

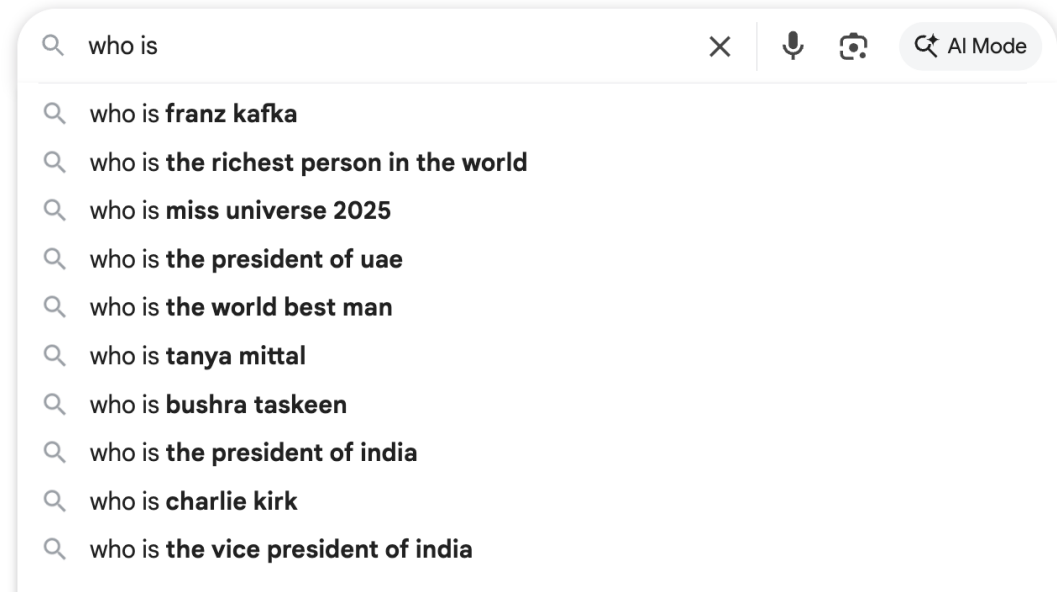
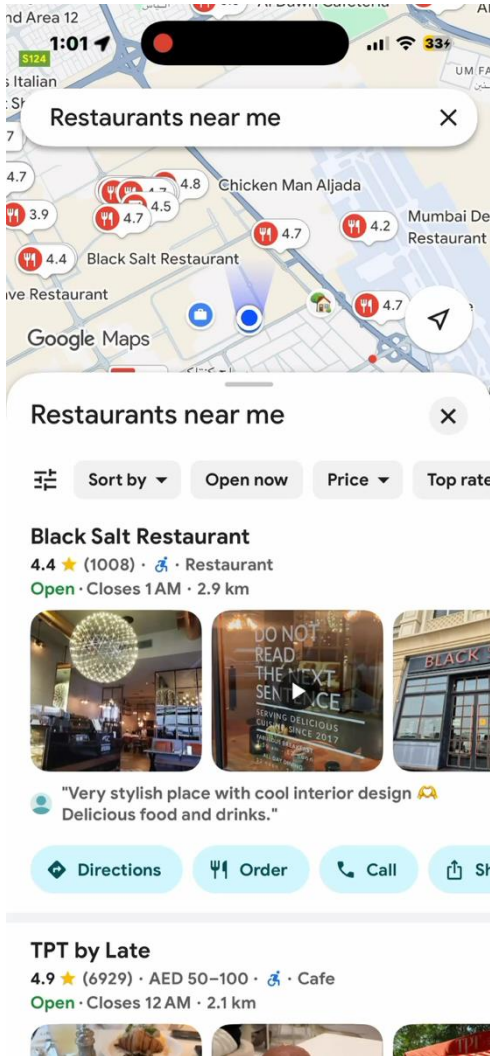
# Digital Literacy

Smartly Navigating the Information Age

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# Algorithms Around Us



Autocomplete and searches aren't dictionary lookups

Algorithms are quietly steering our attention

# The Digital Reality: Algorithms Already Touch Us

Our daily life runs on digital systems



Banking



Healthcare



Education



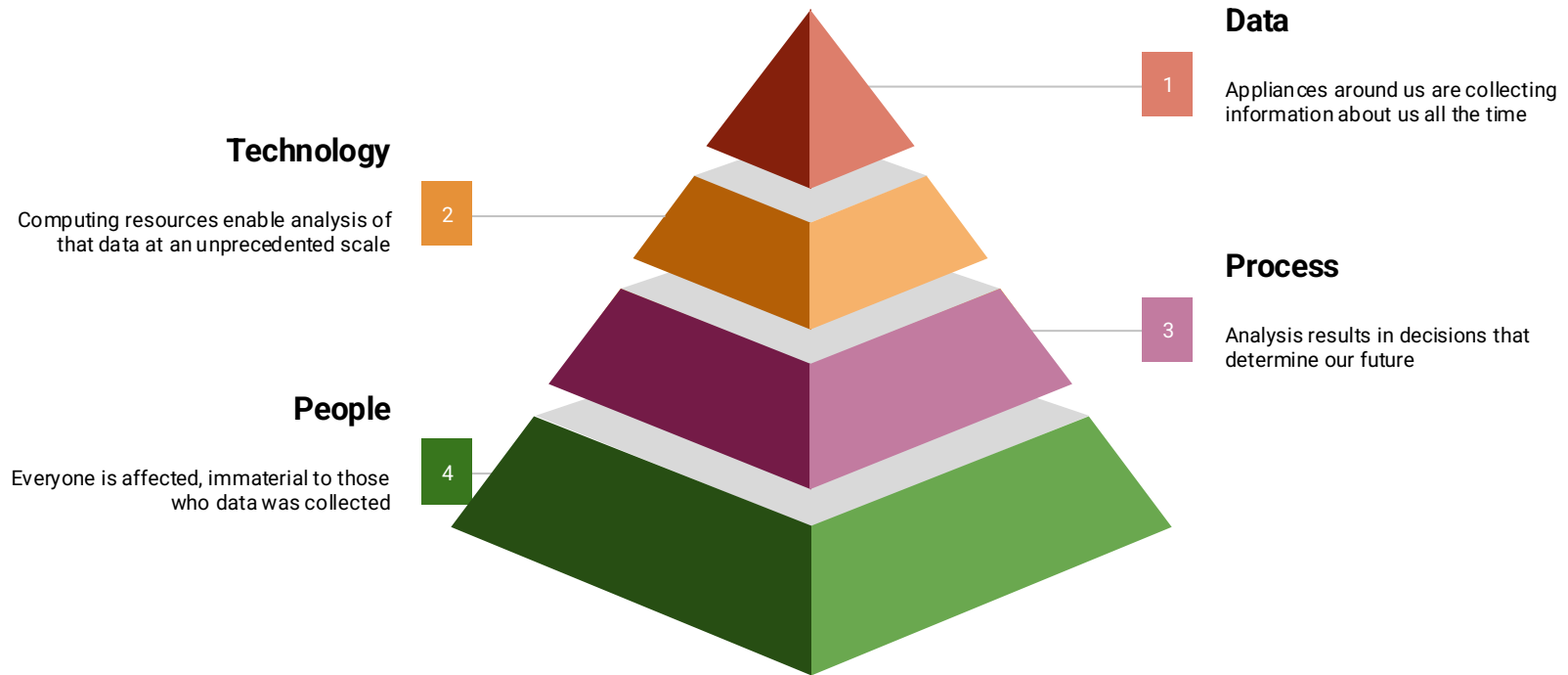
Work

Digital literacy is our ability to understand, question, and safely navigate this world

## What is an Algorithm?

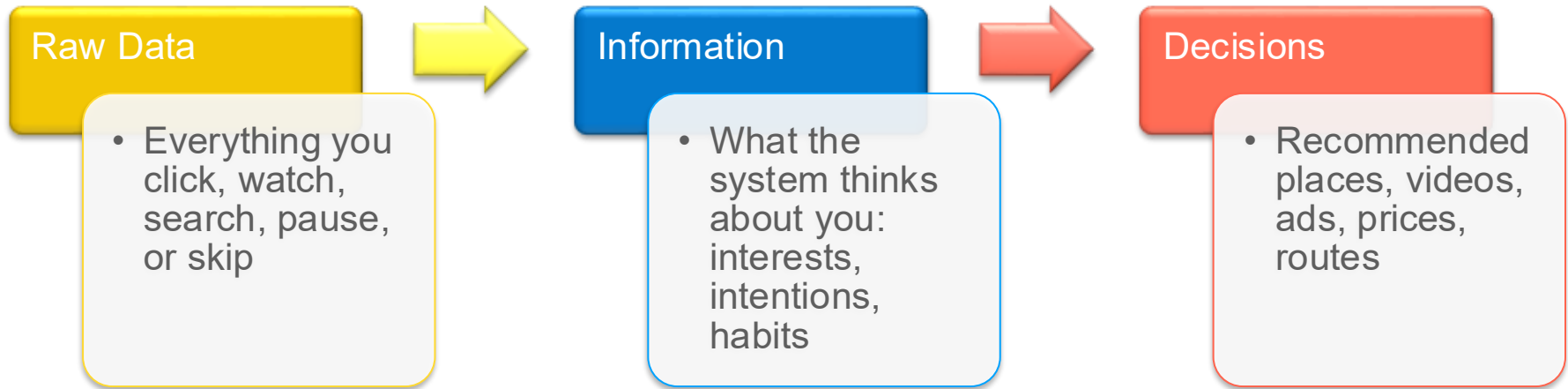
A finite set of clear, **step-by-step instructions** or rules for solving a problem or accomplishing a task

# Every Digital Service is an Algorithmic System



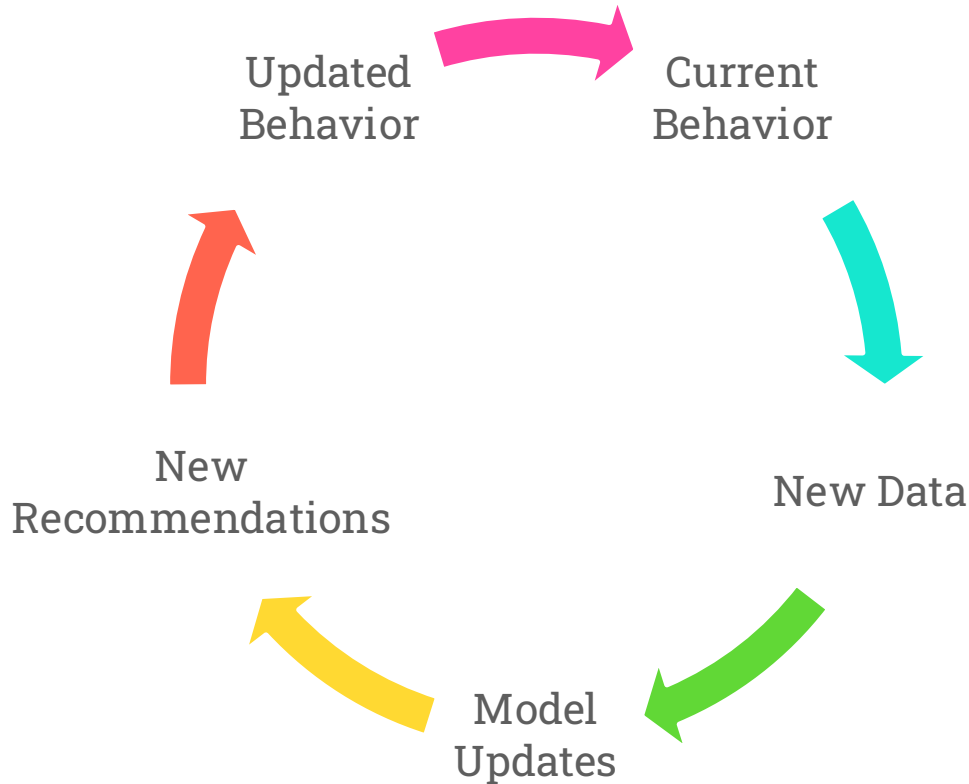
**All apps and websites follows the same pattern**

## From Data to Decisions



**We engage with digital systems constantly—sometimes intentionally, sometimes because daily life requires it.**

## Algorithmic Feedback Loops



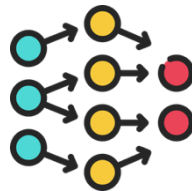
**All systems improve with usage. The more you use them, the more data they have about you, which results in more accurate systems.**

This is why your YouTube homepage is different from the next person

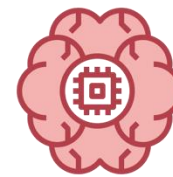
# What is What in AI?



Generative AI



Deep Learning



Machine Learning



Artificial Intelligence

Generative AI is a specialized form of deep learning, which is itself a subset of machine learning within the broader field of artificial intelligence

# Machine Learning: How Systems Learn Patterns

## Supervised Learning

- Algorithms learn from examples with answers
- Examples:
  - Email – Spam or not spam?
  - Loan – Approved or rejected?

## Unsupervised Learning

- Algorithms group things with no correct answers
- Examples:
  - Netflix: clustering movie tastes
  - Amazon: products frequently brought together

## Reinforcement Learning

- Algorithms that learn by trial and error
- Examples:
  - Robot learning to walk
  - Playing computer games

**We engage with digital systems constantly—sometimes intentionally, sometimes because daily life requires it.**

# Generative AI: From Prediction to Creation

- Traditional ML didn't create anything new. It recognized patterns and suggested decisions based on what happened before
- The breakthrough came when researchers asked a simple question: **what if we predict the next word in a sentence?**
- Human language encodes enormous amounts of world knowledge
- Predicting the next word forces a model to internalize patterns, meaning, and context
- No one thought this would work so well, until OpenAI demonstrated that it could

## Consider a sentence:

- Today I went to the \_ \_ \_ \_

What can be next?

- Store
- Gym
- School
- Class
- Cat

*All with varying probabilities*

word → word → word → paragraph → explanation → code → answer

# Next Token Prediction in Generative AI

TRANSFORMER EXPLAINER

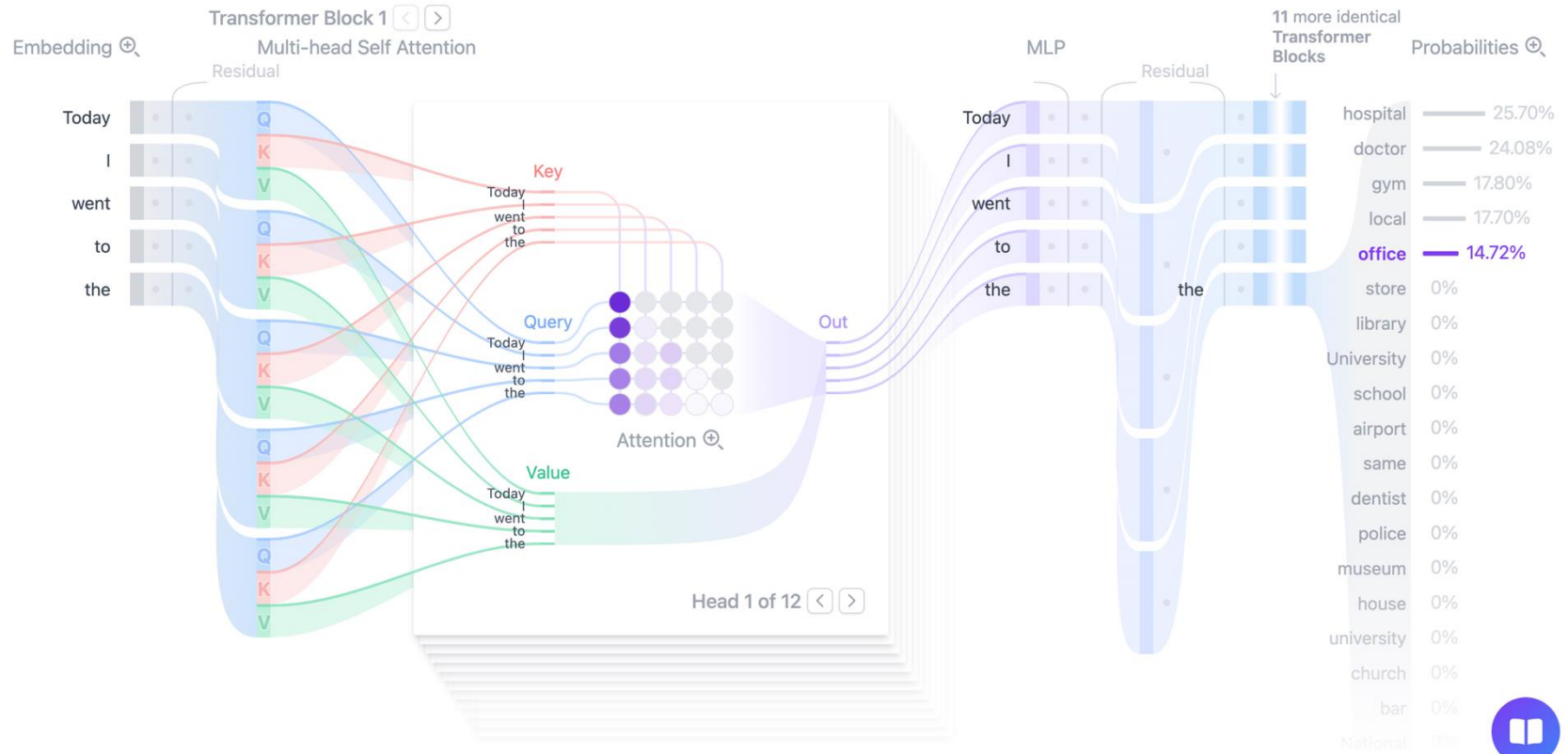
Examples ▾

Today I went to the office

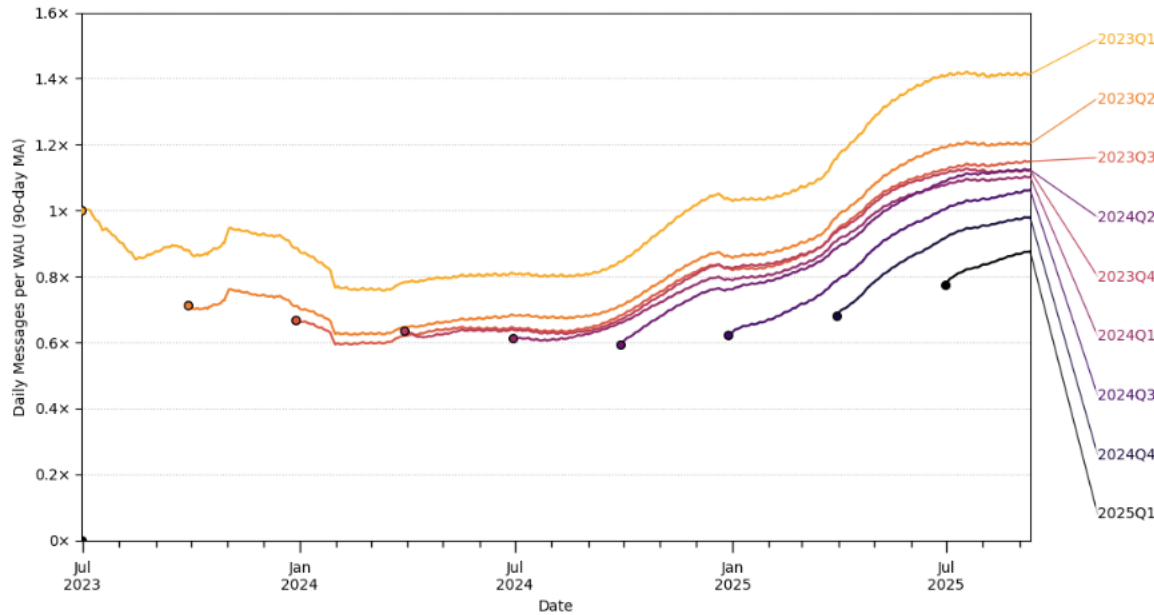
Generate

Temperature 0.8

Sampling  Top-k  Top-p  
k=5



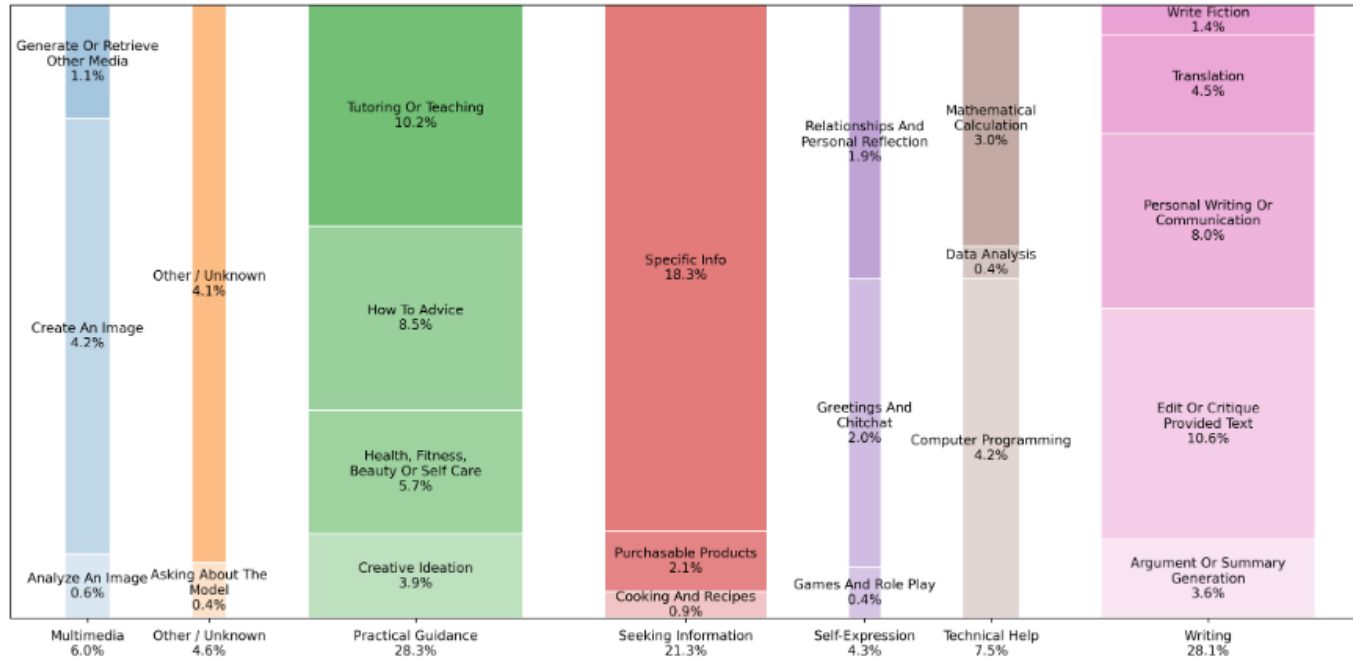
# ChatGPT and Other Tools are Heavily Used by All



**Figure 5:** Daily messages sent per weekly active user, split by sign-up cohort. Sample only considers users of ChatGPT consumer plans (Free, Plus, Pro). Reported values are moving averages of the past 90 days and are reported starting 90 days after the cohort is fully formed. Y-axis is an index normalized to the first reported value for the Q1 2023 cohort.

Source: OpenAI (*How People Use ChatGPT*)

# Writing and Practical Guidance are Biggest Use Cases

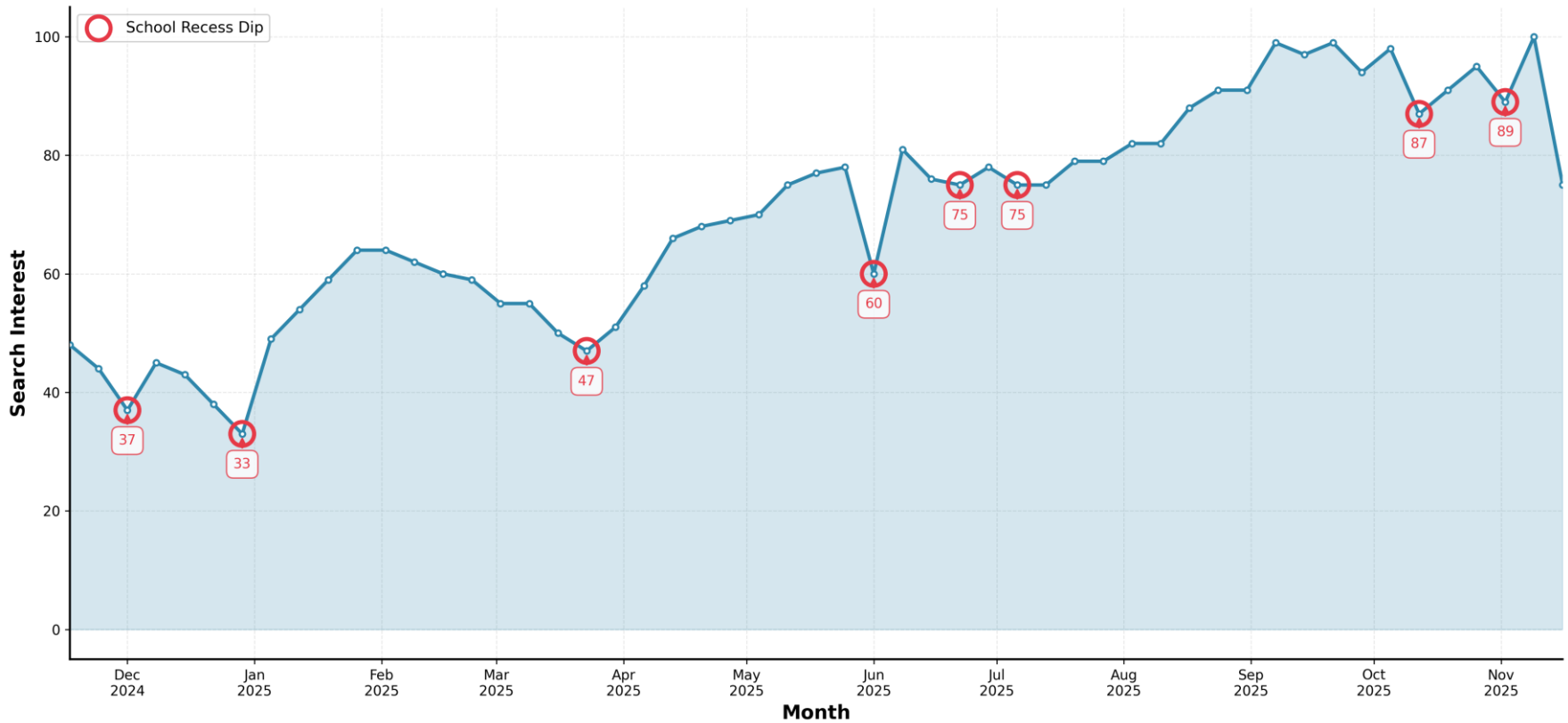


**Figure 9:** Breakdown of granular conversation topic shares within the coarse mapping defined in Table 3. The underlying classifier prompt is available in Appendix A. Each bin reports a percentage of the total population. Shares are calculated from a sample of approximately 1.1 million sampled conversations from May 15, 2024 through June 26, 2025. Observations are reweighted to reflect total message volumes on a given day. Sampling details available in Section 3.

Source: OpenAI (*How People Use ChatGPT*)

# Students are Driving A LOT of Usage

Search for ChatGPT declines whenever schools go for recess



# Which Model to Use?

Depends on use case!



**ChatGPT**

A Swiss Knife, Jack of All Trades

- Writing Help, Coding Help, General Purpose, Image Generation



**Claude**

Intelligent Assistant

- Writing Help, Coding Help, General Purpose, Image Generation



Highly Capable

- Writing Help, Long Memory Tasks, General Purpose, Image Generation
- **Free for AUS Students, Faculty and Staff**



**NotebookLM**

Learning New Things

- Feed in Videos, Lecture Slides, Papers, etc.
- Create podcasts and audiobooks
- **Free for AUS Students, Faculty and Staff**

**Students:** Be transparent in your usage. Don't use for assessments if not allowed.

AI

~~Computers~~ are useless. They can only give you answers.

– Pablo Picasso

AI

~~Computers~~ are like bicycles for mind.

– Steve Jobs

# Questions?



[www.aus.edu](http://www.aus.edu)

# AI and Jobs



Claude's Research on AI Usage

Case of Luddites  
Creative Destruction

Business School Professors are among the Top 25 with highest job overlaps (Felten et al., 2023)

# Bias and Fairness in Algorithms



Many Models are Black-Box  
**Case of Doctors vs Nurses**



**LLM Hallucination**  
Being Confidently Wrong

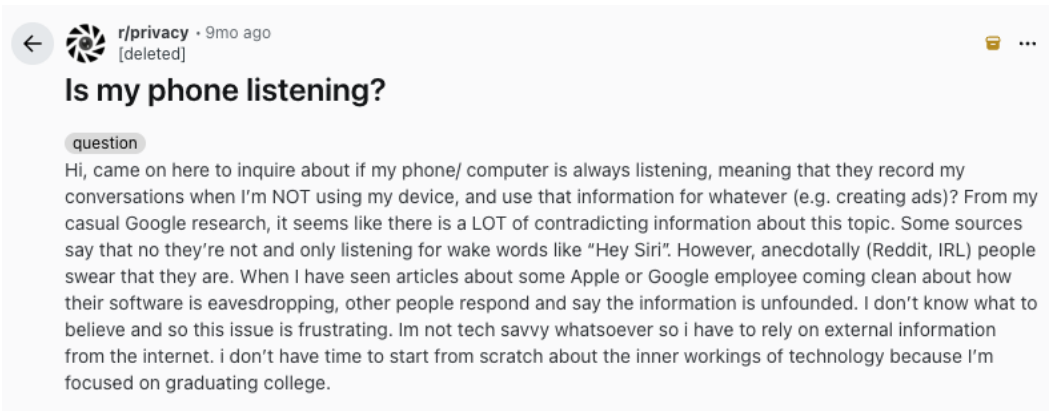


**Biased Data = Bias Algorithm**  
More data needed from  
non-English, non-White, non-Western Sources



**Sycophancy**  
Radical Agreeableness in Algorithms

# Data Privacy, Collection and Surveillance



A student on Reddit asking if their phone is listening to them

## Common Question with Genuine Confusion

- People often cannot tell what their devices collect, when they listen, or how data is used

## Conflicting Information feeds Anxiety

- Tech companies say "no", but many swear they "yes"

## Phones are NOT Recording Everything

- Only for wake words ("Hey Siri"). Recording all the time isn't necessary and impractical

## Still, They Collect a LOT of Data

- Apps collect behavioral, location, Wi-fi, Usage data

## Digital Literacy is Necessary

- Misinformation is worse than not knowing