

# AI IN ACTION: TRANSFORMING BUSINESS AND EDUCATION IN COLORADO

JEREMIAH CONTRERAS  
Teaching Assistant Professor  
[Jeremiah.Contreras@colorado.edu](mailto:Jeremiah.Contreras@colorado.edu)

DAVID KOHNKE  
Senior IT Director  
[David.Kohnke@colorado.edu](mailto:David.Kohnke@colorado.edu)



**Leeds** School of Business  
UNIVERSITY OF COLORADO **BOULDER**

# STATISTICS ON AI ADOPTION RATES

AI Use Report	2023	2024
US Census Bureau's BTOS <sup>1</sup>	3.7%	6.6%
Colorado Company Statistics <sup>2</sup>	-	7.4%
US Chamber of Commerce <sup>3</sup> US Small Businesses	23%	40%
KPMG Global AI Finance Report <sup>4</sup>	-	62%

- WHY THE DISCREPANCY?
- CHATGPT USERS<sup>5</sup>: 5 Days = 1M → 2 Mos = 100M → Currently: 300M weekly & 1B Messages daily

Source 1: U.S. Census Bureau. Business Trends and Outlook Survey. March 2024, [www.census.gov](http://www.census.gov)

Source 2: <https://coloradobiz.com/ai-adoption-us-businesses-insights/>

Source 3: <https://www.uschamber.com/assets/documents/Impact-of-Technology-on-Small-Business-Report-2024.pdf>

Source 4: <https://kpmg.com/xx/en/our-insights/ai-and-technology/kpmg-global-ai-in-finance-report.html>

Source 5: Exploding Topics. Dec 2024, [www.explodingtopics.com/blog/chatgpt-users](http://www.explodingtopics.com/blog/chatgpt-users)

# TODAY'S ROADMAP

## PART 1

- EXAMPLES: GENERATIVE AI IN ACTION
- AI'S IMPACT ON INDUSTRY
- WHAT IS AI?
- USING GENERATIVE AI
- ETHICS & LAWS
- CONCLUDE PART 1

## 5-MINUTE BREAK

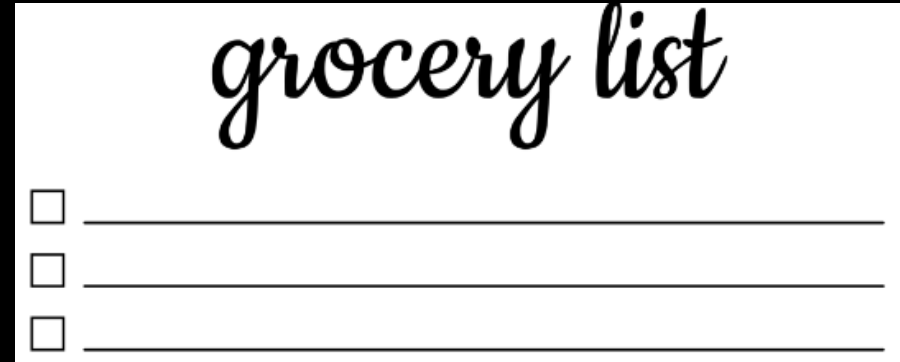
## PART 2

- HANDS ON PROMPTING & Q&A

# EXAMPLES OF GENERATIVE AI IN ACTION



MICROSOFT COPILOT:  
Finding Efficiencies

A white rectangular box containing the text "grocery list" in a black, cursive font. Below the text are three horizontal lines, each preceded by a small square checkbox, representing a list of items to be checked off.

GENAI as your personal dietician and  
meal planner

# AUDIENCE SURVEY



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# AI'S IMPACT ON COLORADO INDUSTRIES



- ENERGY AND SUSTAINABILITY
- HEALTHCARE
- FINANCE
- EDUCATION
- REAL ESTATE
- AGRICULTURE



# AI'S IMPACT ON ENERGY & SUSTAINABILITY



- ENERGY DEMAND FORECASTING [LINK](#)
- ENERGY GRID MANAGEMENT [LINK](#)
- SMART THERMOSTATS [LINK](#)

# AI'S IMPACT ON HEALTHCARE

- PREDICTIVE DIAGNOSTICS [LINK](#)
- REAL-TIME NOTE CAPTURE [LINK](#)
- AT HOME MEDICAL INSIGHTS [LINK](#)









# AI'S IMPACT ON EDUCATION



- PERSONALIZED LEARNING [LINK](#)
- STUDENT RETENTION AND SUCCESS [LINK](#)
- CONTENT CREATION FOR COURSE DESIGN [LINK](#)





# AI'S IMPACT ON REAL ESTATE

- PROPERTY VALUATION [LINK](#)
- STREAMLINED TRANSACTIONS [LINK](#)
- FINDING YOUR DREAM HOME [LINK](#)



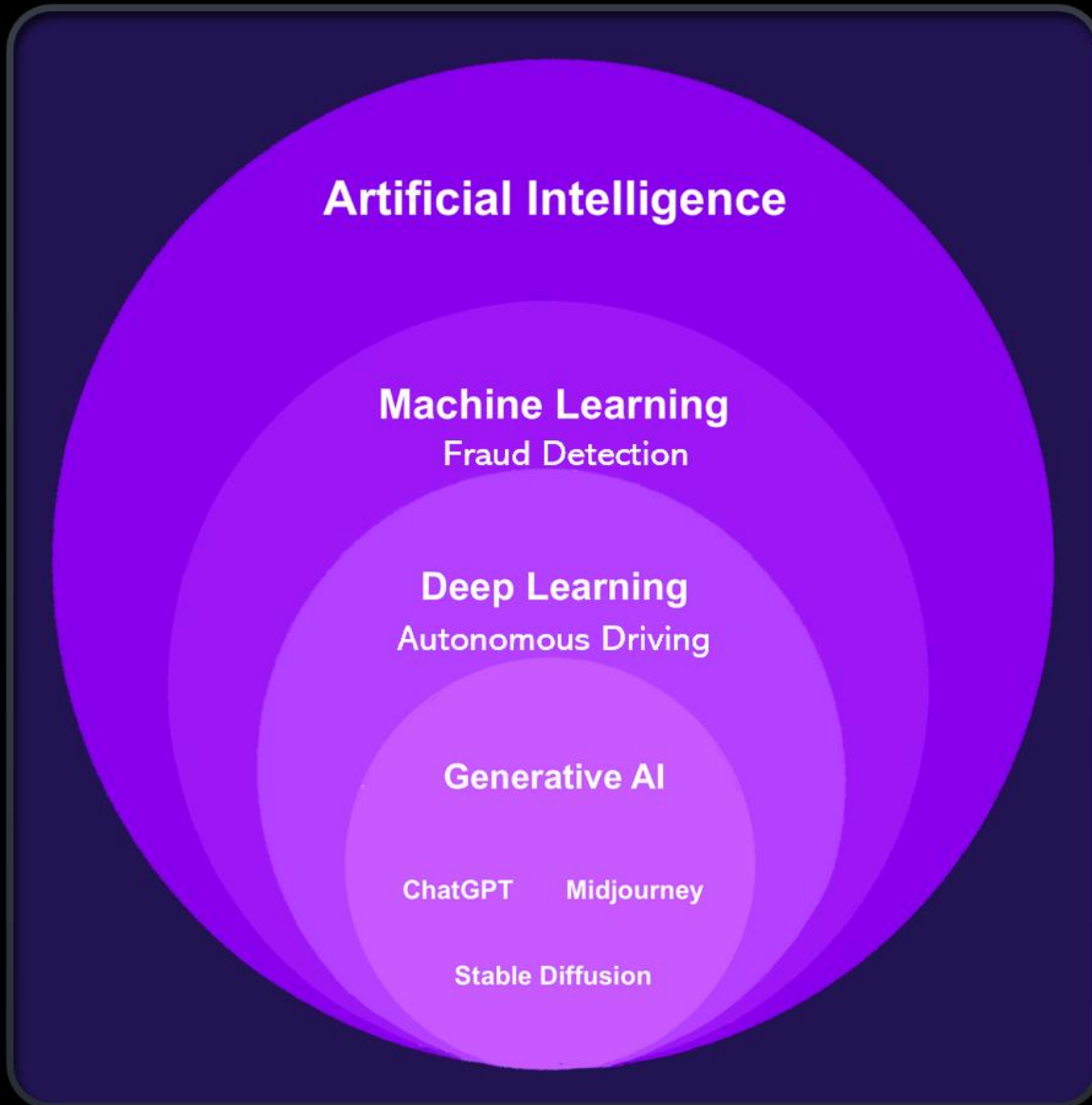


# AI'S IMPACT ON AGRICULTURE

- ADVANCE WEATHER FORECASTING [LINK](#)
- PRECISION FARMING [LINK](#)
- PLANT DISEASE IDENTIFICATION [LINK](#)



# WHAT IS AI?



## ARTIFICIAL INTELLIGENCE (BROAD)

- 1950s-1980s: Human-Based Algorithms
- 1990s-2000s: Machine Learning (ML): Data Driven Patterns. Machine-Based Algorithms
- 2010-ISH: DEEP LEARNING (DL): Neural networks that mimic the brain: Complex tasks.
- 2017: GENERATIVE AI (GEN AI) accelerated with “Transformer.” Large Language Models (LLMs), like ChatGPT.
  - GPT: Generative, Pretrained, **Transformer**
  - Text, Images, Video, Speech, Coding



# LARGE LANGUAGE MODELS (LLMS) & MORE

**CHAT TOOLS:** Conversational AI tools for brainstorming, creating, writing, and more.

- ChatGPT, Claude (Anthropic), Gemini (Google), Notebook LM (Google), Perplexity.

**PRODUCTIVITY TOOLS:** BOOST EFFICIENCY BY AUTOMATING TASKS AND ENHANCING WORKFLOWS.

- Microsoft Copilot & Power Automate, Google products, Zapier.

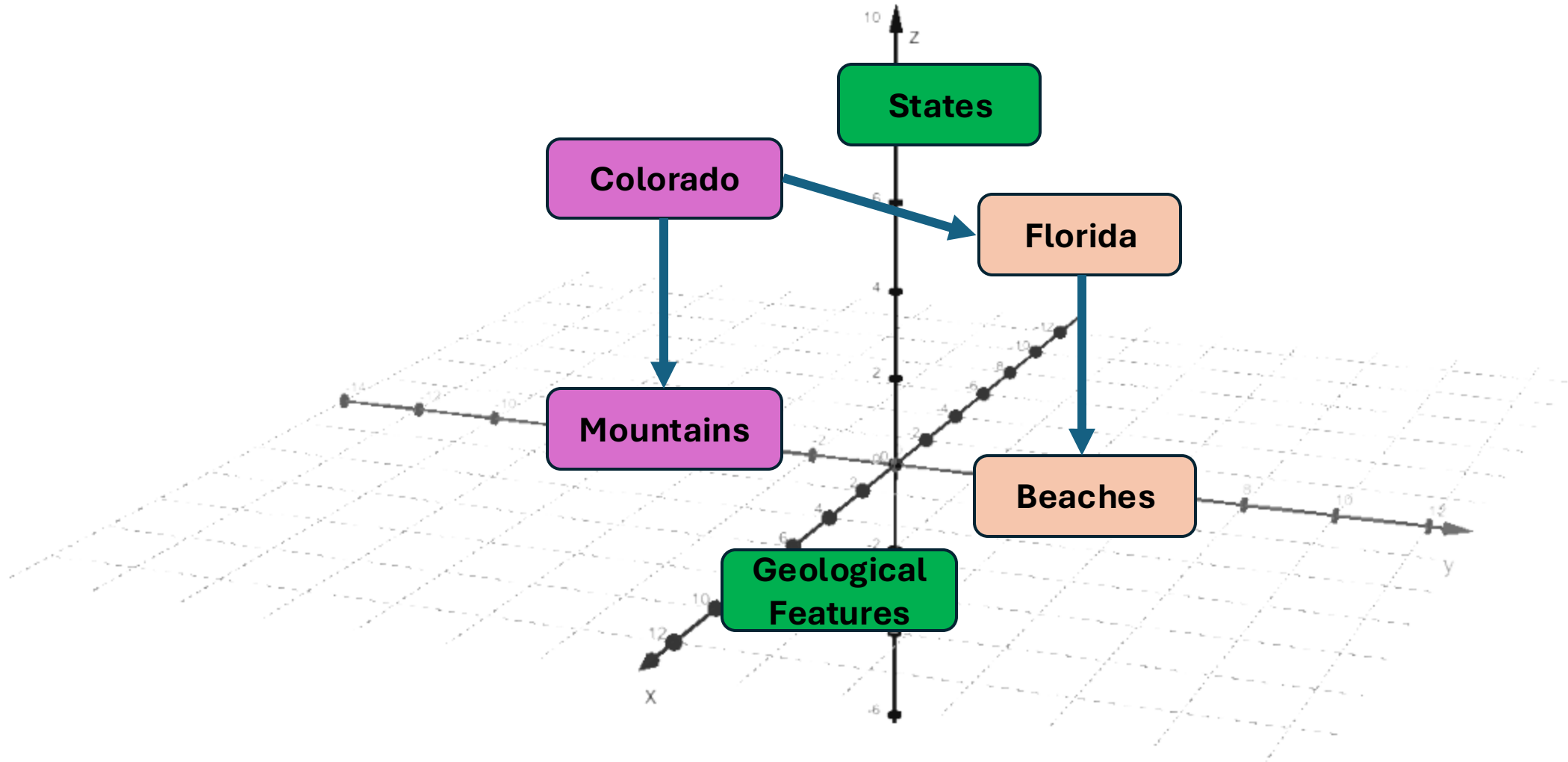
**VISUAL & AUDIO:** AI-powered tools for creating images, video, audio.

- DALL·E, MidJourney, **SORA**, Runway, Synthesia.

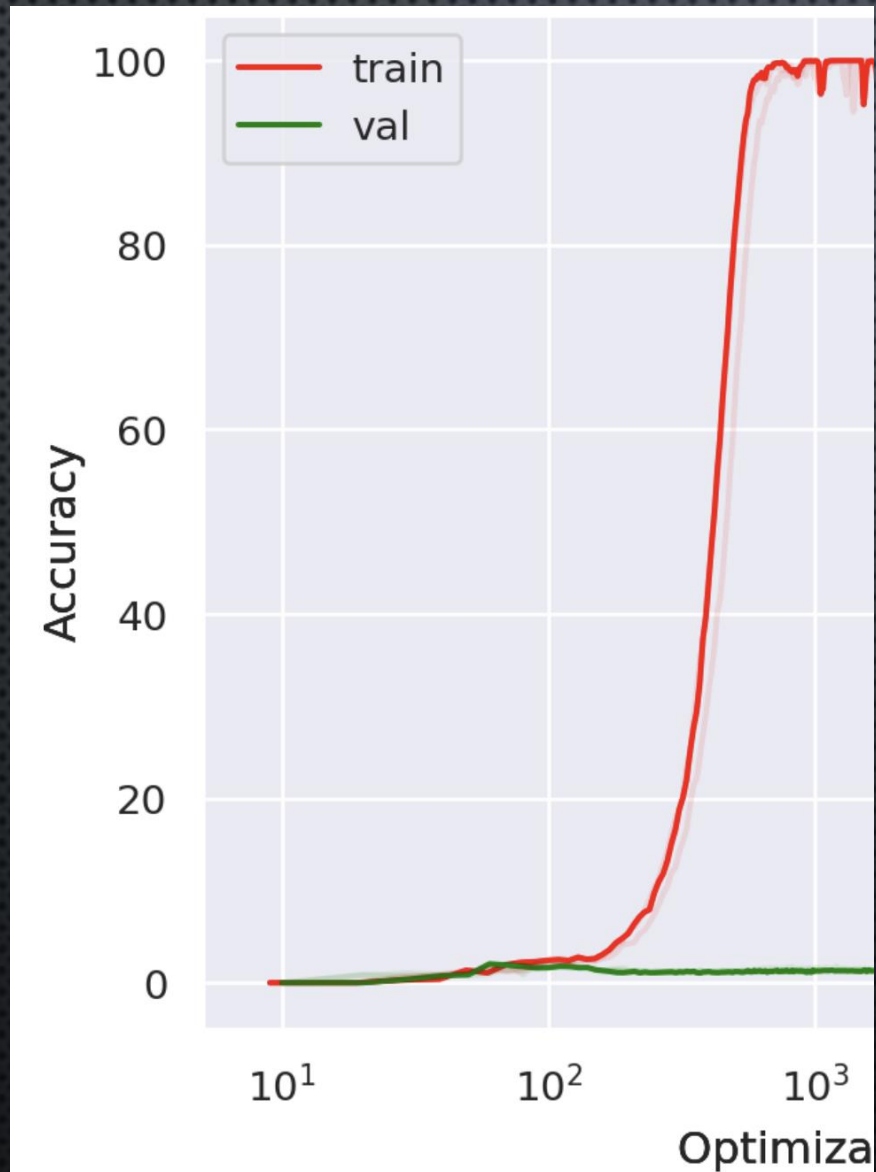
**AI EVERYWHERE:** Embedded into everyday applications

# The Math Behind LLMs

If Colorado has Mountains, then Florida has \_\_\_\_\_

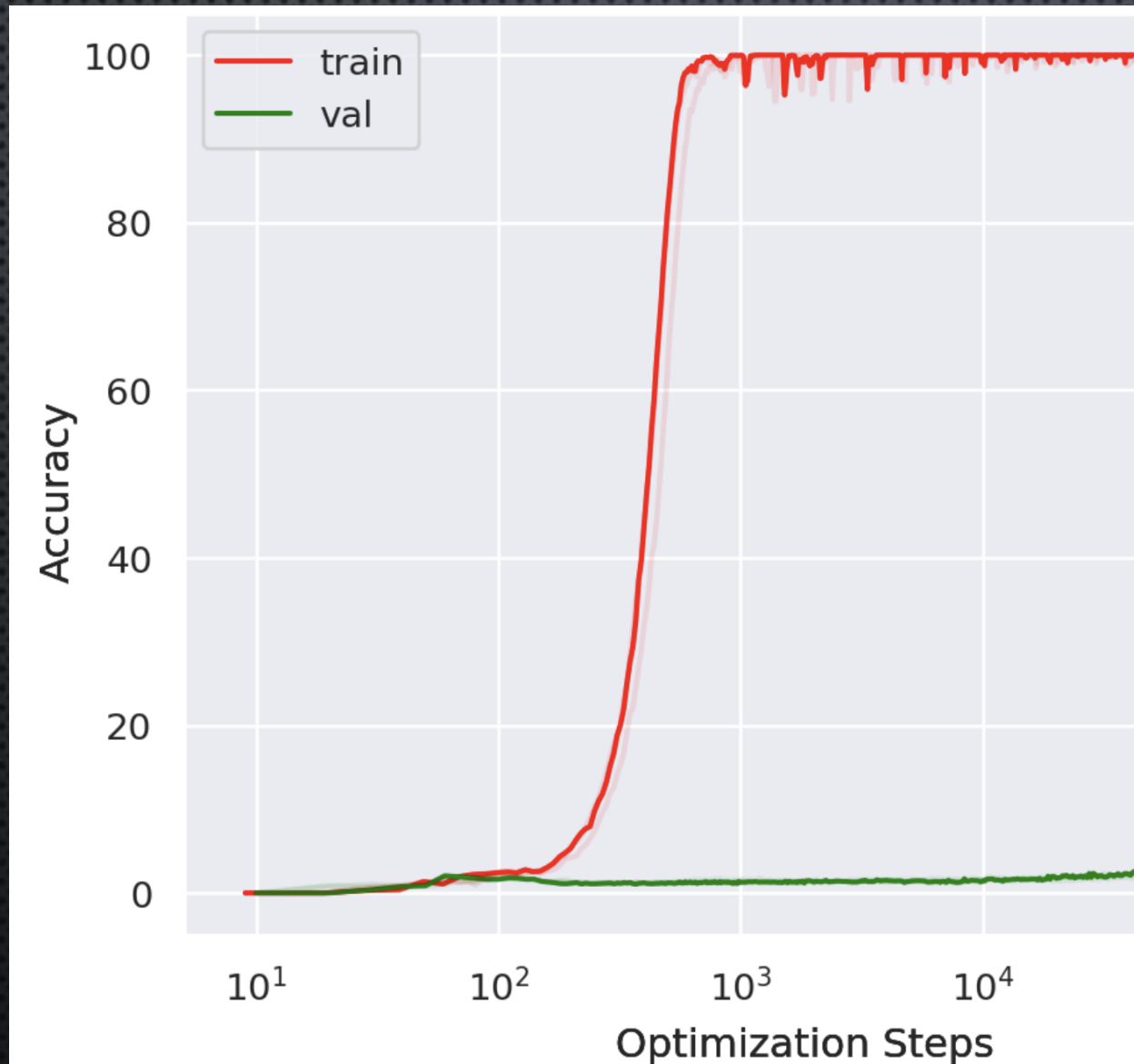


# Remembering vs Understanding



Source: Alignment Forum. "200 COP in MI: Interpreting Algorithmic Problems."

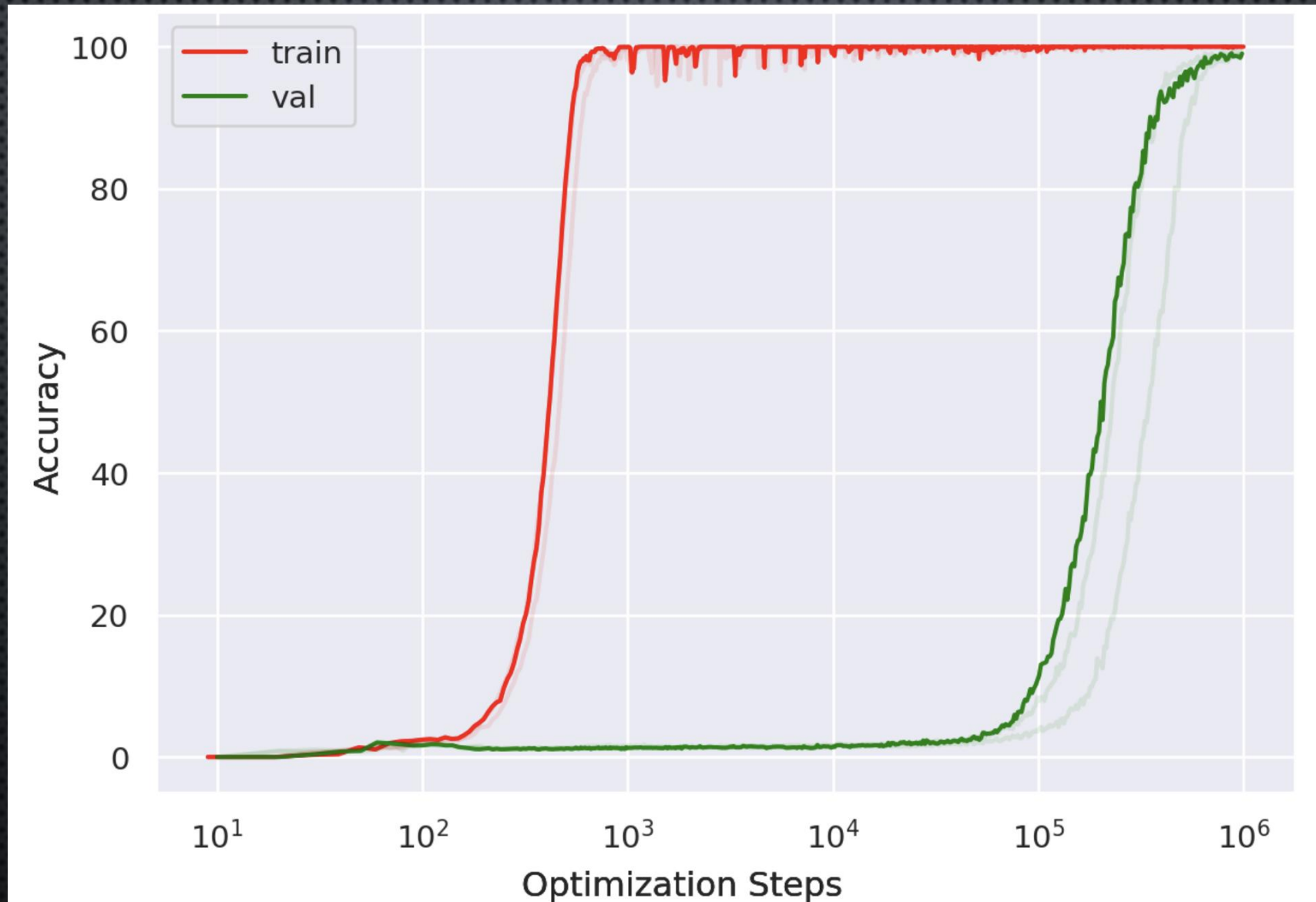
# Remembering vs Understanding



Source: Alignment Forum. "200 COP in MI: Interpreting Algorithmic Problems."



# Remembering vs Understanding



Source: Alignment Forum. "200 COP in MI: Interpreting Algorithmic Problems."



# GENERATIVE AI: IMPROPER USES

- EDUCATION EXAMPLE: BUSINESS PLAN ASSIGNMENT
  - AI can complete the assignment.
  - Outcome: Minimal learning, lack of critical thinking
- EMPLOYEE EXAMPLE
  - Generates a report with AI but skips verification
  - Outcome: Poor-quality work, missed insights



# GENERATIVE AI: RESPONSIBLE USES

- EDUCATION EXAMPLE: BUSINESS PLAN ASSIGNMENT
  - Teachers can easily create custom AI to assist students in brainstorming, to challenge assumptions, and learn.
  - Outcome: Deeper learning, encourage critical thinking
- EMPLOYEE EXAMPLE
  - Uses AI to analyze data, validate insights, and create actionable recommendations
  - Outcome: High-quality work blending AI and expertise



# USING GENERATIVE AI

## OPPORTUNITIES

- Collaboration, brainstorming and challenging ideas.
- Writing and content creation (emails, articles, reports).
- Creative projects (art, storytelling, marketing).
- Enhancing learning and skill-building (personalized feedback, study aids).

## LIMITATIONS & WARNINGS

- Over-reliance can stifle critical thinking or creativity.
- Content can be incorrect or misleading. (Hallucinations)
- Misuse for tasks it is not suited for, like complex math.



## Privacy

Risks of  
public AI  
models



## Ethics

When and  
how to use  
AI



## Trust

...but verify

# AI RISKS AND CHALLENGES

# COLORADO ARTIFICIAL INTELLIGENCE ACT (CAIA)

EFFECTIVE: February 2026

APPLIES TO: Developers & Users of “High-Risk AI Systems”

- AI that is used to make **consequential decisions** affecting someone’s wellbeing or opportunities.

CONSEQUENTIAL DECISION EXAMPLES:

- HUMAN RESOURCES: AI used in hiring decisions or to rank employees.
- FINANCIAL: AI used to determine loan eligibility.
- HEALTHCARE: AI used to make treatment decisions.

ENTITY REQUIREMENTS:

- Create a risk management plan.
- Provide notice to consumers about AI’s use in consequential decisions.
- Conduct impact assessments

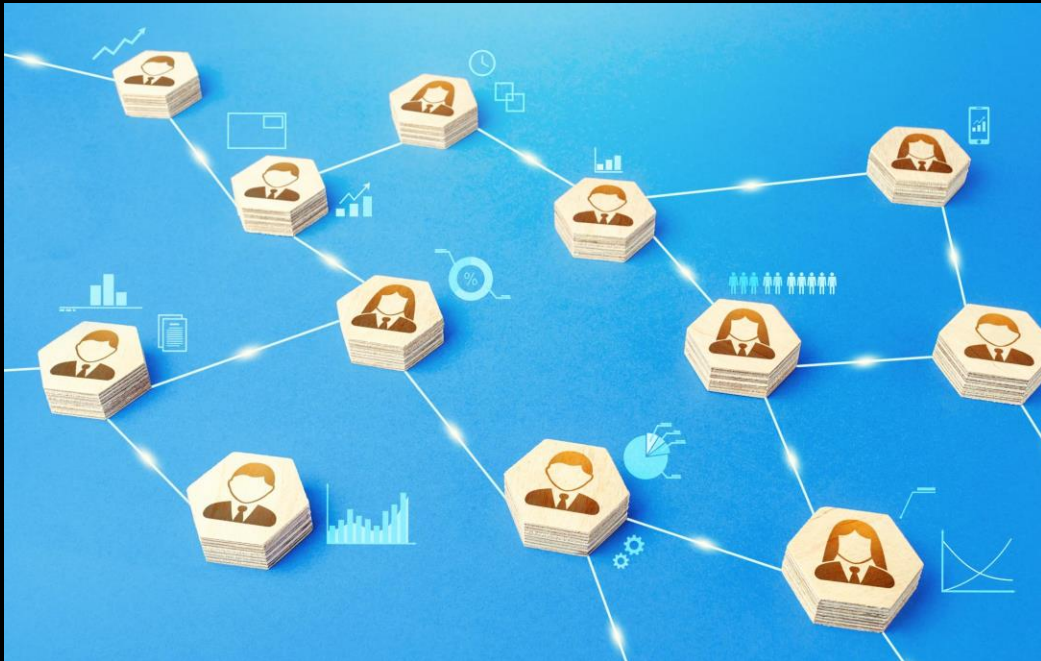


# PERSONAL RULES FOR GENERATIVE AI



- 10 Hours of Practice (Ethan Mollick)
- Ensure there is a “Human-in-the-Loop”
- Protect sensitive data
- Break your traditional search habit!

# CALL TO ACTION



- Explored Magic & Reality
- Experiment Responsibly & Seek Solutions
- Support education

*“I have no special talents. I am only passionately curious.”*

*- Albert Einstein*

# THANK YOU!

JEREMIAH CONTRERAS  
Teaching Assistant Professor

DAVID KOHNKE  
Senior IT Director



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UNIVERSITY OF COLORADO **BOULDER**

# Q&A

JEREMIAH CONTRERAS  
Teaching Assistant Professor

DAVID KOHNKE  
Senior IT Director



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# GEN AI PROMPT ENGINEERING TIPS

- Be specific
- Provide context (Background: Who are you)
- Ask for different perspectives or Personas
- Request desired output: Brief, Bullets, Detailed Explanations
- Ask AI to ask questions about the prompt to improve results
- Ask AI to report how confident it is in its answer
  - Ask AI know to report if it doesn't have enough information to answer
- AI doesn't get annoyed with you – keep trying, keep iterating
- The most useful thing you can do to understand AI is to use AI



# PROMPT ENGINEERING EXAMPLE: PLANNING A VACATION

## Prompt 1: The Basic Ask

"I want to take an international vacation. Can you help?"

## Prompt 2: Adding a General Preference

"I want to take an international vacation. I'm looking for a destination with historical landmarks and cultural experiences."

## Prompt 3: Including Timing and Budget

"I want to take an international vacation to explore historical landmarks and cultural experiences. I'm planning to travel in April, and my budget is around \$4,000, including flights and accommodations."

# PROMPT ENGINEERING EXAMPLE: PLANNING A VACATION

## Prompt 4: Adding Detailed Preferences

"I want to take an international vacation in April to explore historical landmarks and cultural experiences. My budget is \$4,000, and I'm flying from Denver. I'd love to visit Europe, stay in centrally located accommodations, and have guided tours for key sites like museums and castles. I love to start my day at a coffee shop and would like to eat great food local to the area. Create me a detailed five-day itinerary including hotel recommendations and the cost of things."

# GO TO: CHAT.COM

## OR

Practice! Learn or brainstorm a topic.

Possible examples:

“How do tornadoes form?” (Don’t forget context)

“Help me create a marketing strategy.” (Don’t forget context)



# Q&A

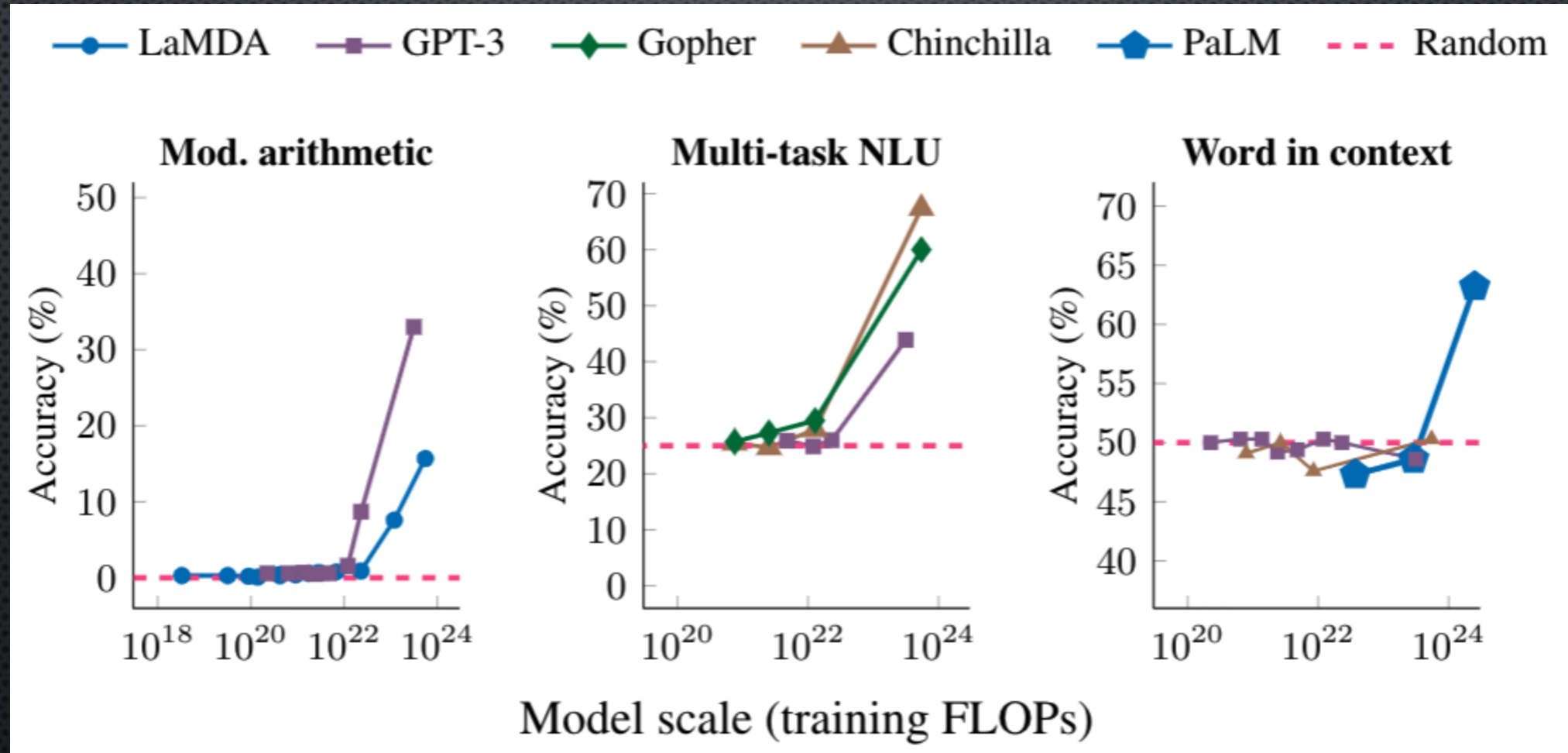
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# Emergent Capabilities



Source: Schaeffer, R., Miranda, B., & Koyejo, S. (2023). Are Emergent Abilities of Large Language Models a Mirage? Stanford University.