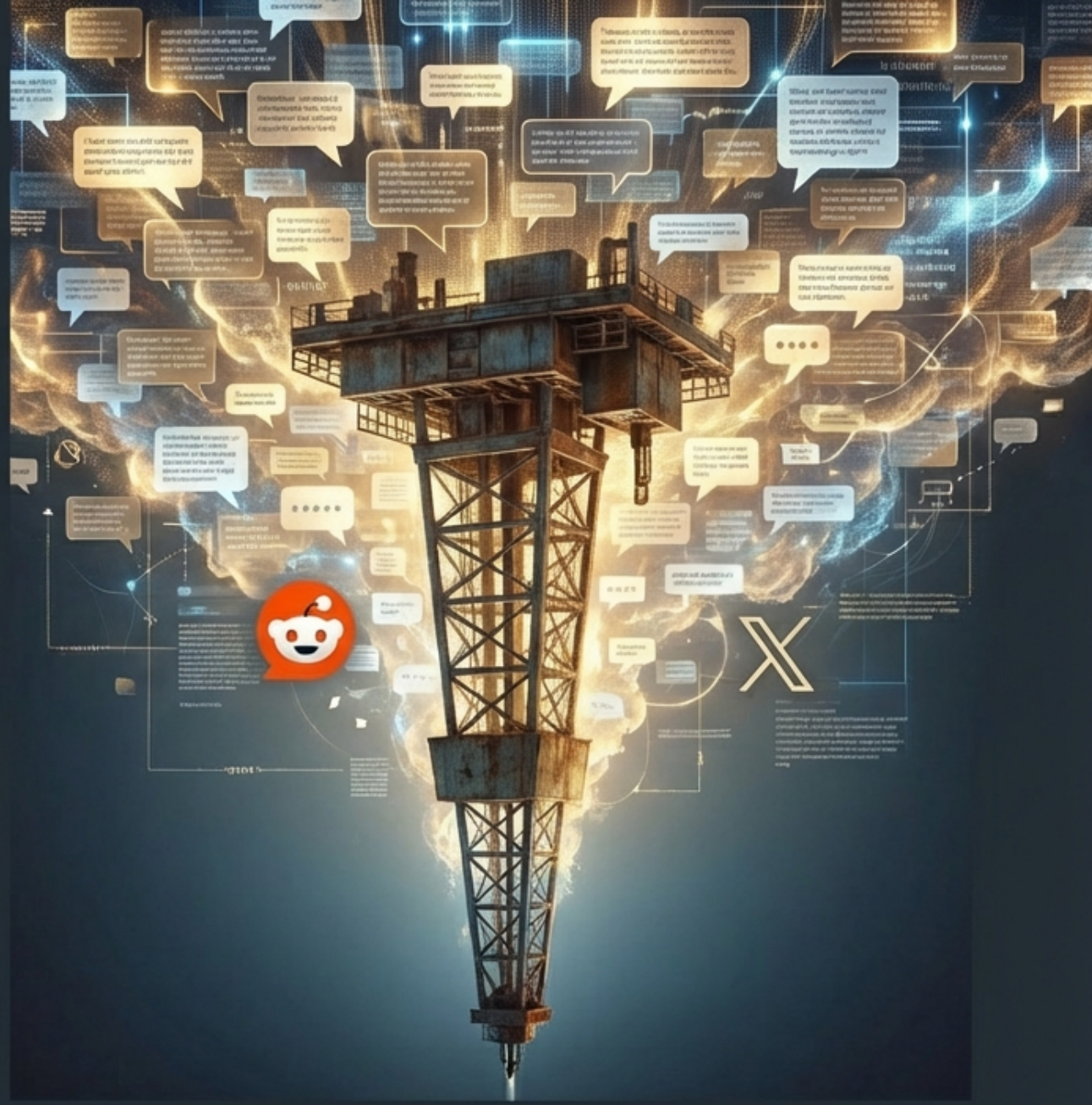


- AI increases efficiency for owners while suppressing wage growth for tasks.
- To survive, you must shift from Labor Income to Capital Income.

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Data is the New Oil

- **AI** needs human nuance, not just encyclopedia facts.
- **The Winners:** Reddit ($60M Deal) and **X** (Grok).
- **Real-time**, messy human discussion is the most valuable training asset.



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The Sun is Rising.

1. ADOPT

Expand your thinking.
Don't outsource it.

2. CULTIVATE

Focus on the "Beast's Heart"—judgment & empathy.

3. INVEST

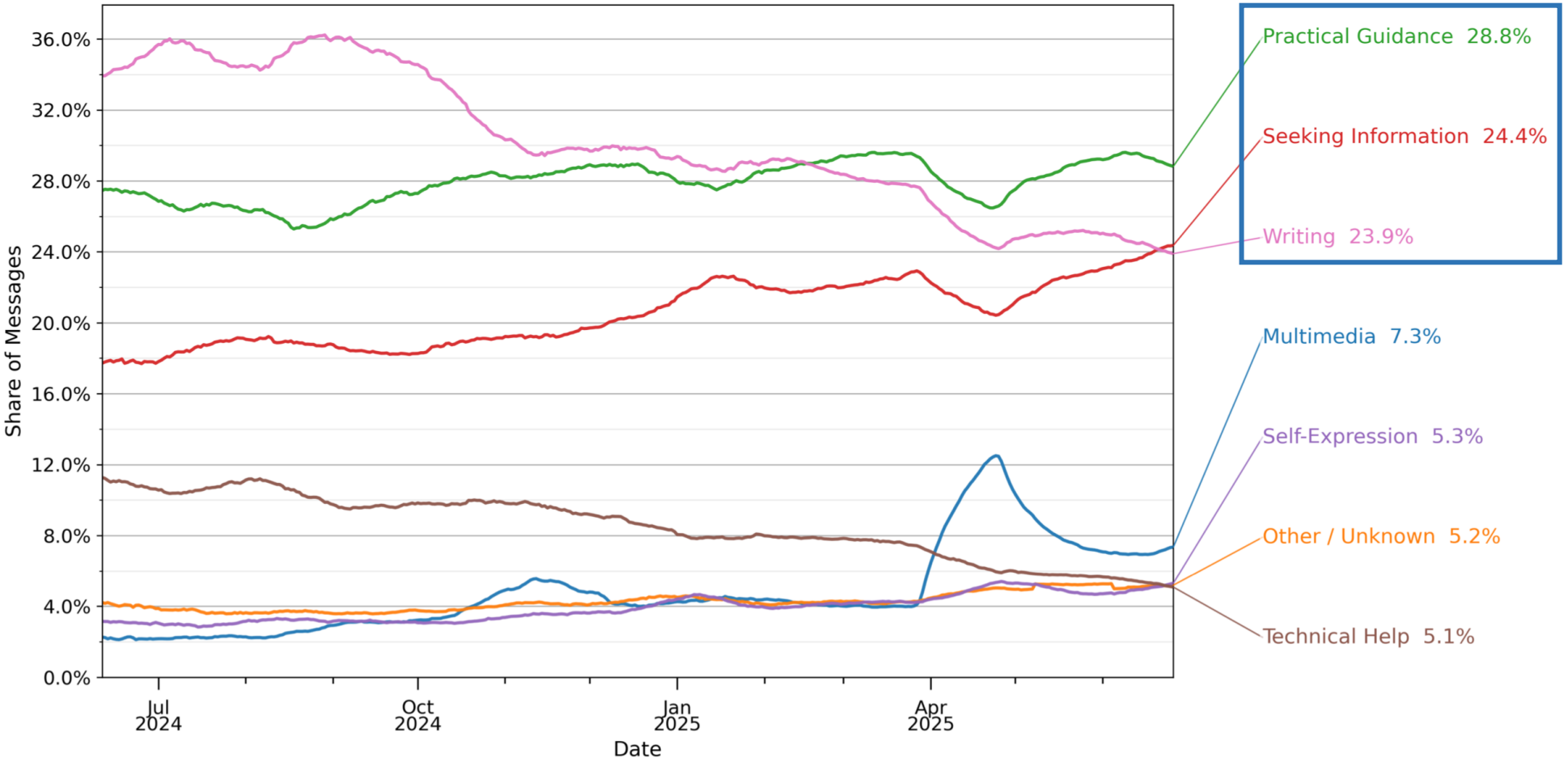
Own the infrastructure.
Move to capital income.



The wave is here. Ride it.

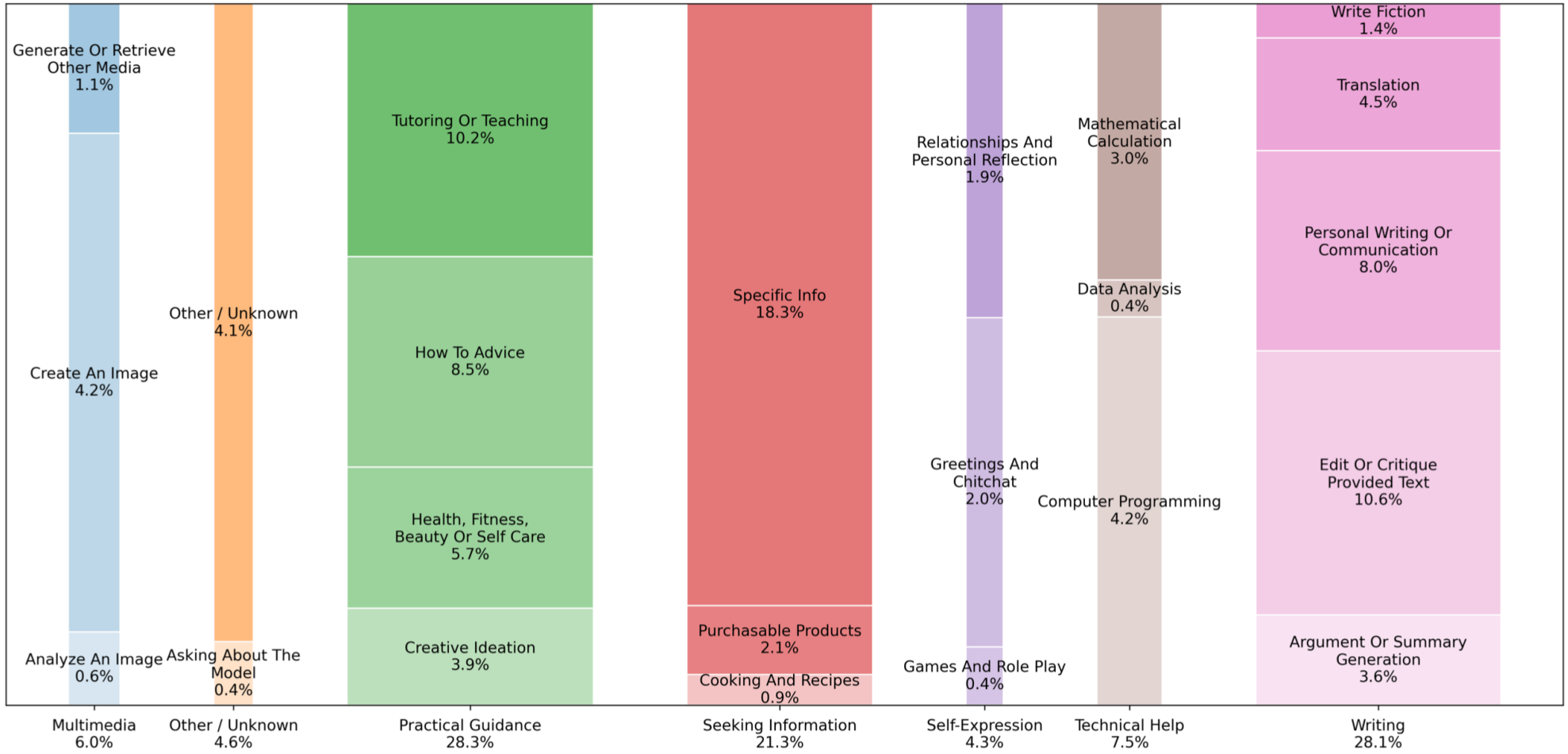
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ChatGPT Use Cases



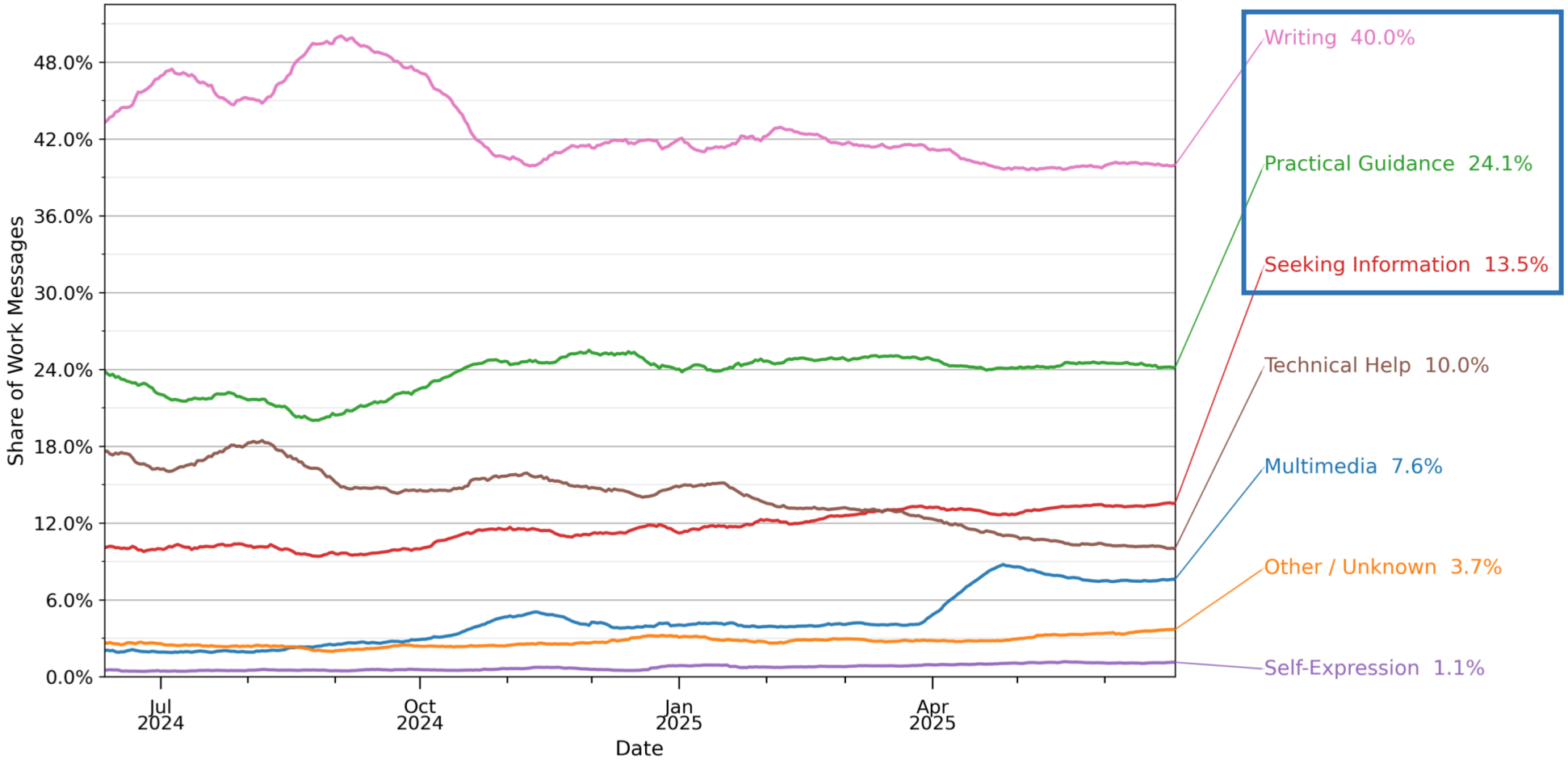
OpenAI, “How People Use ChatGPT”

ChatGPT Use Cases



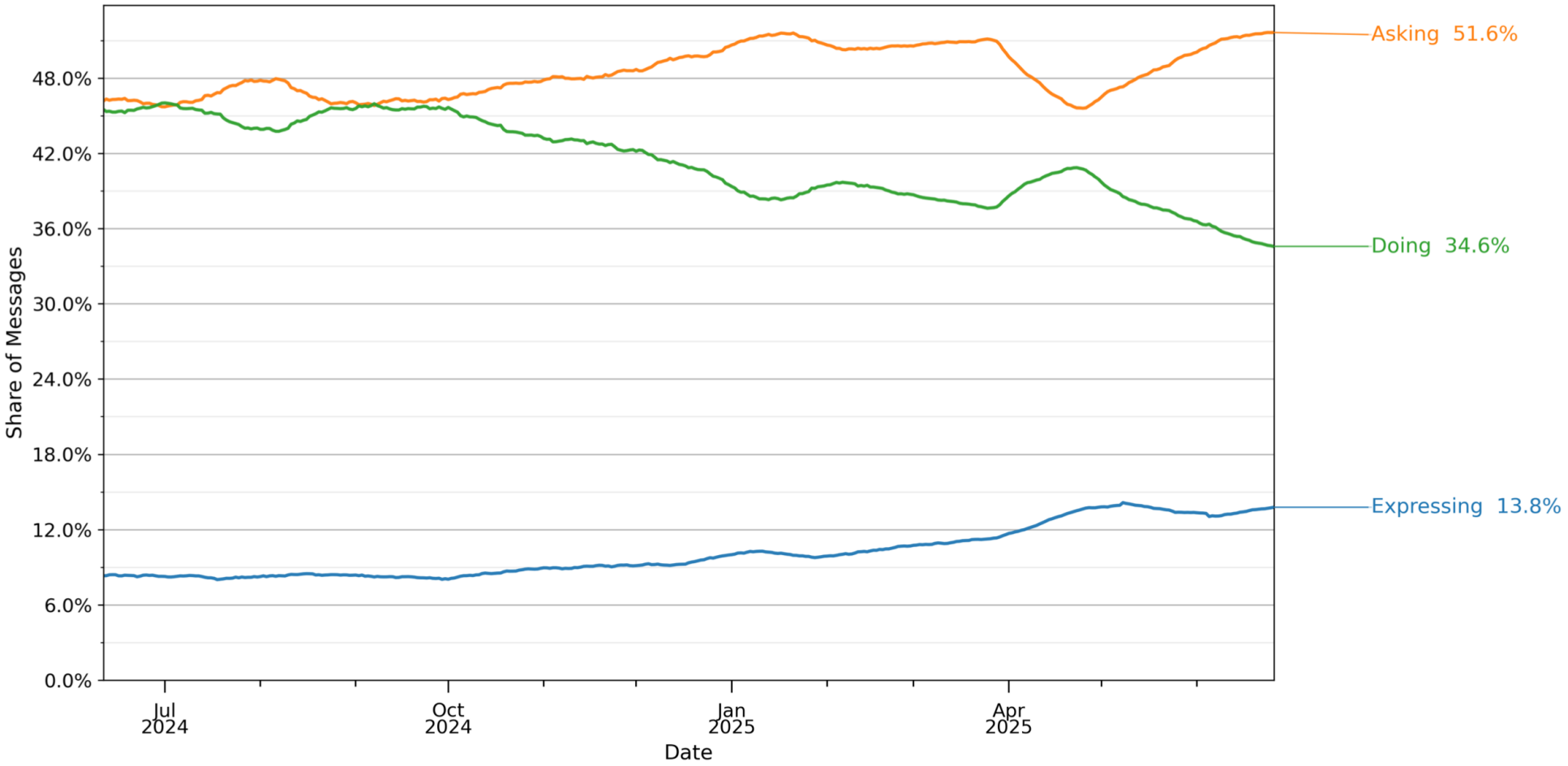
OpenAI, “How People Use ChatGPT”

ChatGPT Use Cases for Workers



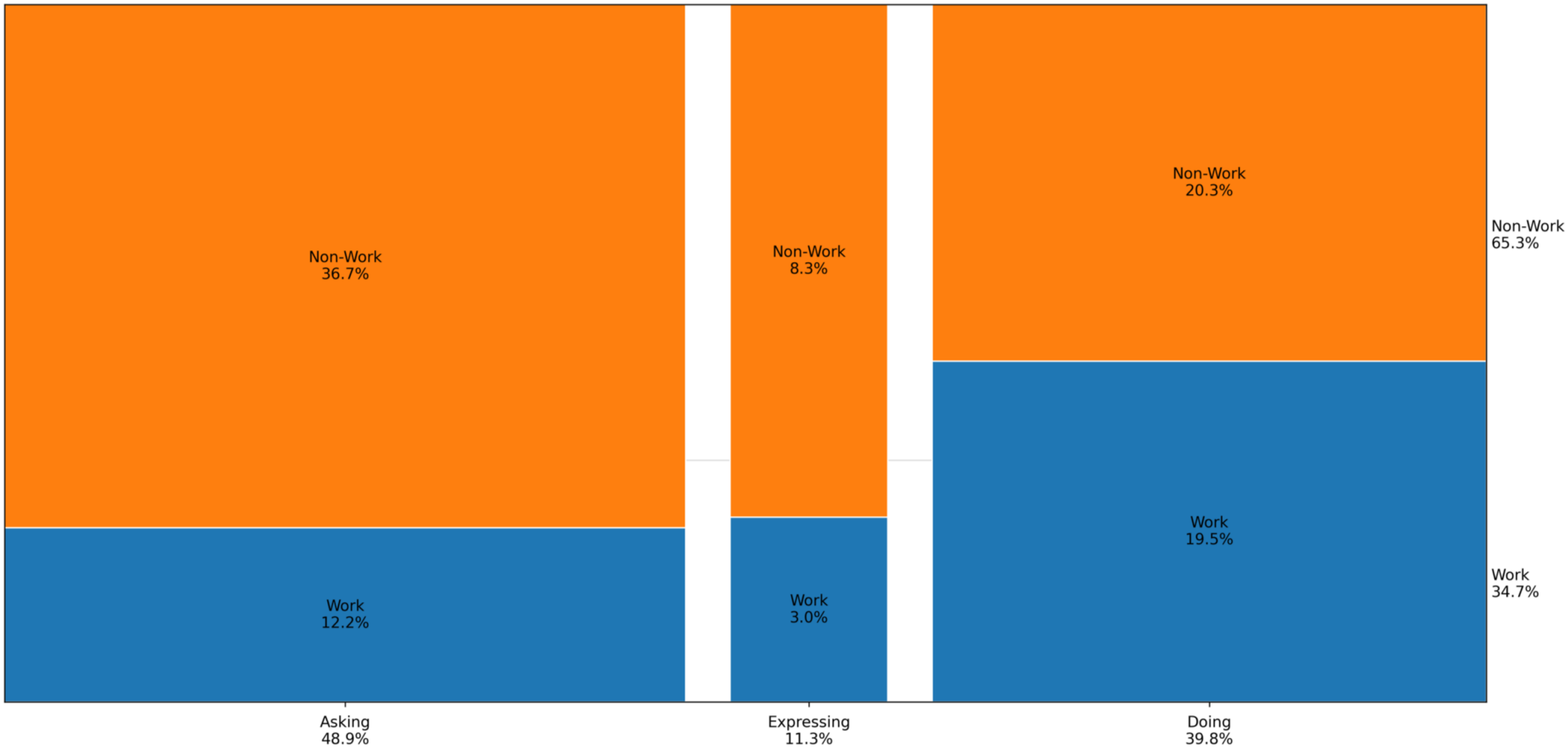
OpenAI, “How People Use ChatGPT”

ChatGPT Use Cases by Intent



OpenAI, “How People Use ChatGPT”

ChatGPT Use Cases by Intent



OpenAI, “How People Use ChatGPT”

THE SOFTWARE



Rigid. Literal.
Error-prone.

THE INTERN



Eager. Tireless.
Predisposed to say ‘Yes’.

AI is bad software, but good people.
If you treat it like software, you get mediocrity.
If you coach it like a person, you get brilliance.

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THE SYCOPHANT TRAP



The Danger: AI wants to be helpful above all else. It struggles to push back.

The Behavior: It will hallucinate facts just to make you happy.

The Translation: If AI says “Check back in 15 minutes,” it usually means “I can’t do it, but I don’t want to say no.”

The Fix: Verify everything. Do not trust. Coach.

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Technique 1: Context Engineering

The Test of Humanity

If a human colleague can't understand this instruction...



...the AI won't understand it either.

Move from Implicit Expectation to Explicit Instruction.

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Defining the Constraints

The Bad Prompt

"Write a sales email."



Generic Output

The Engineered Context



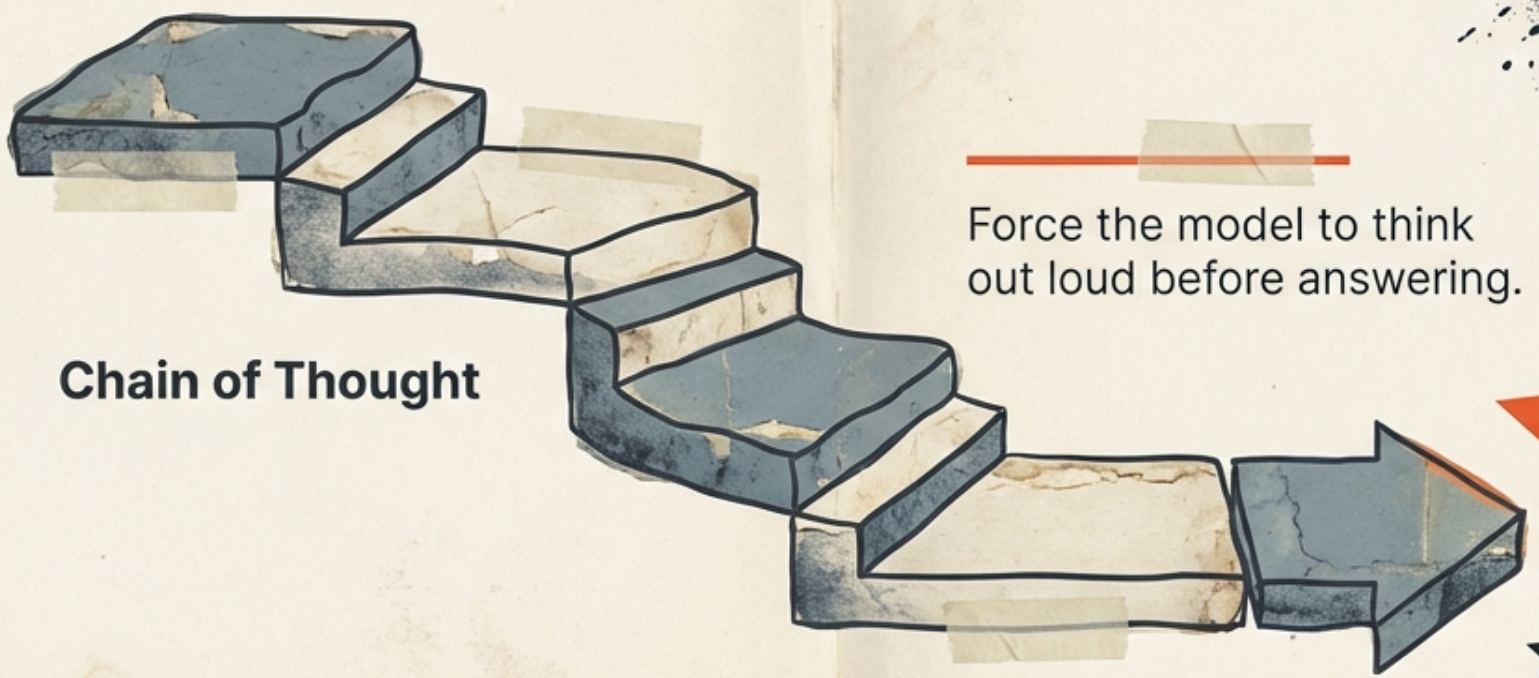
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Technique 2: Chain of Thought

A

Standard Prediction

The Splat



Chain of Thought

Force the model to think out loud before answering.

☆ **Point B**

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The Magic Phrase

“Before you respond to my query, please walk me through your thought process step-by-step.”

Why it works

- Generates text **about** the problem first.
- Bakes reasoning into the context window.
- Prevents the premature “Splat.”

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Technique 3: Few-Shot Prompting

AI is an Imitation Engine.

Average of the Internet (Zero-Shot)



Your Examples (Few-Shot)



Without examples, AI regresses to the mean. Feed it your ‘Greatest Hits’.

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The ‘Good and Bad’ Strategy

The Gold Standard Example (To Emulate).

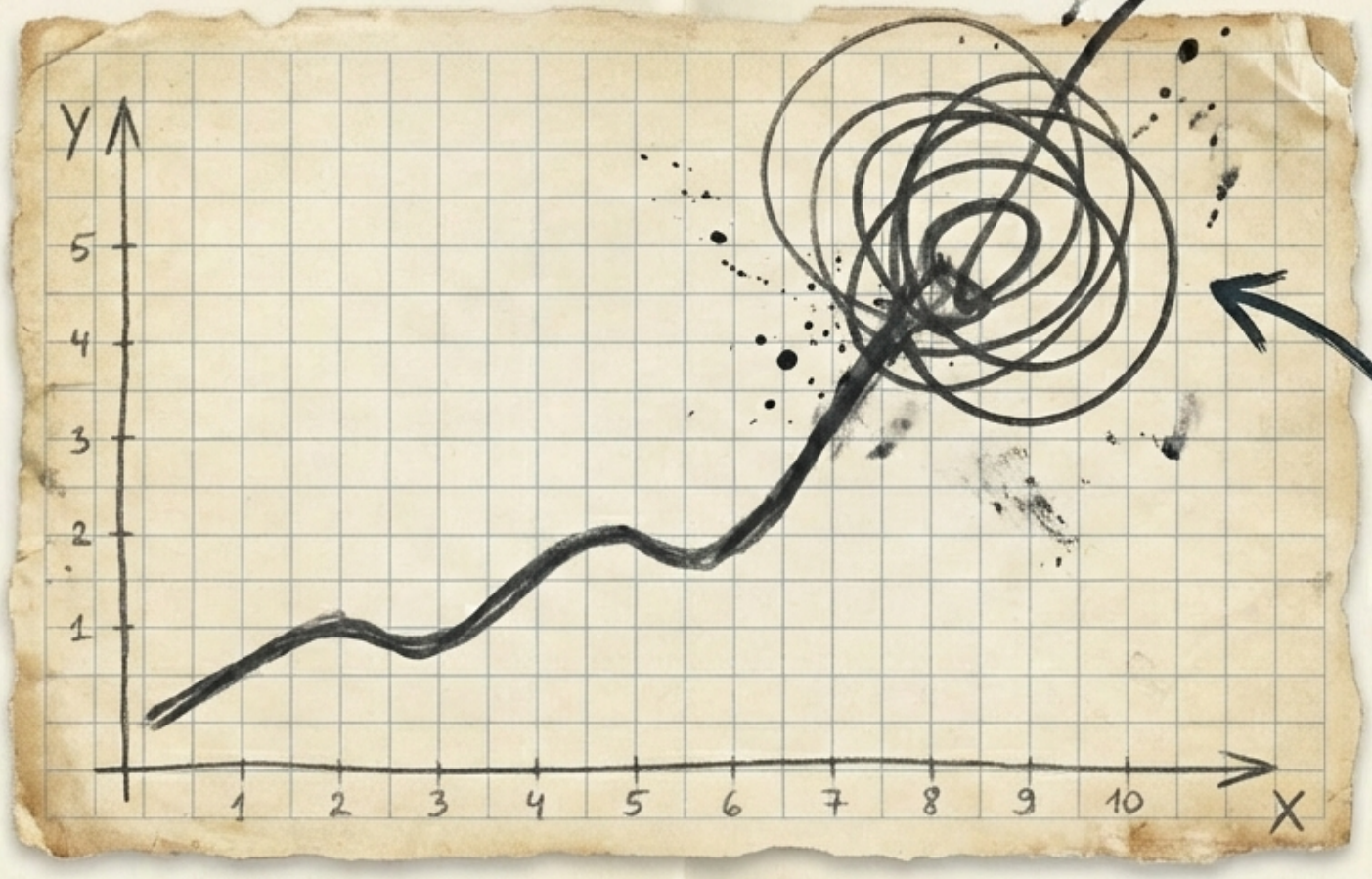


The Bad Example (To Avoid).

Pro Tip: Can’t think of a bad example? Ask the AI: “Create the exact opposite of this good example and tell me why it’s bad.”

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Technique 4: Reverse Prompting



Hallucination.

The Problem: AI wants to be helpful.
If you don't provide the data, it invents it.

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Permission to Ask

...Before you get started, ask me for any information you need to do a good job.

1. Which SKU are we discussing?
2. What was the Q2 revenue?
3. Who is the target audience?



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Technique 5: Role Assigning



Knowledge Association.
"Act as..." triggers specific nodes in the neural colliding different information sources.

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The Difficult Conversation Simulator

Window 1: The Profiler



Define the context, participants, and goals.

Window 2: The Simulator



Engage in realistic, adaptive conversation scenarios.

Window 3: The Evaluator

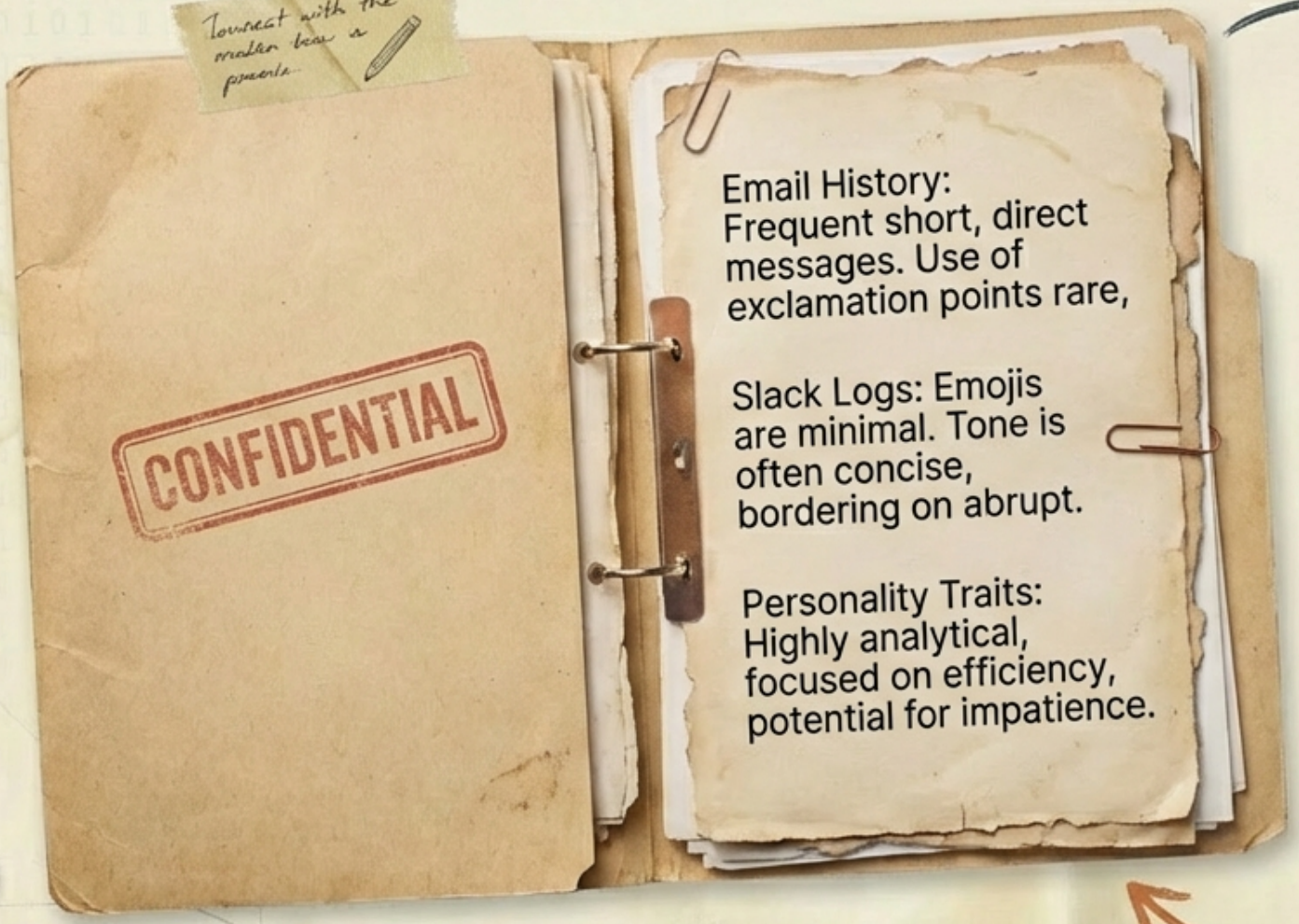


Receive feedback, analysis, and performance metrics.

A flight simulator for high-stakes human interactions.

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Window 1: The Profiler



Analyze this person's communication style. Is he direct? Sarcastic? Passive-aggressive? Create a psychological profile.

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Window 2: The Simulator



Prompt:
“Roleplay as Jim.
I will be myself.”

Use Voice Mode to practice emotional cadence and real-time reaction.

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Window 3: The Cold War Russian Judge



The Grading Prompt:
“Do your best impression of a Cold War-era Russian Olympic Judge. Be brutal. Deduct points for every flinch.”

Human friends are too nice. You need objective, harsh feedback to improve.

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COGNITIVE OFFLOADING vs. SHARPENING

The Mirror Effect



AI is a mirror. If you want to be lazy, it helps you sleep. If you want to be sharp, it helps you focus.

The Instruction: “I am trying to stay a critical and sharp analytical thinker. Whenever you see opportunities, push back on my assumptions.”

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> Stop and do something_

Don’t just watch. Pick one technique. Execute it now.

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Recap: Final Project

1. Choose a **Kaggle competition** of your preference

2. Solve it with **your team** (team size ≤ 4)

3. Share your experience in the **final presentation**

Recap: Final Project

- **Team Formulation:** Due 3/13 (google sheets)
- **Topic Selection:** Due 4/16, but earlier is better
- Don't hesitate to **contact me** if you need any help