

# Hierarchical Reasoning Models & Context Engineering



Presented by



Andy Masters

Caelan Huntress

#### Caelan Huntress

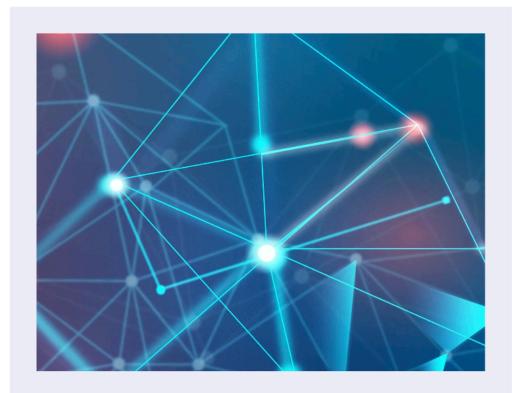
- Head of Learning and Enablement
- The Newest Zealander
- From Portland, Oregon

#### **WHATIDO**

- Train knowledge workers to improve their Strategy, Creativity, and Productivity with GenAl
- Interactive training workshops
- Step-by-step tutorials
- Copy-paste prompts

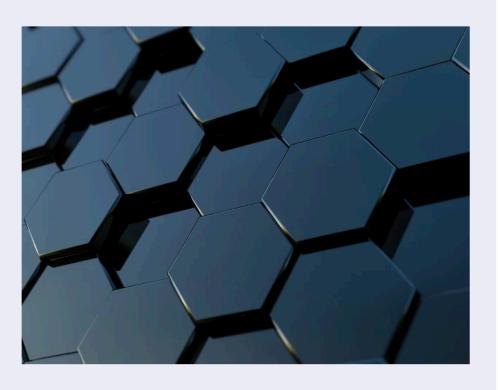






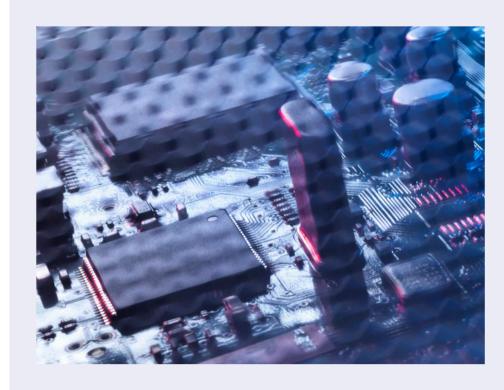
#### Al Training

Transform your business capabilities with our hands-on Al training workshops, delivered onsite in Christchurch or on Zoom



#### Al Consulting

Rapidly validate Al use cases to meet the unique business challenges and capabilities of New Zealand businesses.



#### Al Platform Development

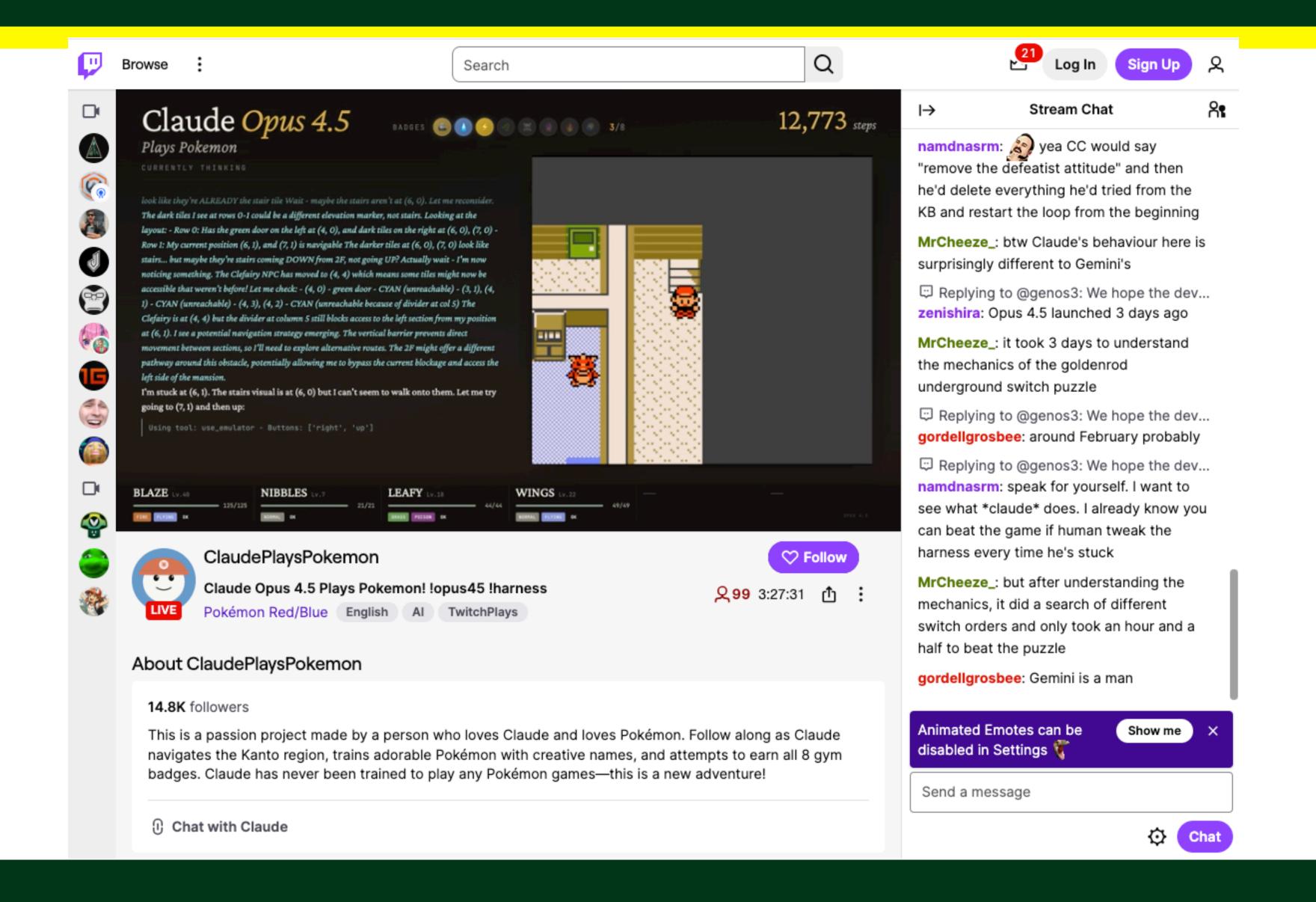
Build, deploy, and scale customised Al platforms built specifically for your business.

## MEETUP AGENDA

- → 5:30-6pm Drinks and networking
- ♦ 6:05-6:45 Hierarchical Reasoning Models with Andy Masters
- ♦ 6:50-7:30 Context Engineering with Caelan Huntress
- → 7:30-8pm Drinks and Open Q&A



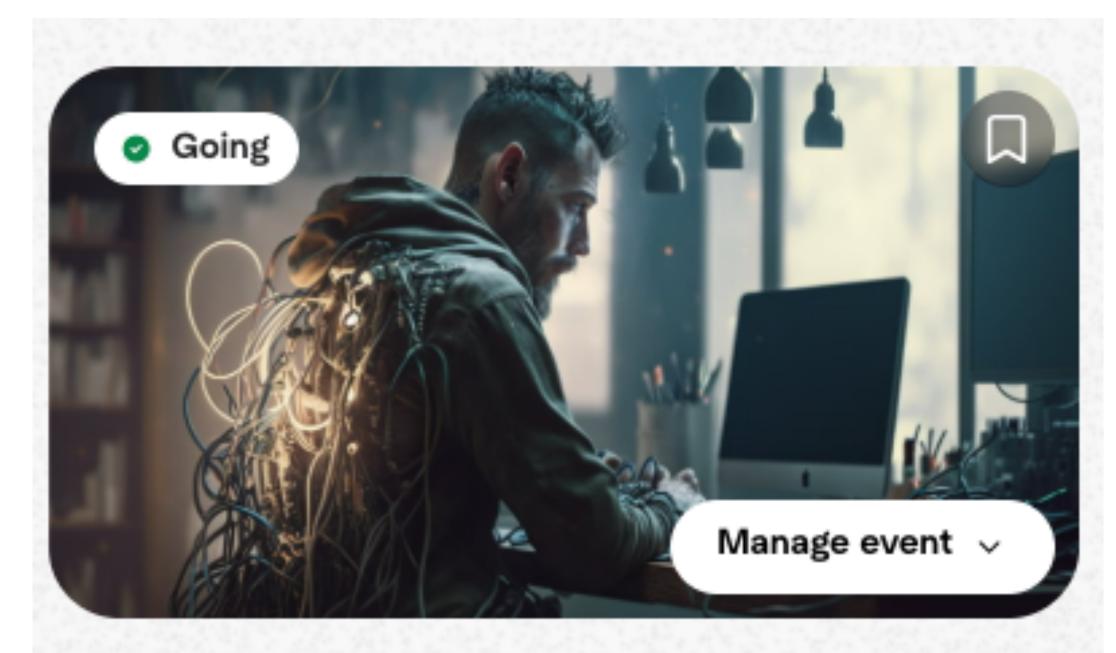
#### HTTP://TWITCH.TV/CLAUDEPLAYSPOKEMON







#### PROMPT LIKE A PRO @ MINISTRY OF AWESOME



Mon, Dec 8 · 1:00 PM NZDT

#### Prompt Like a Pro: Practical Al

#### **Techniques**

Ministry of Awesome, Barbadoes Street, Christ...

**Prompt Like A Pro** is a high-energy, hands-on workshop where you'll practice live with ChatGPT, Gemini, Claude, and Perplexity while learning the...

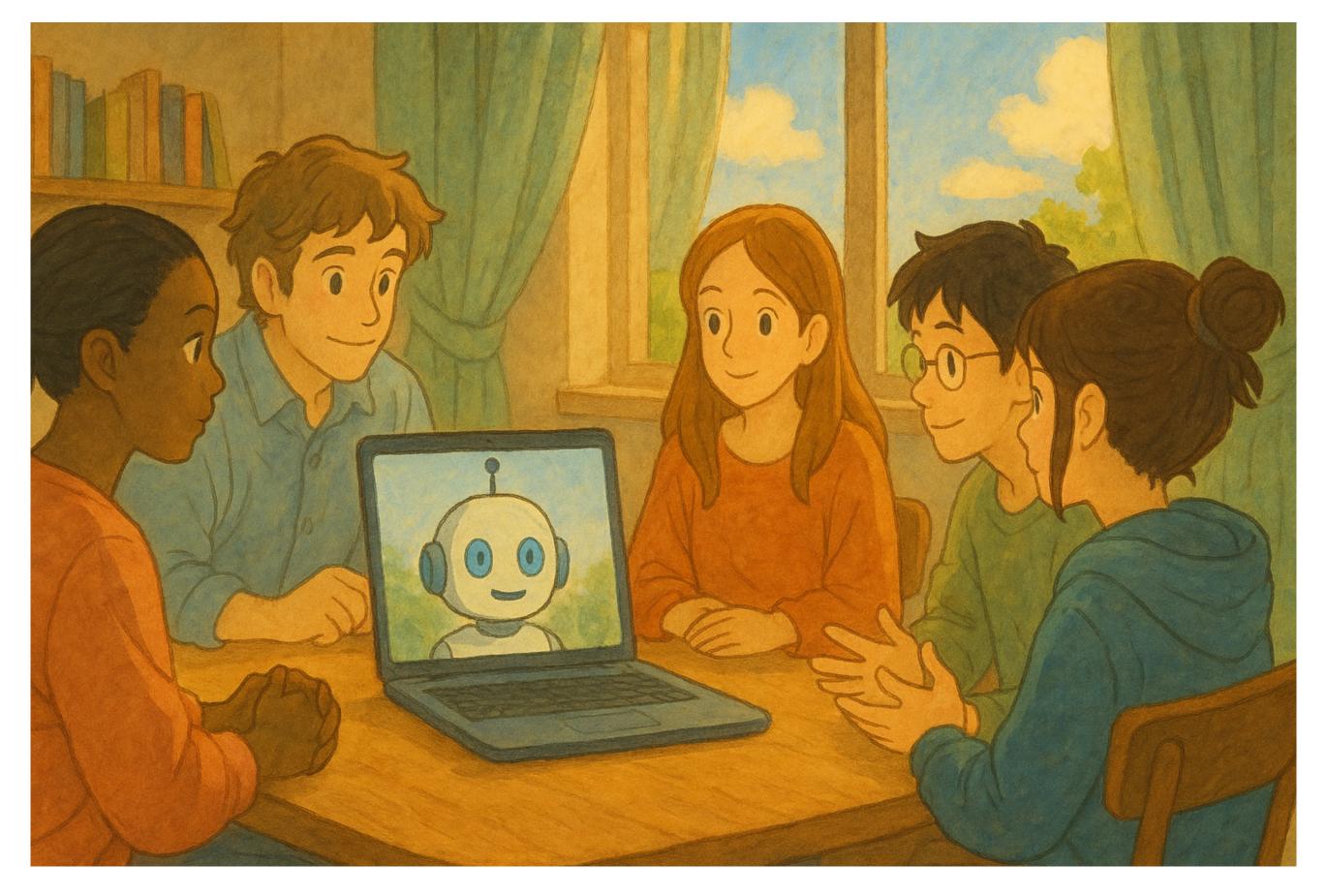


# NO MONTHLY MEETUP IN JANUARY



## 4 X WEEKLY ZOOMS IN JANUARY

#### Al Coaching Power Hour



Mondays 3-4 PM



### 4 X WEEKLY ZOOMS IN JANUARY

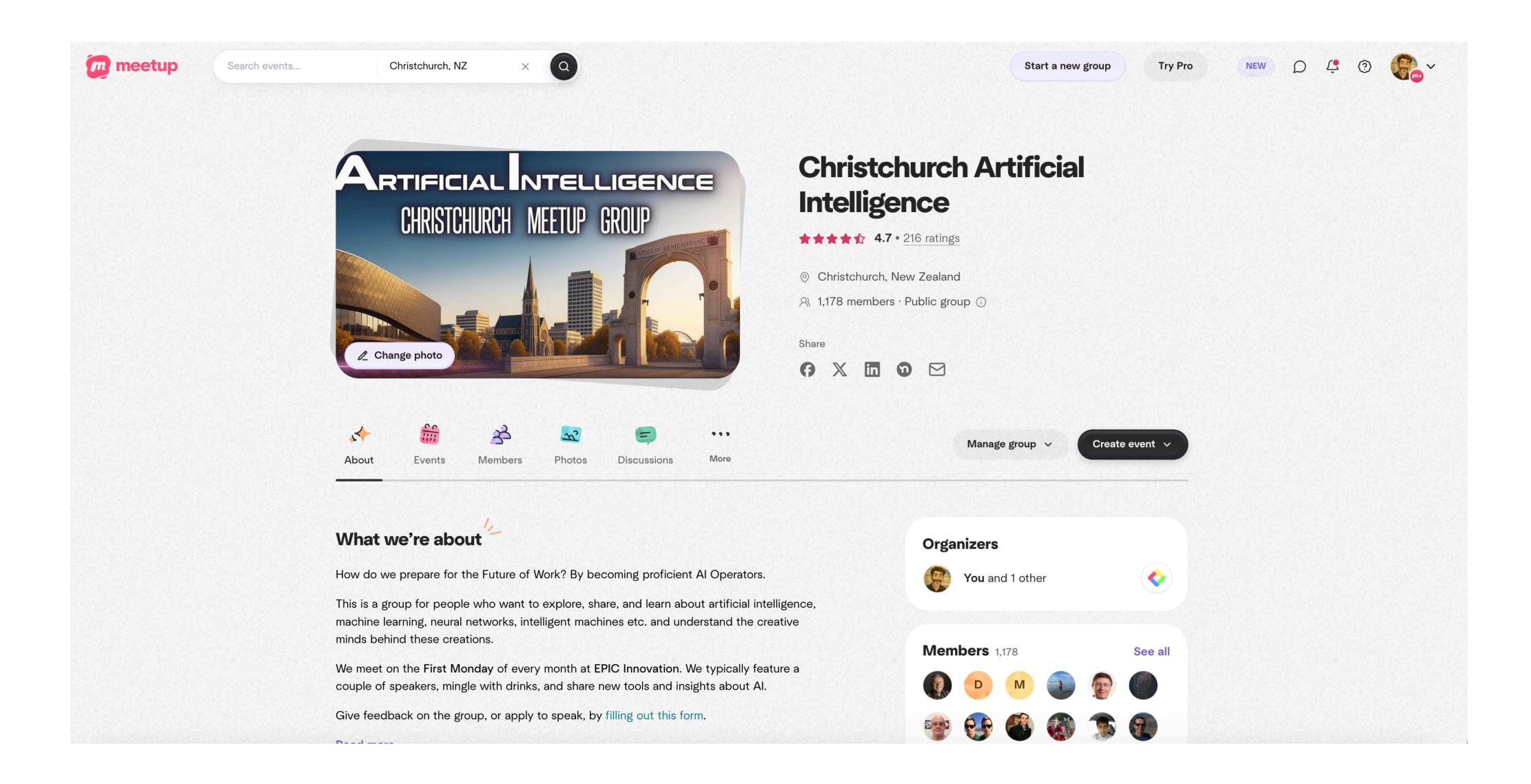
#### Al Coaching Power Hour

- + 15 min we talk to each other, on Zoom
- ↑ 15 min we talk to an Al coach, individually
- → 10 min we come back together and debrief
- + 10 min breakout room 1:1s
- + 5 min weekly commitments
- + 5 min show & tell, open Q&A

Mondays 3-4 PM



## CALL FOR SPEAKERS









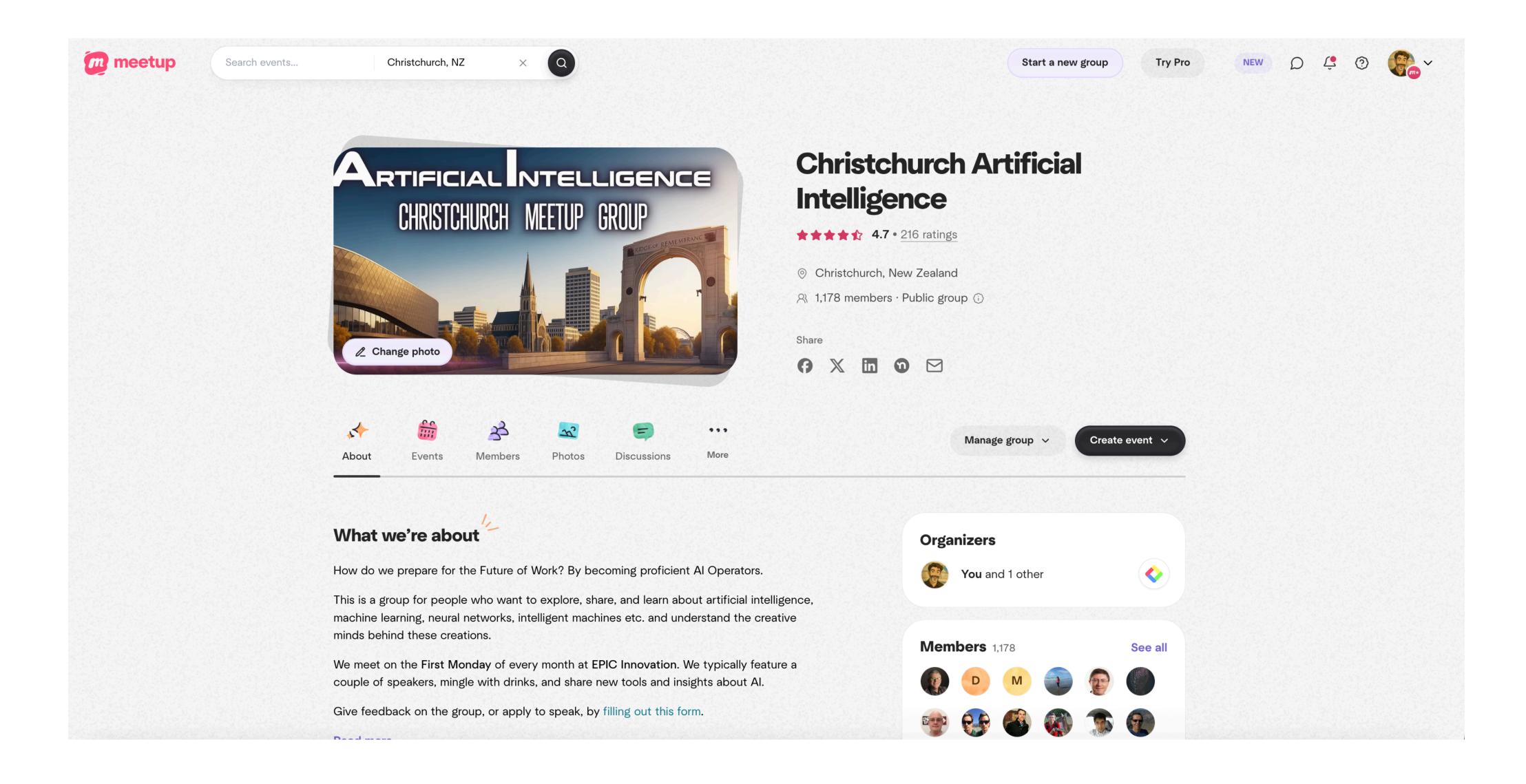
# Al Data Testing & Coaching with Al

- Where? EPIC Innovation
- When? 5:30 8:00 PM
- Monday, 2 February

#### FIRST MONDAY & THIRD THURSDAY IN 2026

- + First Monday General Al Topics
- Third Thursday Technical Al Topics

### VIDEO VOLUNTEER





### GREG DICKSON

- Bridge Media Limited Director of Al Search Marketing
- Fractional CMO/CTO specialising in Alpowered performance marketing automation
- ◆ 20+ years in financial services performance marketing across UK and NZ markets
- Focus areas: Building performance marketing systems that drive qualified leads

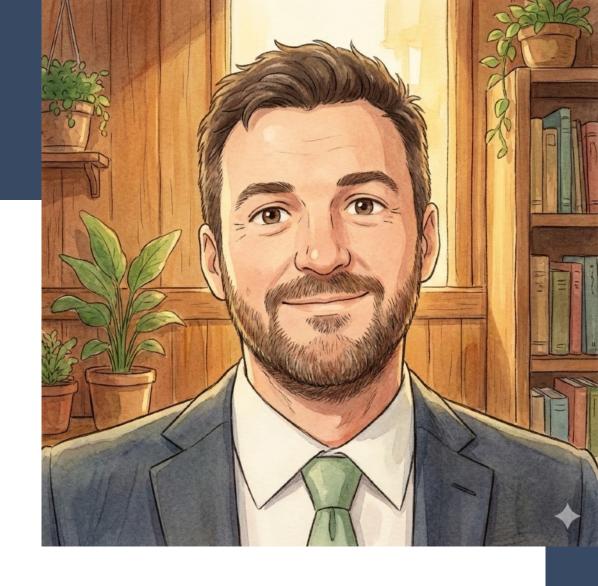


### GREG DICKSON

- Marketing Automation: Complex n8n workflows that actually work
- Lead Generation System: Focused on ROI, not vanity metrics
- Al Integration: Fixing bottlenecks across the marketing stack
- Business Systems: CRM integration, lead processing, content automation



#### GREG DICKSON



Connect on LinkedIn: <a href="https://www.linkedin.com/in/greg-dickson-nz/">https://www.linkedin.com/in/greg-dickson-nz/</a>

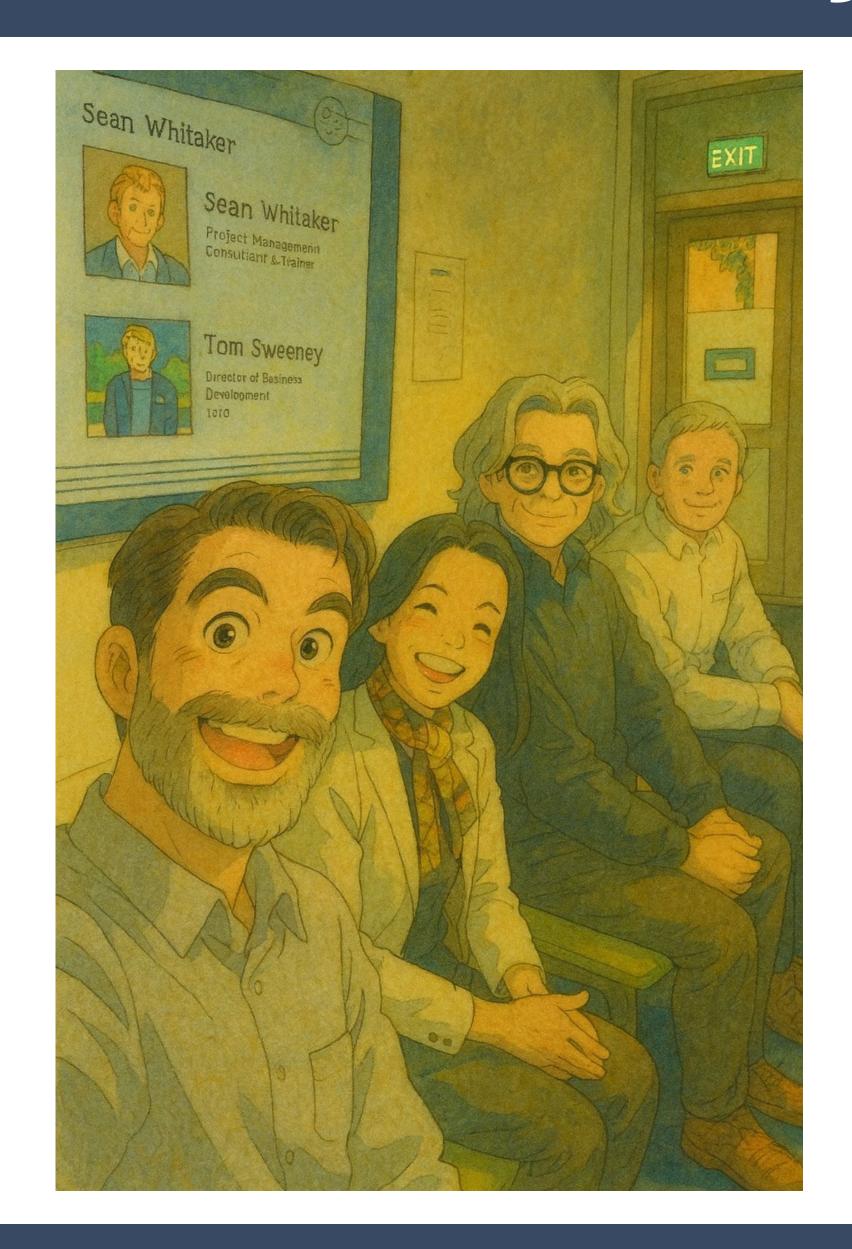
+ Email: greg@aisearch.marketing

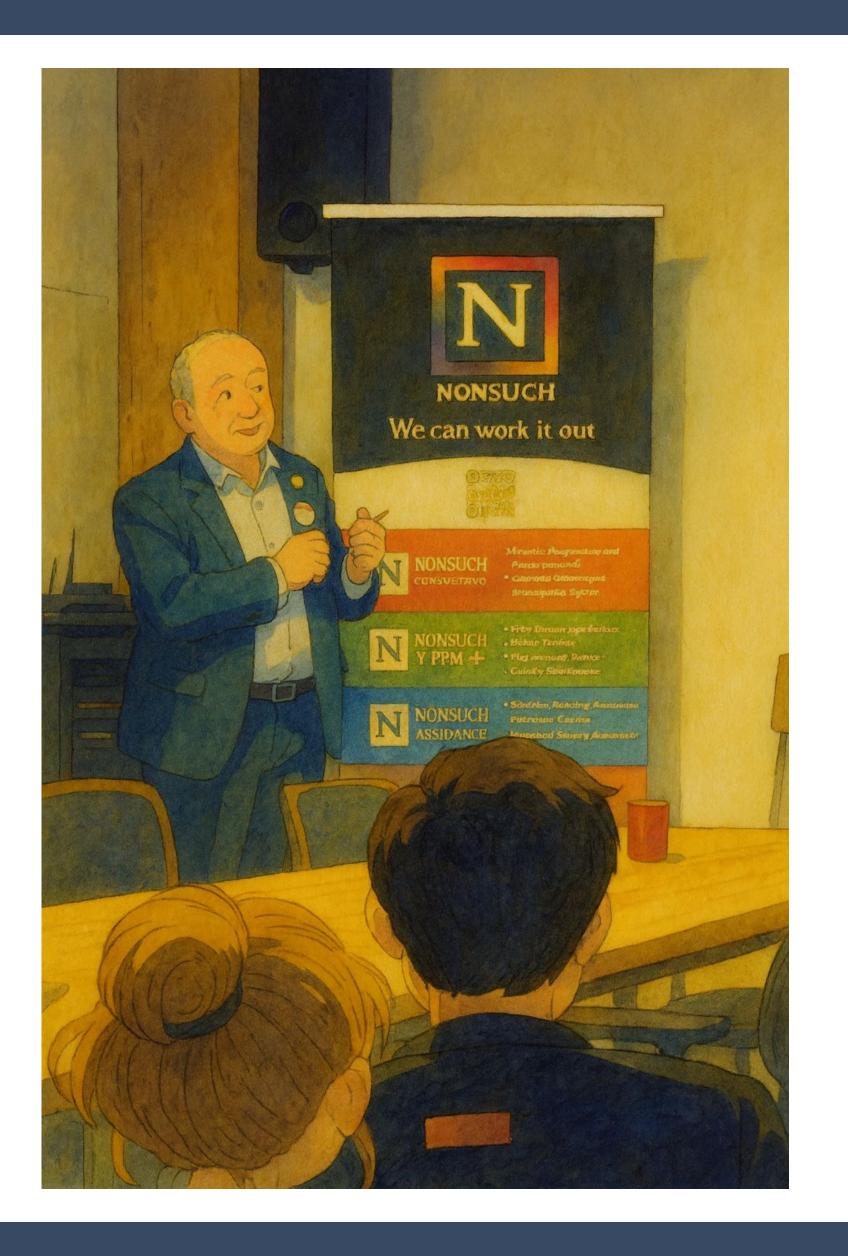


## GAME: GHIBLIFY A SELFIE

- ◆ GOAL: Turn a selfie photo into a Studio Ghibli illustration automatically.
- → RULES: Take a selfie with your phone, upload, and Ghiblify with a Project.
- ◆ FEEDBACK: Does this look like a cartoon version of you? Can you do this with fewer steps?

# Ghiblify a Selfie







### GAME: GHIBLIFY A SELFIE

- 1. {Take a selfie photo, upload to ChatGPT (slow) or Gemini (fast).}
- 2. Create an illustration of this photo in Studio Ghibli style.
- 3. {Post with hashtag #CHCHAI }

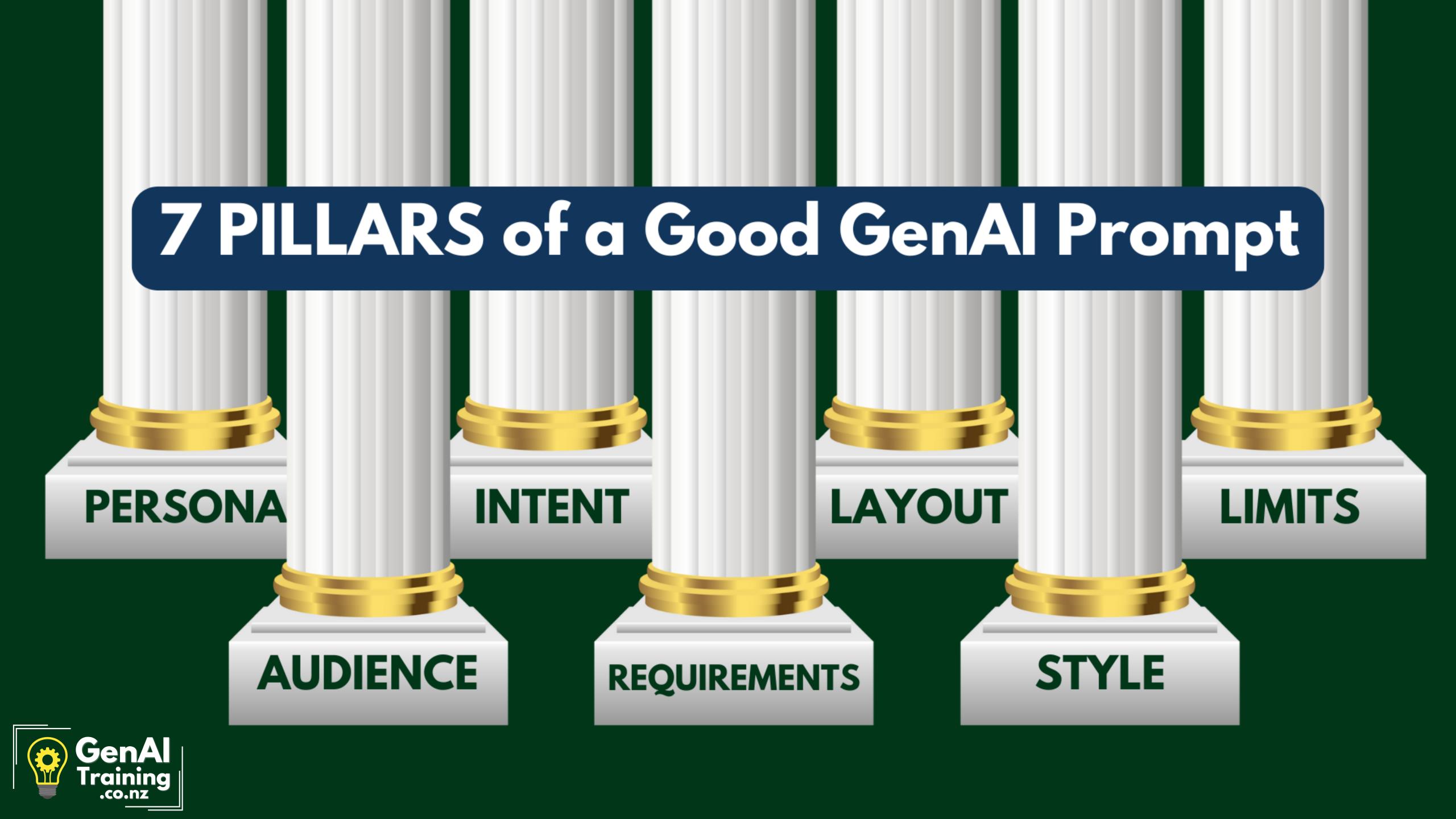






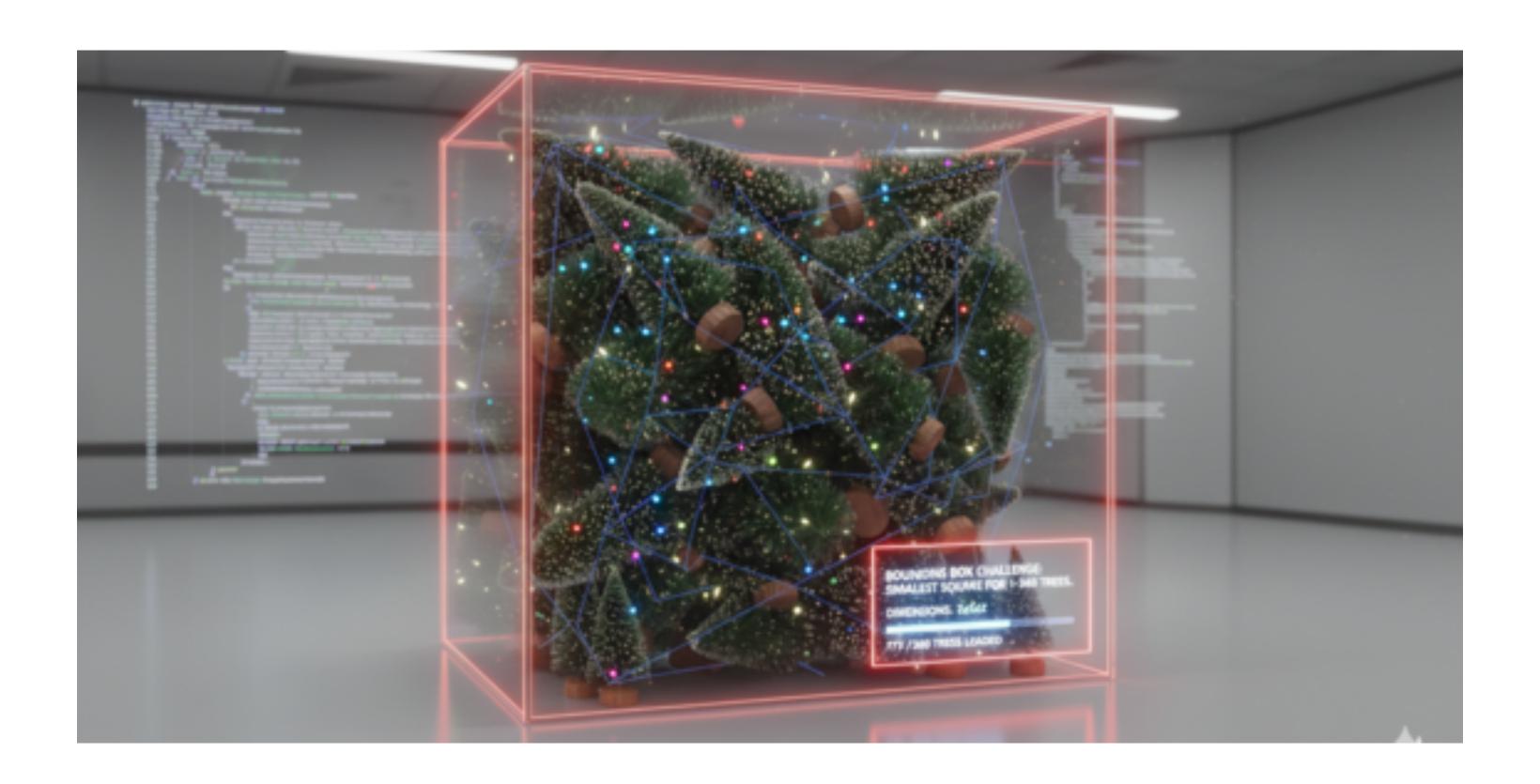
# Al Reasoning & Context Engineering

- Where? EPIC Innovation
- When? 5:30 8:00 PM
- Monday, 1 December



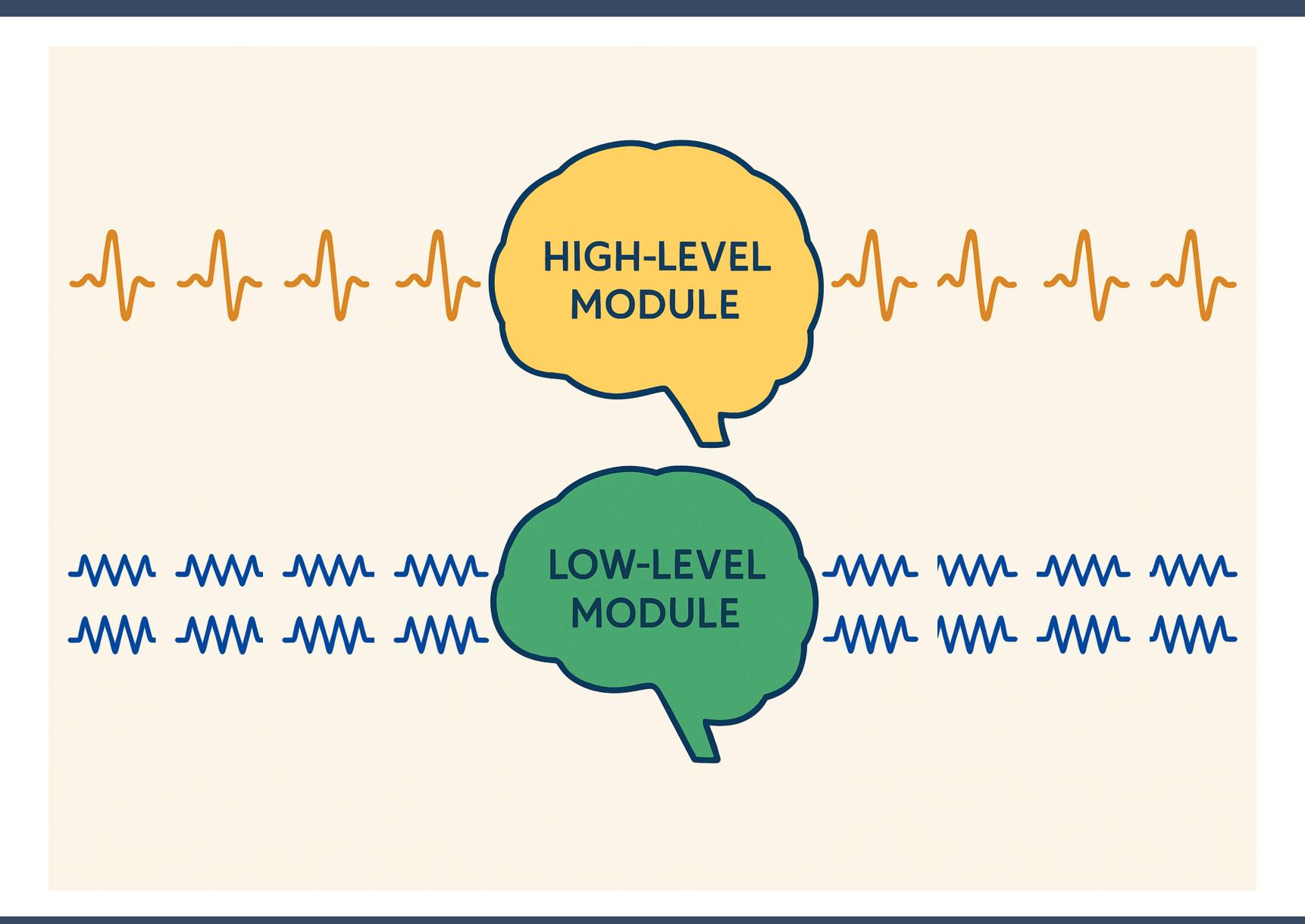
## HIERARCHICAL REASONING MODEL

https://www.kaggle.com/competitions/santa-2025/overview





#### HIERARCHICAL REASONING MODEL







#### GAME: PROMPT LADDER

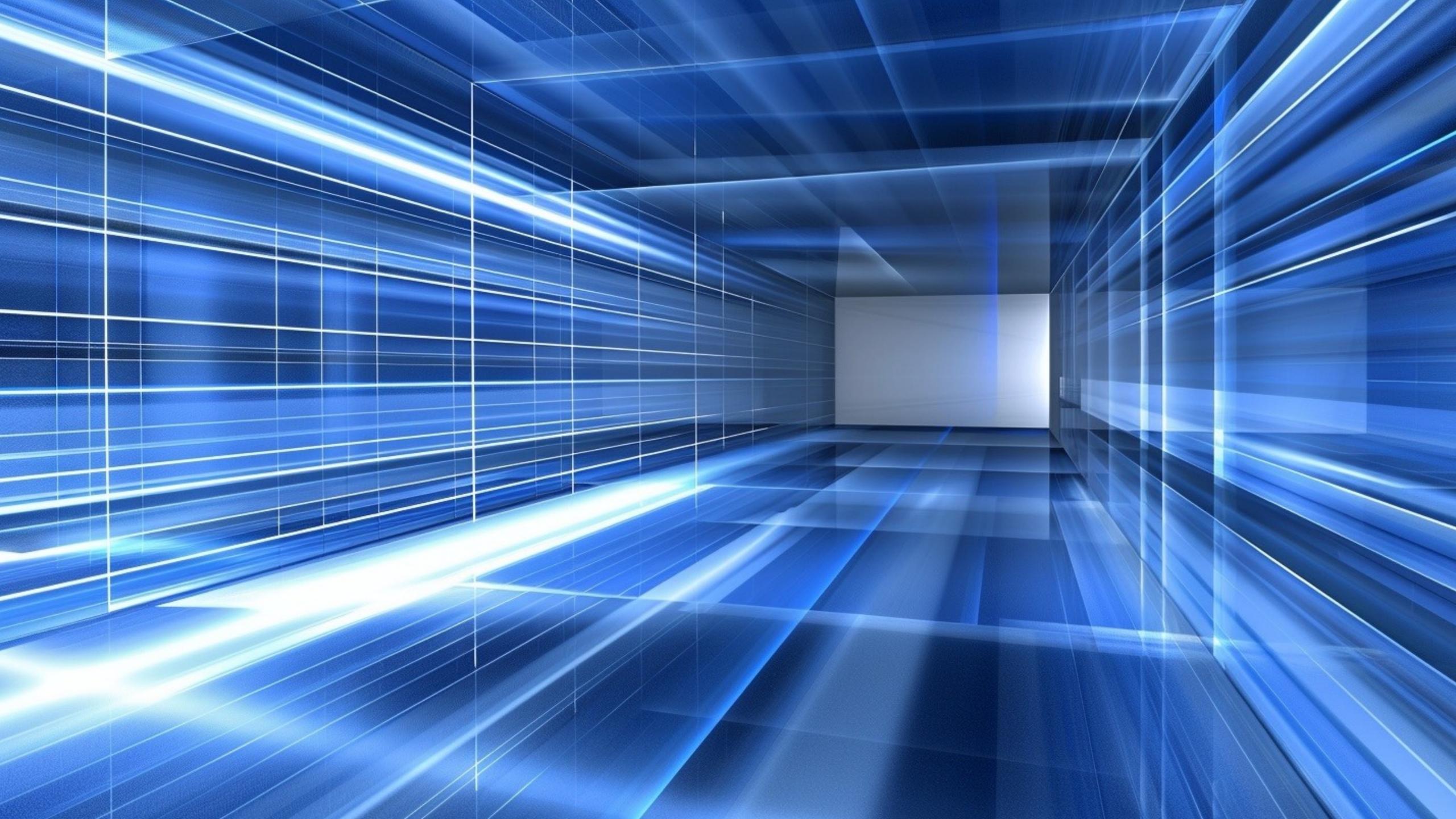
- ◆ GOAL: Demonstrate the difference between one-shot and multi-shot prompting.
- RULES: Ask Al to complete a task in 1 prompt, and then in 3 sequential prompts.
- → FEEDBACK: Compare the two. Which is better?



#### GAME: PROMPT LADDER

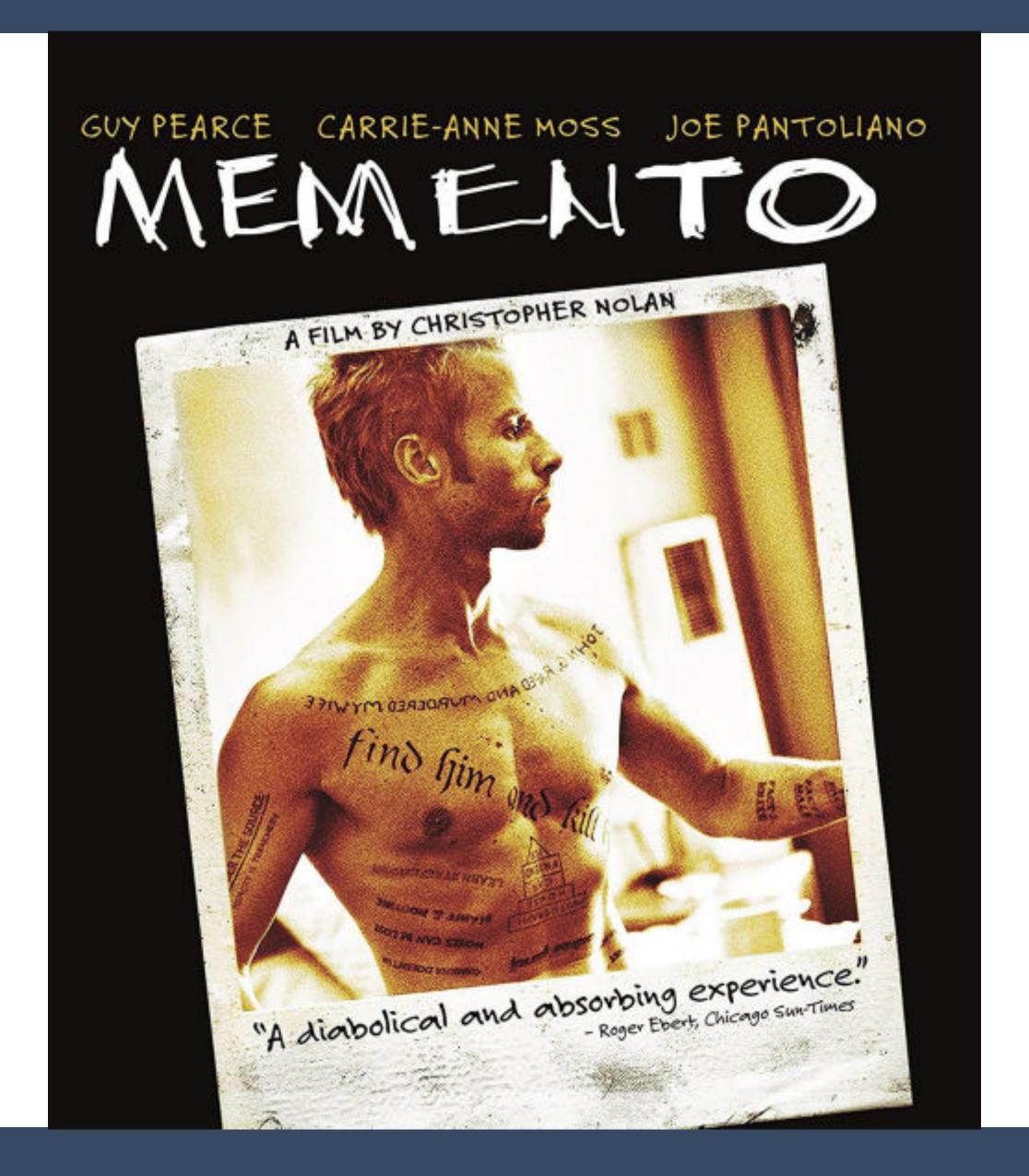
- 1. Write a 100-word story about an underdog who wins. // List 3 underdog character ideas.
- 2. Create a short plot outline for the most interesting one.
- 3. Now write a 100-word story based on that character and outline.







## CONTEXT ENGINEERING





"CONTEXT ENGINEERING IS THE STRATEGIC PROCESS OF SELECTING, PACKAGING, AND MANAGING THE MOST RELEVANT INFORMATION FOR EACH STEP."



-ANTONIO GULLI

#### CLAUDE TESTS

WITH AND WITHOUT CONTEXT

+22% Improvement, Especially in Complex Decision-Making Tasks

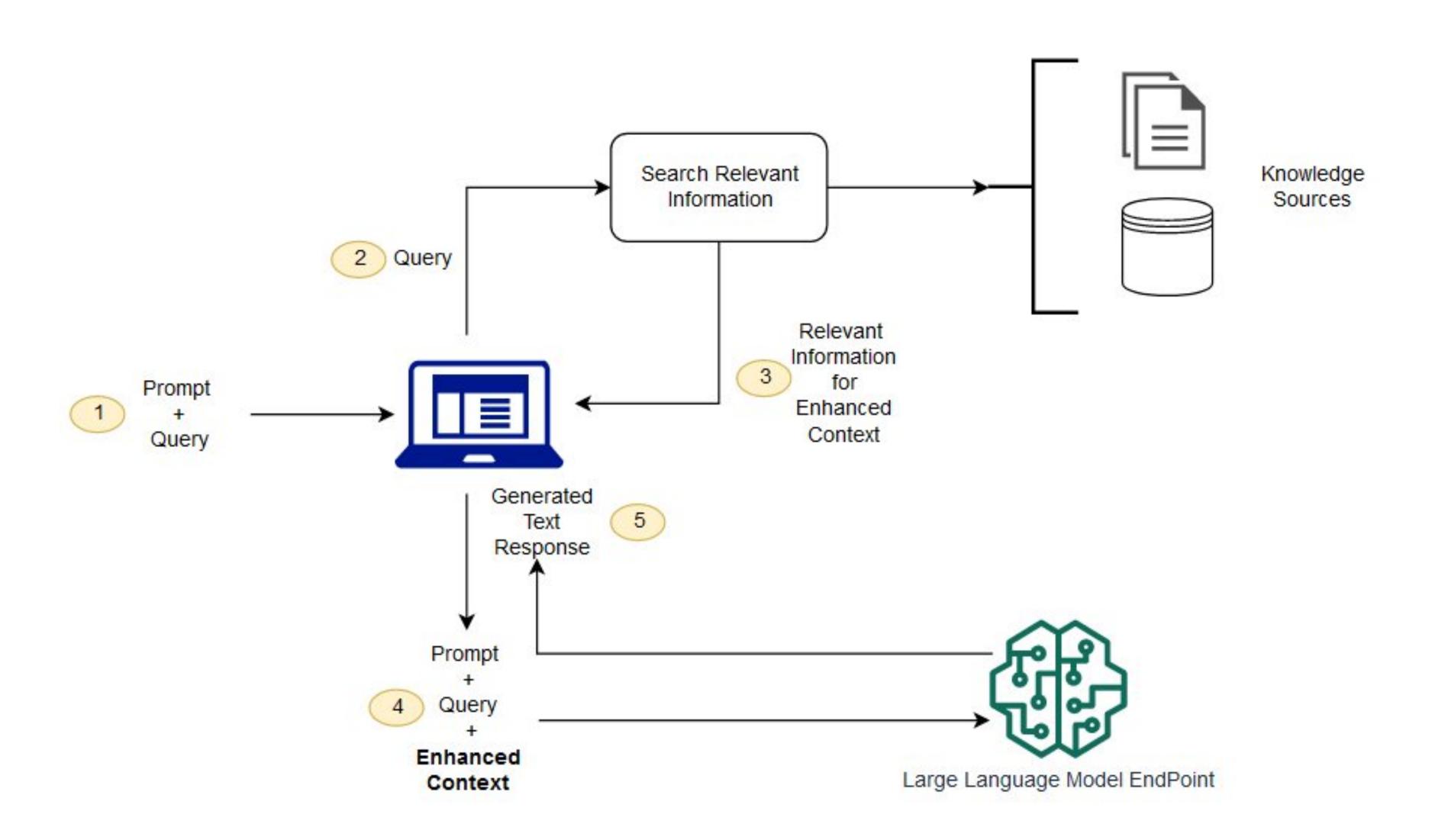
### CONTEXT WITH RAG

RETRIEVAL-AUGMENTED GENERATION FOR KNOWLEDGE-INTENSIVE NLP TASKS



- + Question Encoder
- Retriever
- + Generator

## AWS FLOWCHART





# STANFORD CRFM, 2024

CENTER FOR RESEARCH ON FOUNDATION MODELS

 Guardrails and Goal Framing reduced prompt injection success by 44%



### GAME: ADDING CONTEXT

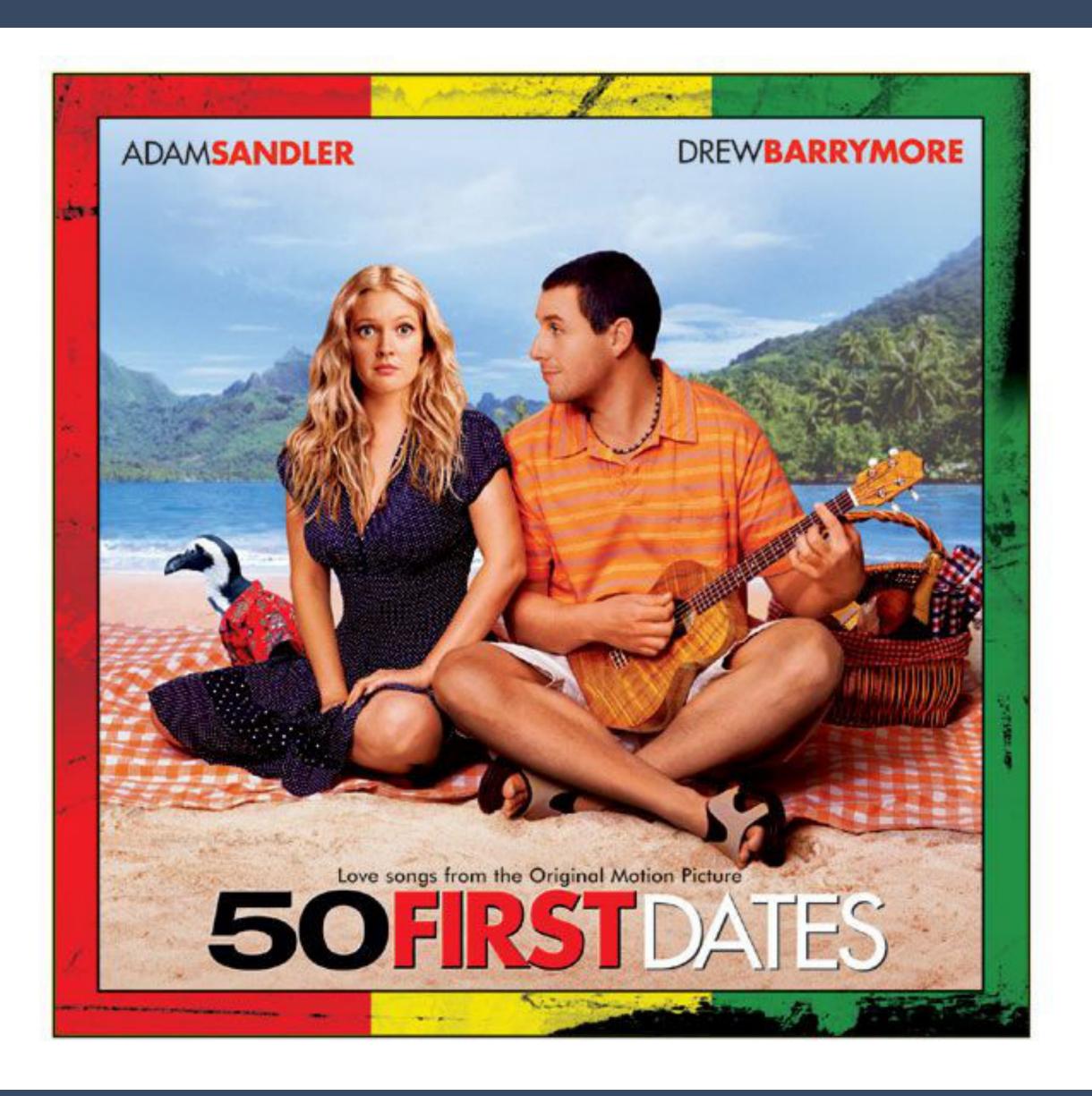
- ◆ GOAL: Understand how adding context improves the quality and relevance of Al responses.
- → RULES: Use a simple prompt first, then add detailed context using multiple sources. Compare responses to see how AI reasoning changes with additional context.
- → FEEDBACK: Which output was more helpful? Did the extra context change tone, detail, or insight?

### GAME: ADDING CONTEXT

- 1. What are some good ways to set New Year's resolutions?
- 2. Read 5 articles from <a href="https://caelanhuntress.com/tag/resolutions">https://caelanhuntress.com/tag/resolutions</a> and then answer: What are some good ways to set New Year's resolutions?
- 3. Compare the responses from Prompts 1 and 2. What changed, and how does added context improve the result?



### CONTEXT ENGINEERING





#### GAME: PROGRESSIVE PROMPTING

- GOAL: Compare the results of progressive prompting vs single prompting.
- → RULES: Ask an LLM to "Write a short, inspiring motivational speech for a group of students." Then try progressive prompting, and compare the results.
- FEEDBACK: Which one is a better speech?



### GAME: PROGRESSIVE PROMPTING

- 1. What are 3 key messages students need to hear to stay motivated?
- 2. Turn those messages into a short speech outline.
- 3. Now write a full speech using that outline in an inspiring tone.

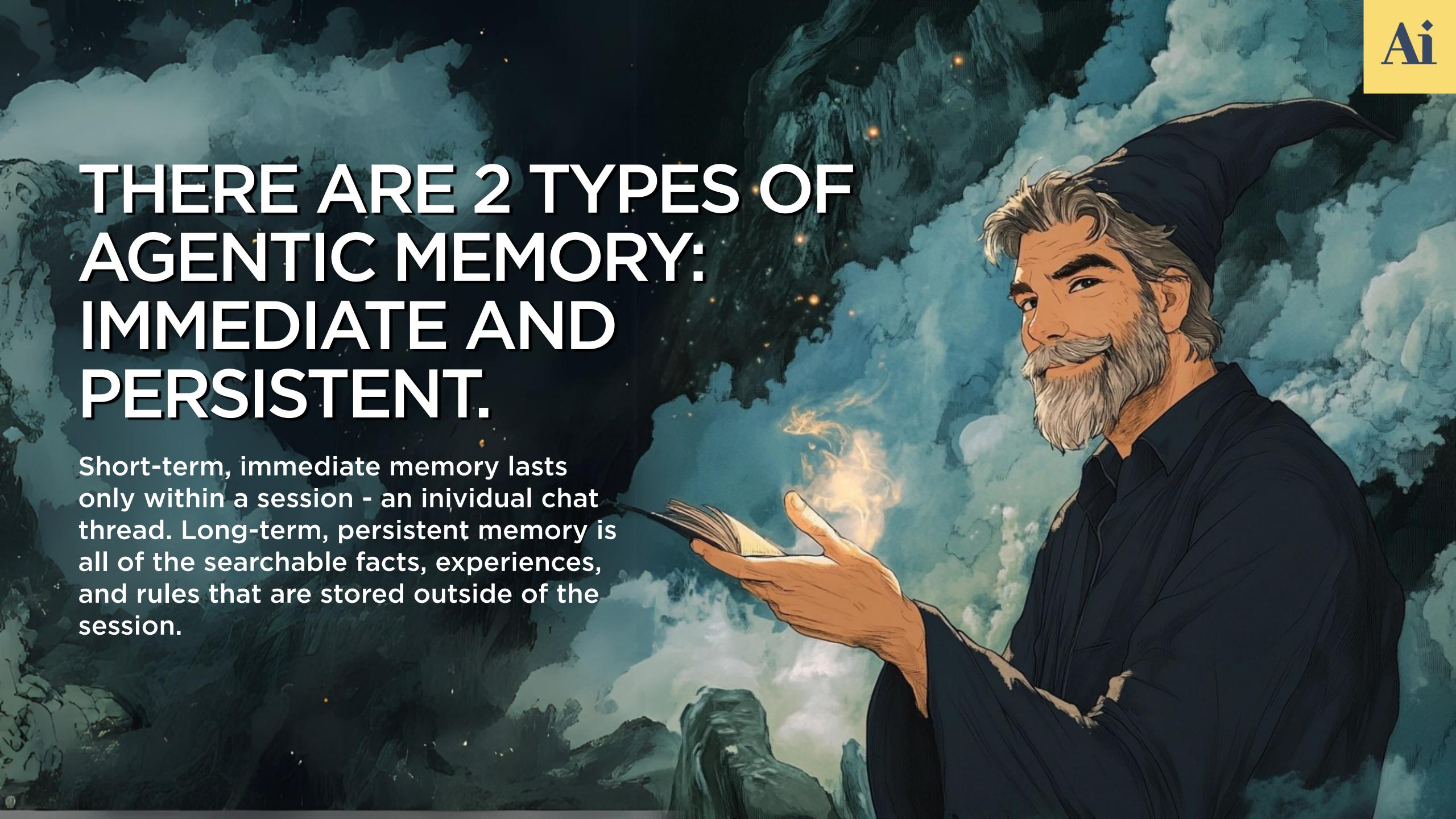


"CONTEXT ENGINEERING IS THE DISCIPLINE OF DESIGNING, CONSTRUCTING, AND DELIVERING A COMPLETE INFORMATIONAL ENVIRONMENT TO AN AI MODEL PRIOR TO GENERATION."



-ANTONIO GULLI





#### ROUGH CONVERSION

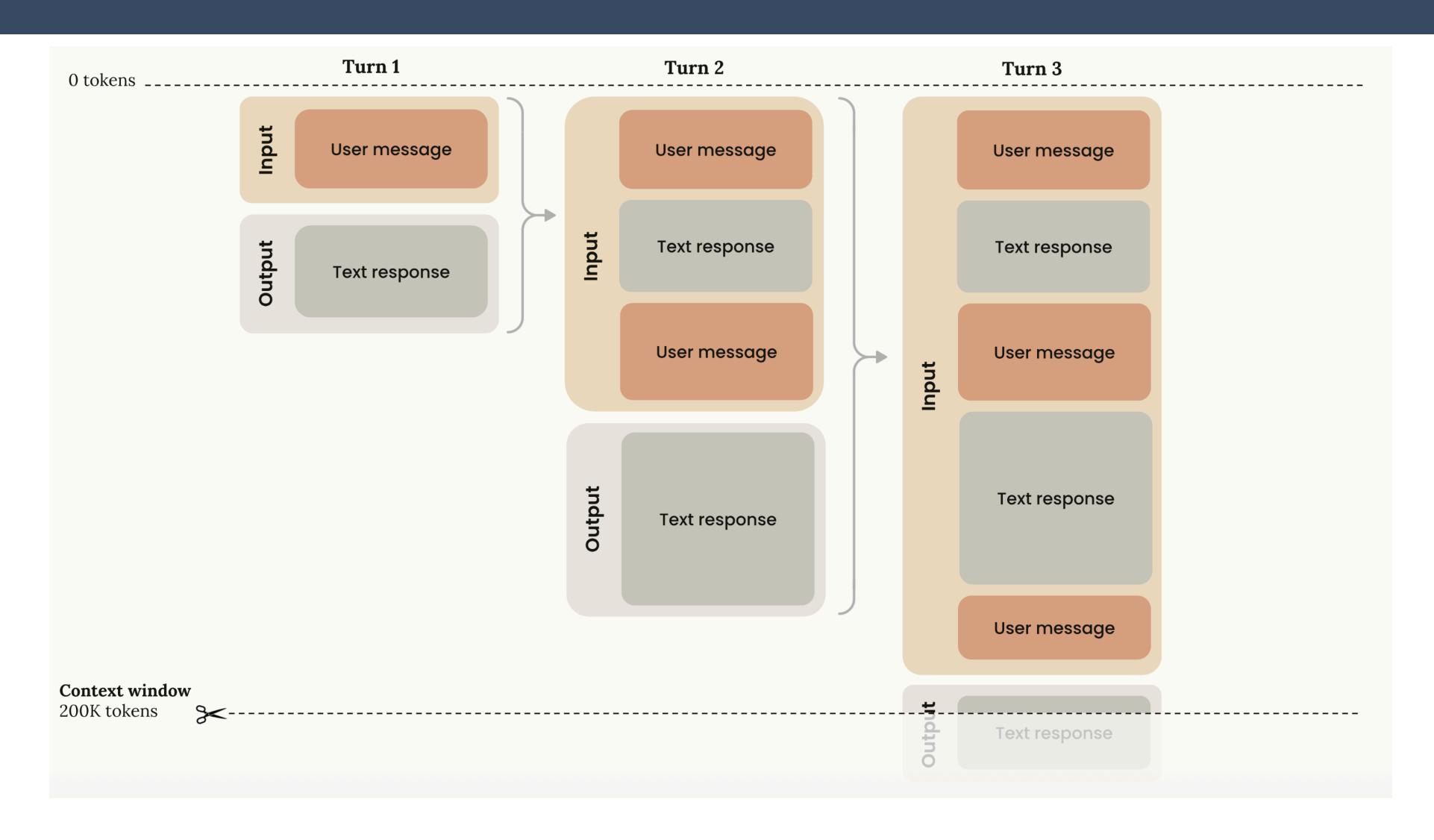
- + 1.5 Tokens Per Word
- ↑ 10,000 Tokens = 6600 Words

#### ROUGH CONVERSION

MEMORY IS STATEFUL CONTENT, NOT JUST FACTS.

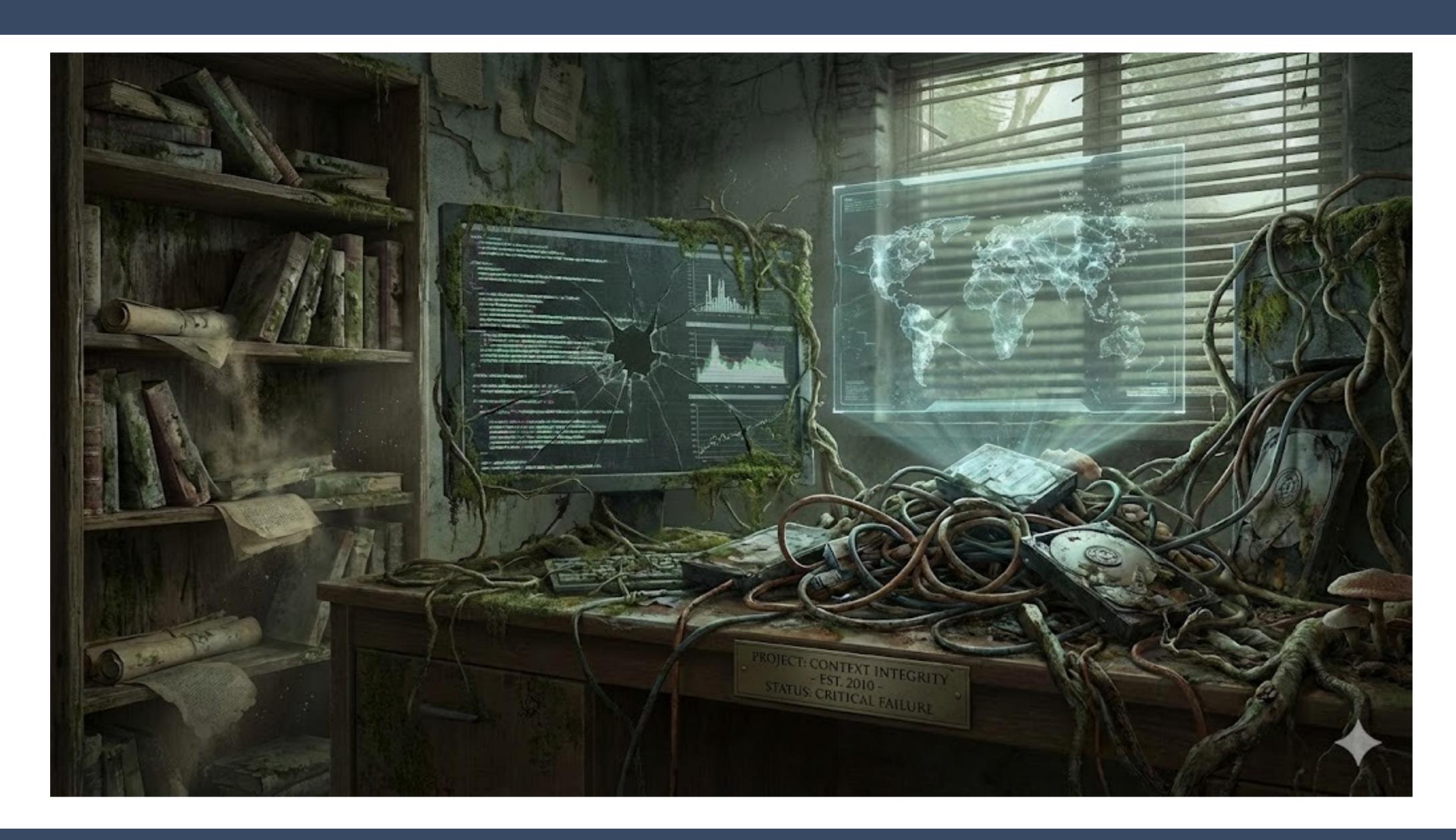
- + 1.5 Tokens Per Word
- → 10,000 Tokens = 6600 Words

## CLAUDE'S CONTEXT WINDOW



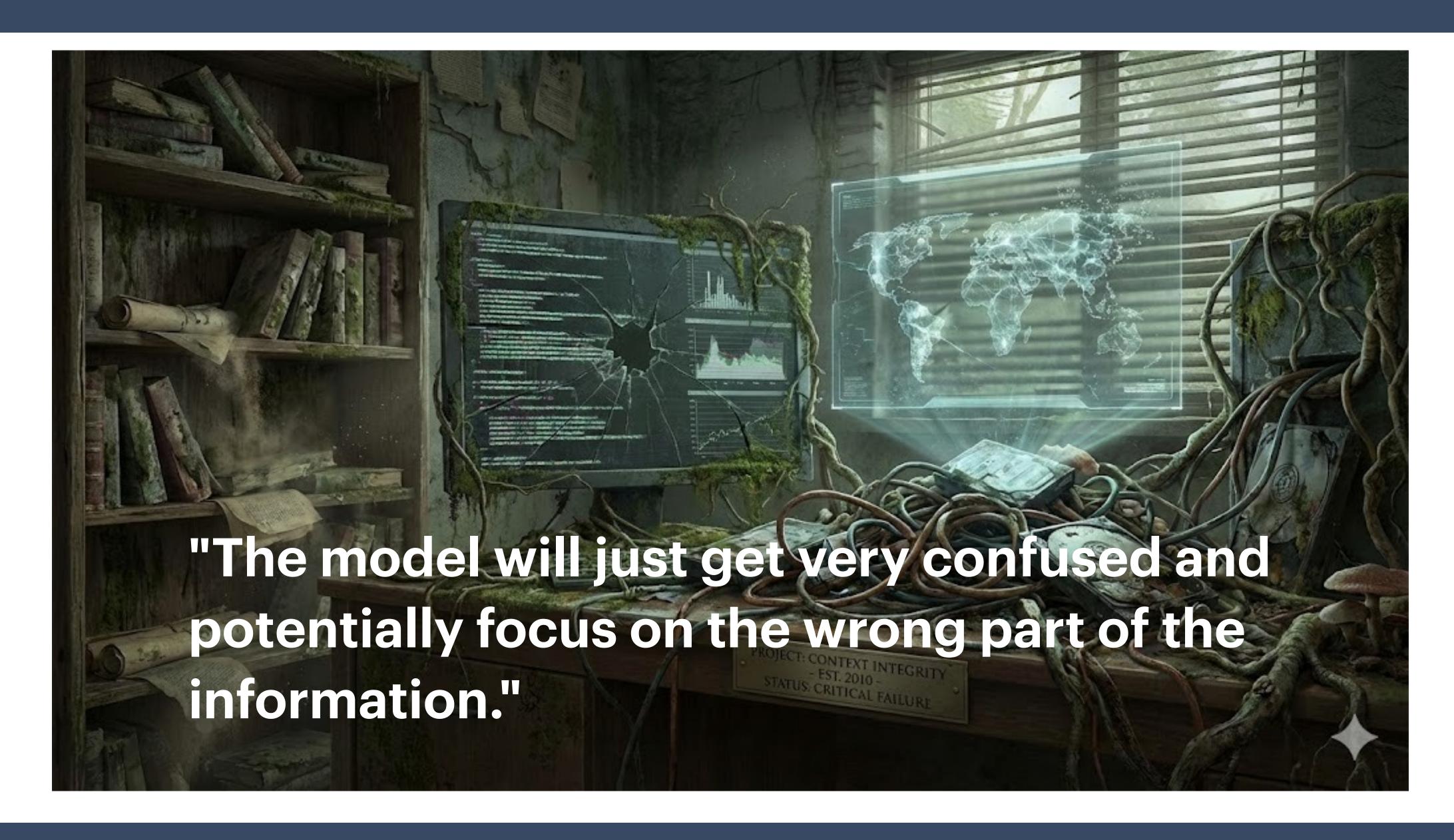


# CONTEXT ROT





### CONTEXT ROT







# "YOU'LL HAVE MULTIPLE AGENTS, ALL WITH A SET OF GOALS AND A SET OF CONTEXTS THAT ARE GERMANE TO THEIR PARTICULAR PART OF THE WORKFLOW."

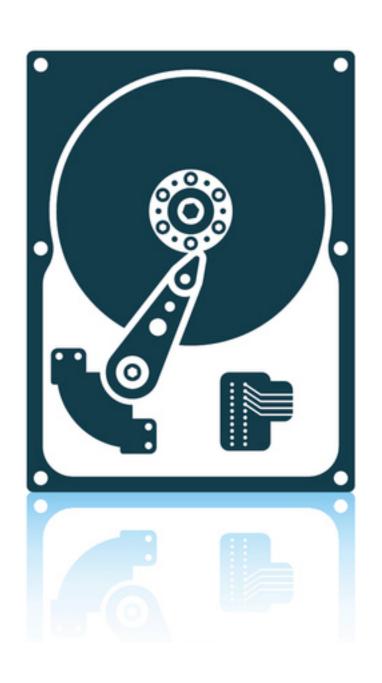


- AARON LEVINE CO-FOUNDER OF BOX

## SHORT TERM VS LONG-TERM

Immediate	Persistent	
Context Window	Database	
Session + State	Storage	
Costly	Efficient	
Relevant	Repository	
Conversation	Relationship	

## ROM VS RAM







# ROM VS RAM



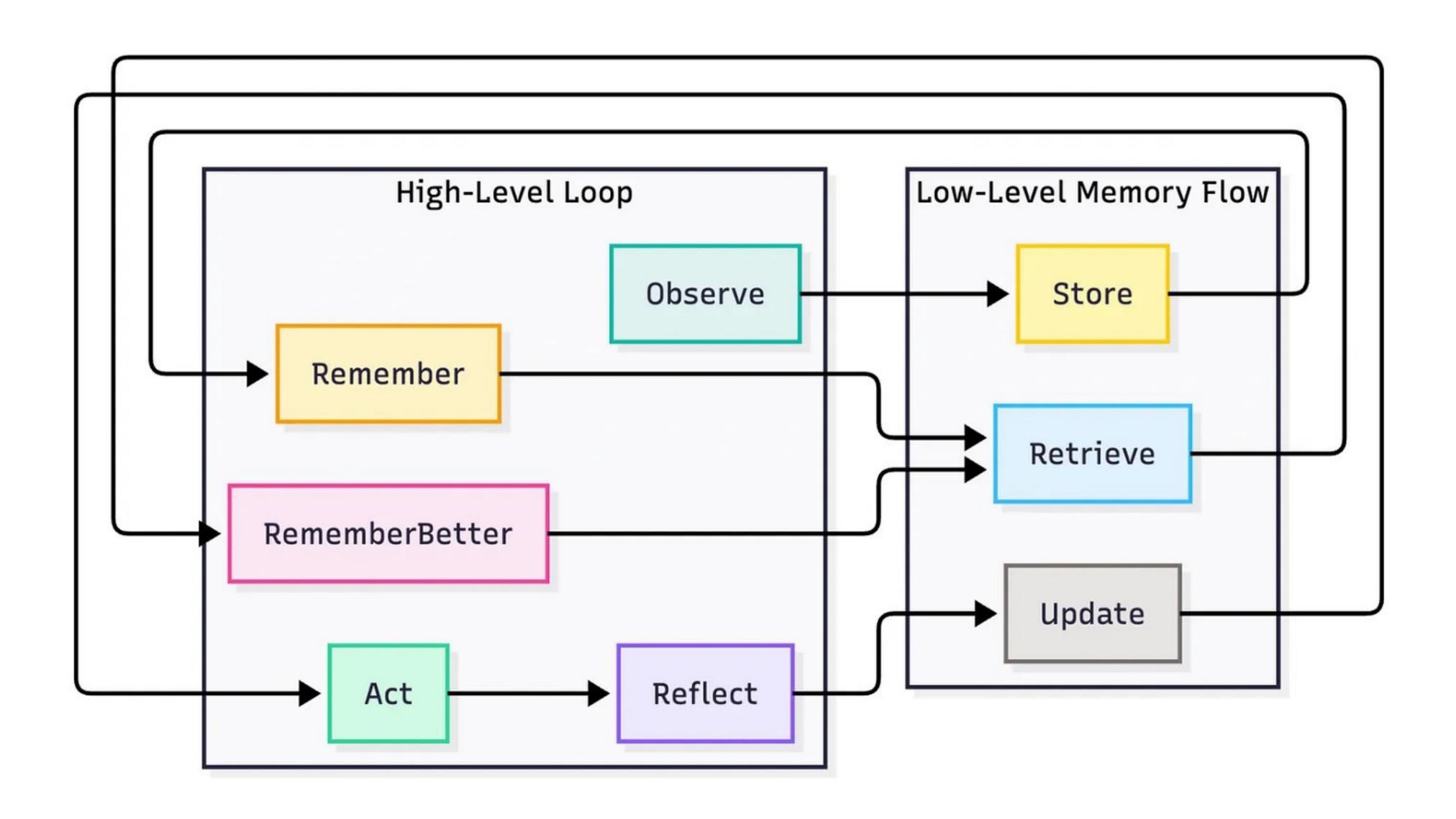


### LONG TERM MEMORY COMPONENTS

Semantic	Library	Facts	Domain Knowledge	JSON
Episodic	Diary	Experiences	Past Events	Few-Shot
Procedural	Toolbox	Rules	System Prompt	Reflections

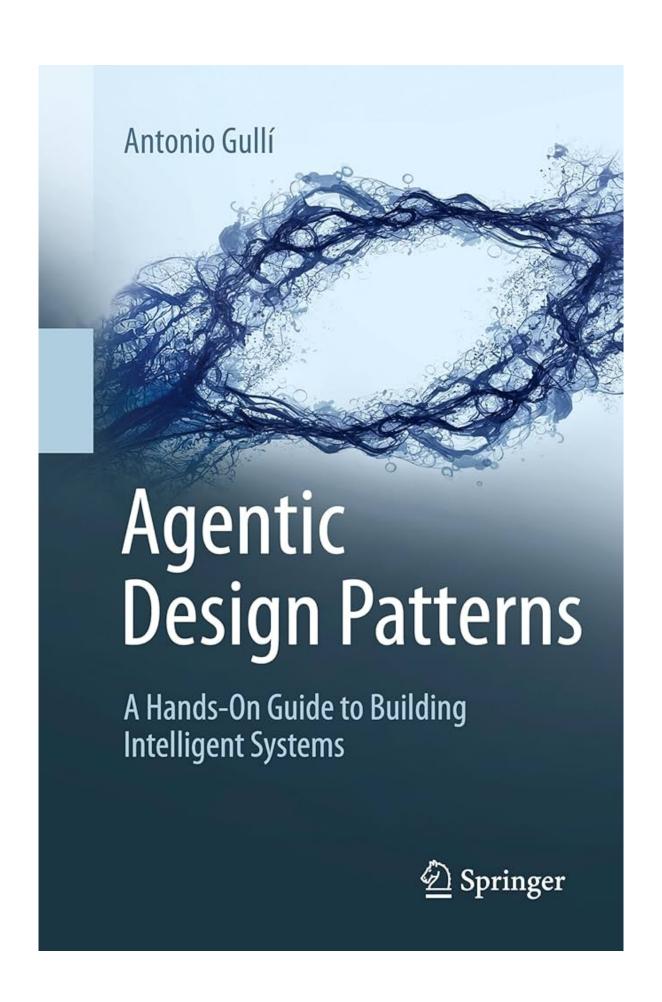


### AGENTIC MEMORY LOOP





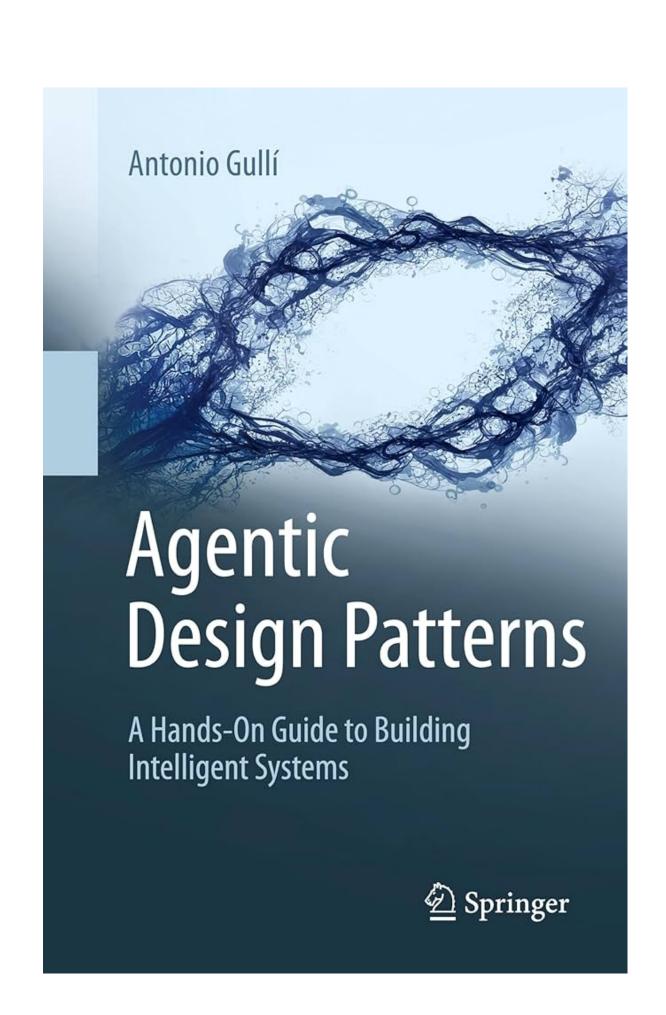
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- https://link.springer.com/book/ 9783032014016
- order the book by December
   12, and use the coupon code
   ADPPreSale at checkout.
- + \$74.22 euro
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### BOOK CLUB IN JANUARY

- Agents Design Patterns Book Club
- + Tuesdays at noon on Zoom
- Right hand interested in attending at that time
- Left hand interested in attending, but not at that time

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## VOTE FOR THE LOGO YOU LIKE



#### VOTE FOR THE LOGO YOU LIKE







#### AI TRAINING CURRICULUM

6 x 90-Minute Workshops
Over 2 weeks

#### Foundation Series

101

AI & The Future of Work 102

Applied Al Ideation Lab

103

**Prompting Techniques** 

\*\*The Foundation Series is prerequisite to the Electives\*\*

Each interactive workshop is 90 minutes long

Delivered at your venue, over Zoom, or @ The Loft Coworking

146a Lichfield St in Christchurch

#### Electives

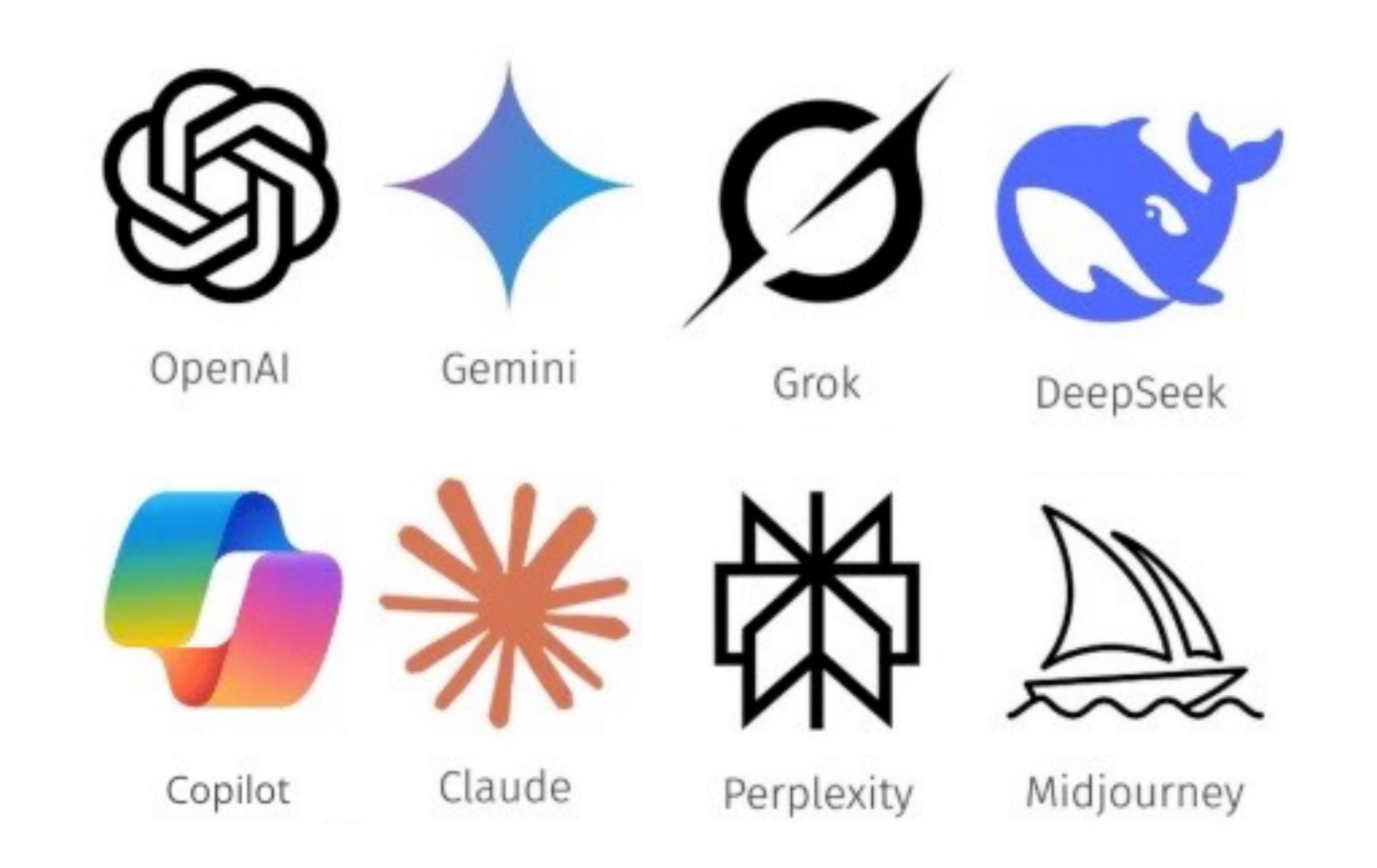
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  - EVALUATE MAKE BETTER CHOICES
- 212 AI FOR GOVERNANCE
  - OVERSEE STEWARD ETHICAL RESPONSIBILITY







### LET'S PLAY WITH THE TOOLS



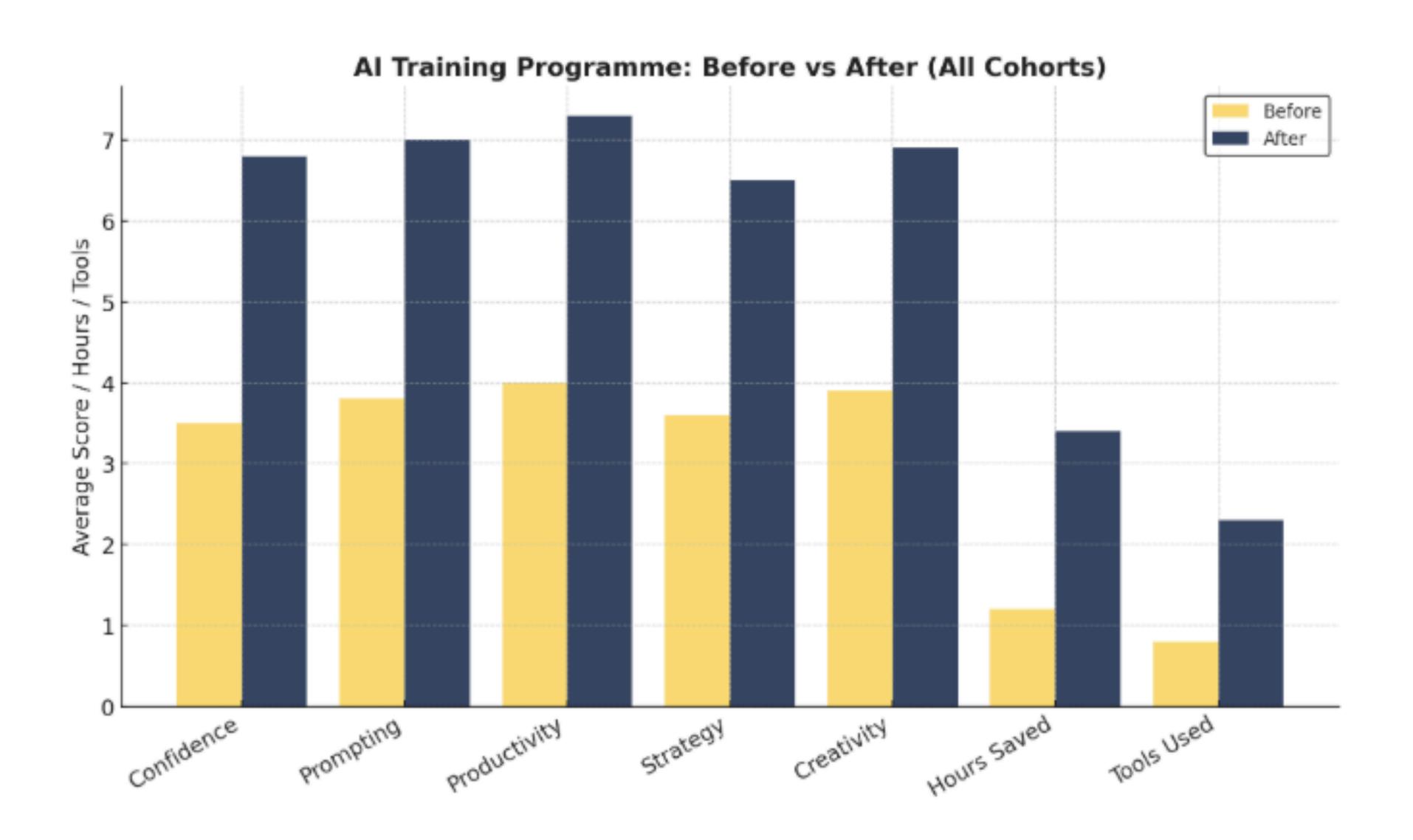
# LEARN BY DOING







### BEFORE-AND-AFTER SURVEY RESULTS





"I use AI every day now, and I hardly did before taking this training programme. Caelan's positivity and enthusiasm is really engaging. His workshops are full of facts and anecdotes, and a lot of fun."

**Testimonial** 



Silena Kirkconnell-Kawana



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"I came into Caelan's workshop not knowing anything about custom GPTs or comparing prompts between different AI models. Now I can draft blog articles in my own voice, iterate across tools, and polish them in a fraction of the time. This training gave me the confidence to try new things, and a clear way of cutting through to what works. Caelan's workshop was memorable and absolutely worth it."

**Testimonial** 



**Andrew Pitts** 



"This was probably the best workshop that I have attended, and multiple people said the same thing. The shift in confidence and engagement across the team is exactly what we were hoping for."

**Testimonial** 



**Matt Harris** 



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# DIGITAL BADGES





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\$1000 PER WORKSHOP FOR UP TO 7 PEOPLE 8-20 PEOPLE - \$150 PER PERSON/PER WORKSHOP, EXCL GST

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MICROSOFT, 2024

Average New Zealand worker can free up to 275 hours per year



- Average New Zealand worker can free up to 275 hours per year
- → Equivalent to 7.5 weeks per year



- Average New Zealand worker can free up to 275 hours per year
- → Equivalent to 7.5 weeks per year
- → 5.7 hours per week



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- → 5.7 hours per week
- → Total ROI = 275 hours x Hourly wage
   = Total first-year savings



- Average New Zealand worker can free up to 275 hours per year
- → Equivalent to 7.5 weeks per year
- → 5.7 hours per week
- ◆ Total ROI = 275 hours x Hourly wage= Total first-year savings
- + \$23 x 275 \$6,325



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# AI PROJECT MANAGEMENT

#### WEEKLY AI COACHING SESSIONS

WEEKLY REPORT CONTAINING

- 1. Scope
- 2. Automate
- 3. Generate
- 4. Evaluate

- Recaps
- Research
- Resources
- Recommendations

+ 1 HOUR WEEKLY AI RESEARCH



# AI PROJECT MANAGEMENT

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WEEKLY REPORT CONTAINING

- 1. Scope
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- Recaps
- Research
- Resources
- Recommendations

+ 1 HOUR WEEKLY AI RESEARCH

\$3000 / MONTH



"This AI Training programme gave our team a shared language about how to think about Al internally. Caelan educated us on the benefits and the pitfalls, and took away many of the fears we had around data security. We've already achieved payback on the time we spent in this programme, and we're now thinking big time about how we can use AI to support our growth plans, securely."

**Testimonial** 



Geoffrey Sullivan







# Al Data Testing & Coaching with Al

- Where? EPIC Innovation
- When? 5:30 8:00 PM
- Monday, 2 February



Open Q&A

