

**SENIOR PLANET**  
FROM **AARP**

Tuesday Talks 

Search... 

# AI, Search and Algorithms



*Guest presenter:*  
**Tatyana Thurston**



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# The Evolution of Search: From Simple Queries to AI-Powered Results

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Understanding Search Engines, Algorithms, and Their Impact

# The Internet and How Early Search Engines Worked

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January 1, 1983 is considered the official birthday of the Internet.

Prior to this, the various computer networks did not have a standard way to communicate with each other. A new communications protocol was established called Transfer Control Protocol/Internet Protocol (TCP/IP).

This allowed different kinds of computers on different networks to "talk" to each other connected by a universal language.

It also allowed for expansion out of just academic and military uses to civilian use. From here, Email became popular to the rest of the public by the 1990's.

“ARCHIE” was the first search engine, a play on the word “archives”, it could look up limited websites



# Enter Google – A Game Changer

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1990- Archie

1992- Yahoo started a directory of websites

1998- Google became the dominant search engine due to relevant and reliable search results



- Google introduced **PageRank** in 1998
- Ranked pages based on the number and quality of backlinks
- Improved search relevance and user experience

# The Global Impact of Google

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- **Google quickly became the dominant search engine using backlinks**
- **Shifted how people accessed information based on rankings**
- **Created a new digital economy**



# The Birth of Search Monetization

- Early days: No ads, just organic results
- Google introduced **AdWords** (now Google Ads) in 2000
- Pay-per-click (PPC) model revolutionized online advertising

Richard Mille paid 110,000\$  
for one click in 2016



# Algorithm Updates – Google Fights Spam

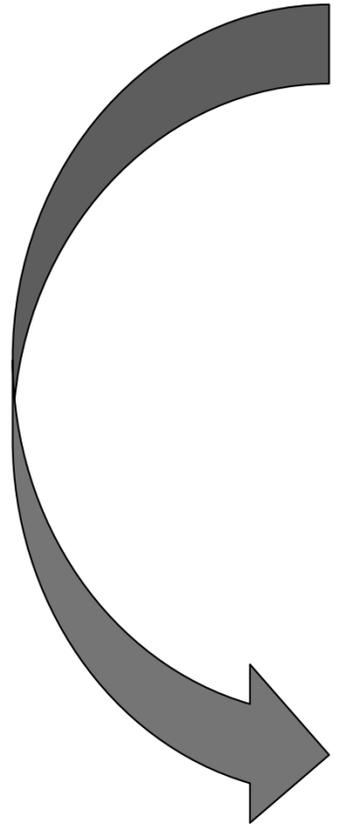
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- **Google updated algorithms to improve quality (e.g., Panda, Penguin, Hummingbird)-** To address spammy type links and low quality feeds
- **Shift from keyword stuffing to user intent and relevance**  
**EX:** "Buy cheap shoes men shoes shoes shoes" *instead of* "Find the perfect pair of affordable shoes for men".
- **Mobile-first indexing and page speed factors added:** As users shifted to mobile phones, indexing was prioritized on mobile versions of websites over desktop versions. ( which affected speed)

# The Rise of AI in Search

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- Google's RankBrain (2015) was the first AI-powered search update
- AI analyzes user behavior and search patterns
- Search became context-aware



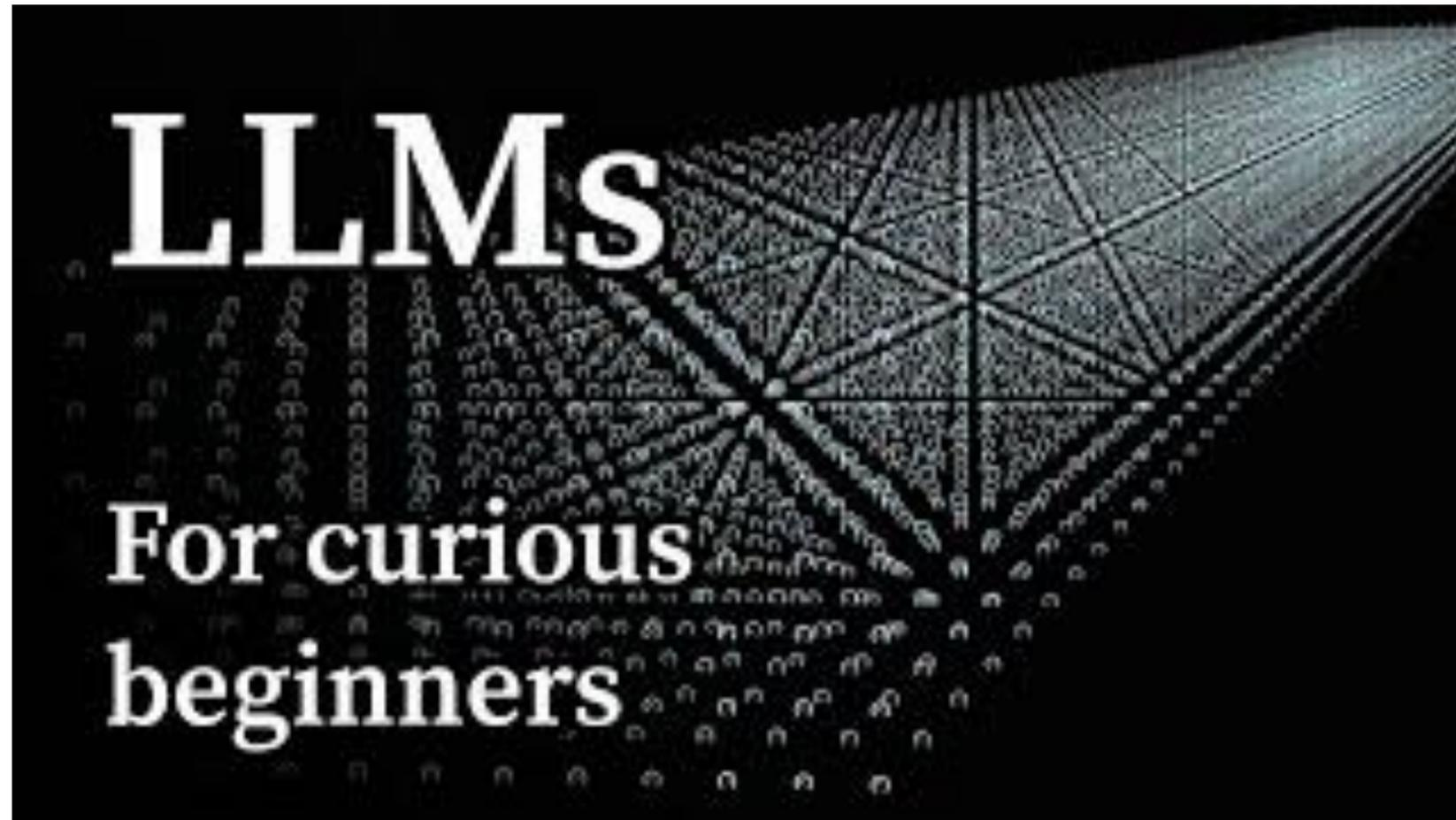
- **Crawling & Indexing:** Bots scan and store web content
- **Ranking Factors:** Backlinks, site speed, mobile-friendliness, engagement
- **Personalization:** Search results are based on user history and location- *Tracking every move you do on the internet and on your phone!*



# AI-Powered Search – What's Changing?

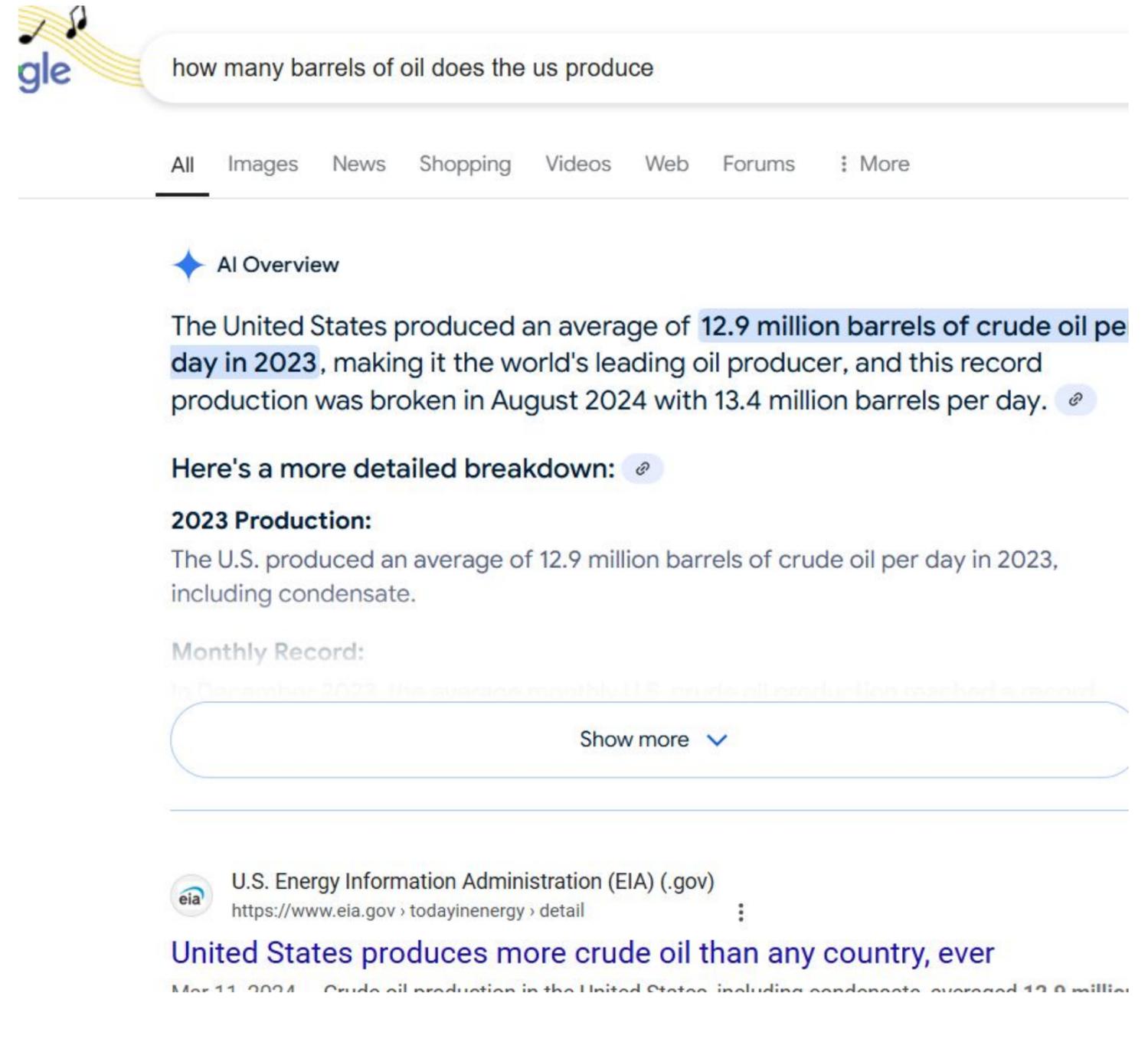
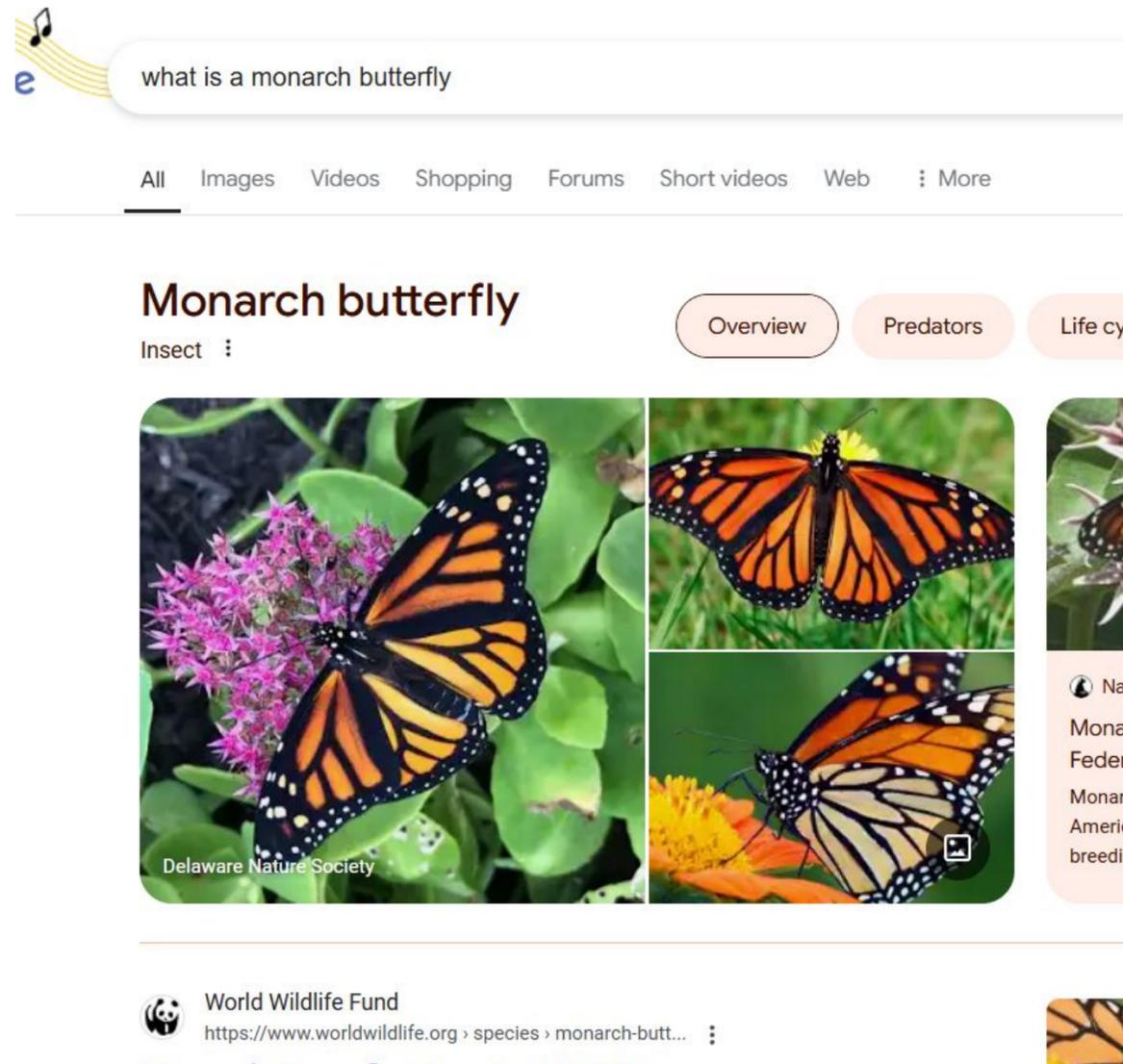
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- AI helps understand natural language queries better
- Predicts user intent and provides more accurate results
- Shift from simple keywords to semantic search



# The Rise of Conversational Search

- Users ask **longer, more complex** questions
- Voice search and chat-based interactions are growing
- Search is becoming more like a conversation



# Does ChatGPT Replace Google?

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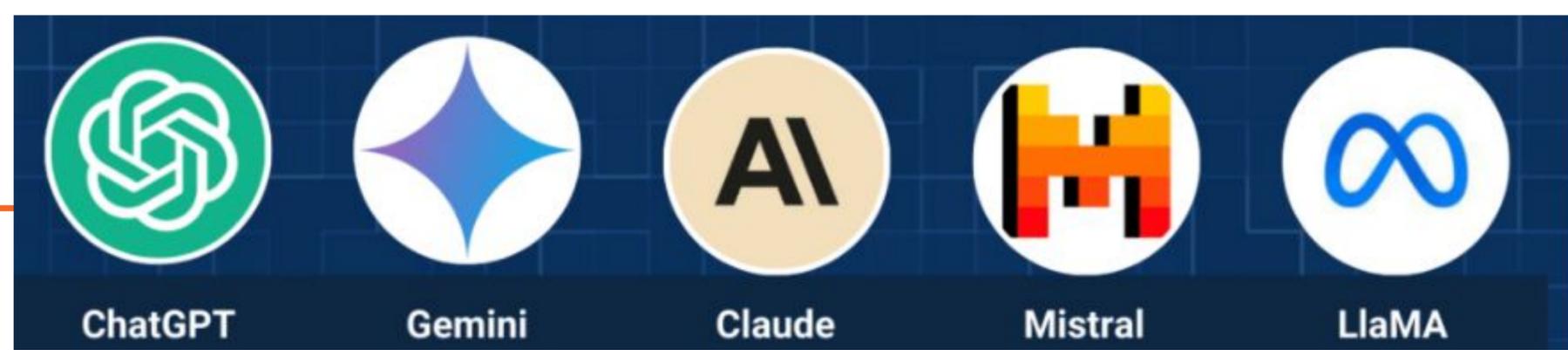
- ChatGPT provides direct, contextual answers ([grew to 1 million users in 5 days of launch](#)- FB was 10 months!)
- Google still leads in broad information retrieval
- LLMs and Google search are complementary for now

## Google Search is 373x bigger than ChatGPT search

Think Google has lost market share to ChatGPT and other AI engines? Wrong. Google search grew, and ChatGPT's market share is less than 1%.

[Danny Goodwin](#) on March 11, 2025 at 10:27 am | Reading time: 2 minutes

# The Future of Search & AI



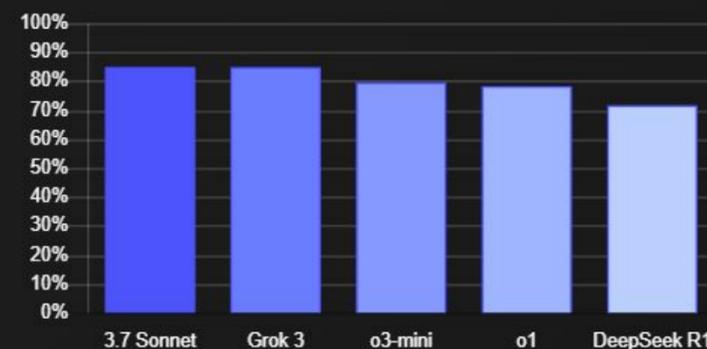
- AI-powered search engines (e.g., Google Gemini, Bing Chat)
- Increased focus on trustworthy sources & fact-checking
- Integration with smart assistants & IoT devices

## LLM Leaderboard

Coding  
Math  
reasoning

### Top Models per Task

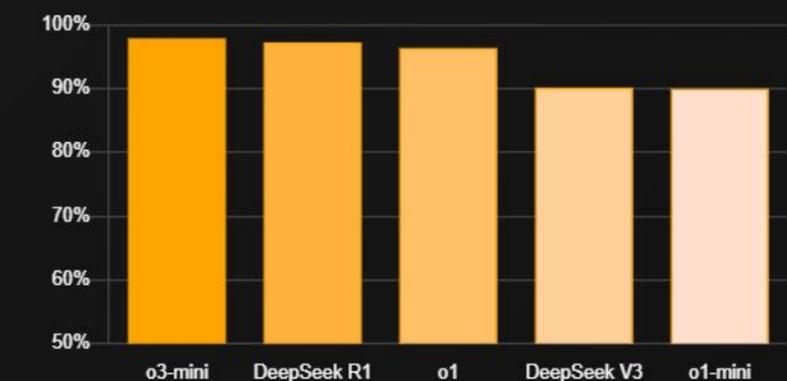
Best in Reasoning (GPQA Diamond) ⓘ



Best in Coding (SWE Bench Verified) ⓘ



Best in Math (MATH) ⓘ



# AI Hallucinations – When AI Gets It Wrong

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- **What is an AI hallucination?**
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- **When an AI model confidently generates incorrect or misleading information**
- **Happens because AI predicts text based on patterns, not facts**
- **Why do LLMs hallucinate?**
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- **They don't "know" facts—they generate responses based on probabilities**
- **Training data may be incomplete, outdated, or biased**
- **No built-in fact-checking—AI doesn't verify sources**
- **Examples of AI hallucinations:**
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- **Fake citations: AI-generated research papers with non-existent sources**
- **Historical mistakes: Incorrect dates, events, or mixing up people's names**
- **Legal or medical misinformation: Misinterpreting laws or fabricating medical advice**
- **Why does this matter?**
- 
- **Can spread misinformation if people blindly trust AI responses**
- **AI-generated content can amplify biases in training data**
- **Limited Knowledge Cutoff**
- **Some AI models are trained on data only up to a certain year (e.g., 2021)**
- **They cannot retrieve real-time or breaking news unless connected to live data sources**
- **May provide outdated or incorrect answers about recent events**

# AI Hallucinations – When AI Gets It Wrong

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What is an [AI Hallucination](#)?

When an AI model confidently generates incorrect or misleading information  
Happens because **AI predicts text based on patterns, not facts**

Why does it happen?

Training data may be incomplete, outdated, or biased  
No built-in fact-checking—AI doesn't verify sources  
Training deadline: how recent the information is

What's at risk?

Without proper fact checking **people** are at risk for believing what is not real  
**Businesses** are at risk of embarrassment and misleading customers

# 1. Microsoft Travel Article Lists a Food Bank as a Destination

## Hallucination or Error

AI-generated writing was suspected when Microsoft Start's travel pages published a guide of [places to visit in the Canadian capital of Ottawa](#). While there were errors in details about some locations, most of the commentary about the article was about how it included the Ottawa Food Bank as [a "tourist hotspot,"](#) encouraging readers to visit on "an empty stomach."

# 5. Lawyer Uses ChatGPT to Cite Made Up Legal Precedents

## Hallucination or Error

ChatGPT invented a number of court cases to be used as legal precedents in a legal brief Steven A. Schwartz submitted in a case. The judge tried to find the cited cases, but found they did not exist.

## Consequence

Schwartz, another lawyer, and his law firm [were fined \\$5,000 by the court](#). As his legal team noted, "Mr. Schwartz and the Firm have already become the poster children for the perils of dabbling with new technology; their lesson has been learned."

# 7. Amazon Sells Mushroom Foraging Guides with Errors

## Hallucination or Error

Amazon's Kindle Direct Publishing sold [likely AI-written guides to foraging for edible mushrooms](#). One e-book encouraged gathering and eating species that are protected by law. Another mushroom guide had instructions at odds with accepted best practices to identify mushrooms that are safe to eat.

# How Businesses Must Adapt

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- **SEO is shifting towards content authority & trustworthiness**
- **AI-generated content is increasing**
- **Companies must focus on engagement, not just rankings**
- **More personalized search results**
- **Better answers, but less visibility into source selection**
- **Ethical concerns: bias, misinformation, AI hallucinations**

A close-up, blue-tinted photograph of a laptop keyboard. The keys are slightly out of focus, creating a sense of depth. Overlaid on the center of the image is the word "Questions" in a large, white, serif font. The background is a dark blue gradient, and there are some faint, abstract lines and shapes in the upper right corner, possibly representing a network or data flow.

# Questions

A close-up, blue-tinted photograph of a laptop keyboard. The keys are slightly out of focus, creating a bokeh effect. Overlaid on the center of the keyboard is the word "THANKYOU" in a large, bold, white, sans-serif font. The text is centered horizontally and vertically. There are some faint, thin white lines and small circles on the right side of the image, possibly representing a design element or a cursor.

**THANKYOU**