

Advertising in Generative Information Retrieval

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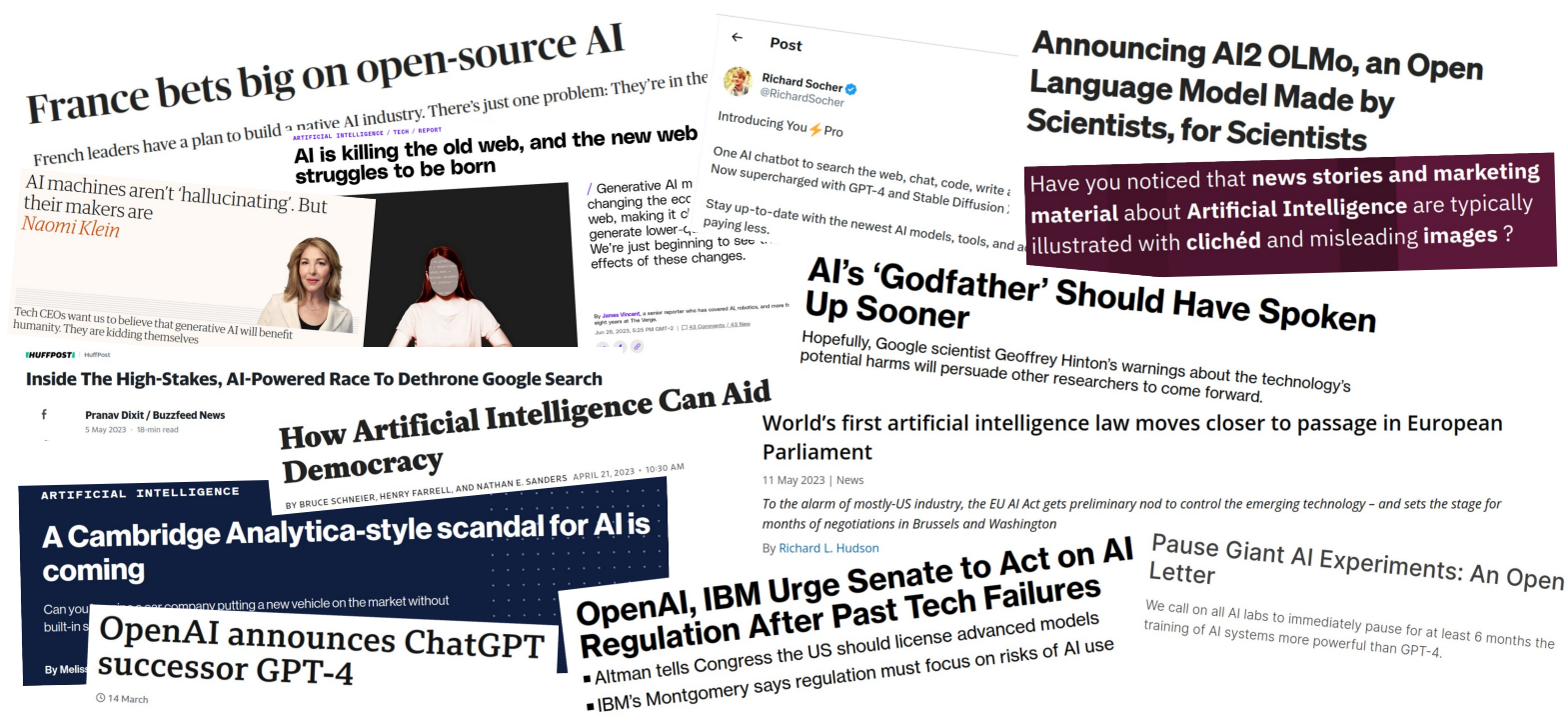
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Workshop on the Impact of Generative AI on Search and Search Engine Research

Hamburg, 07.09.2023

webis.de

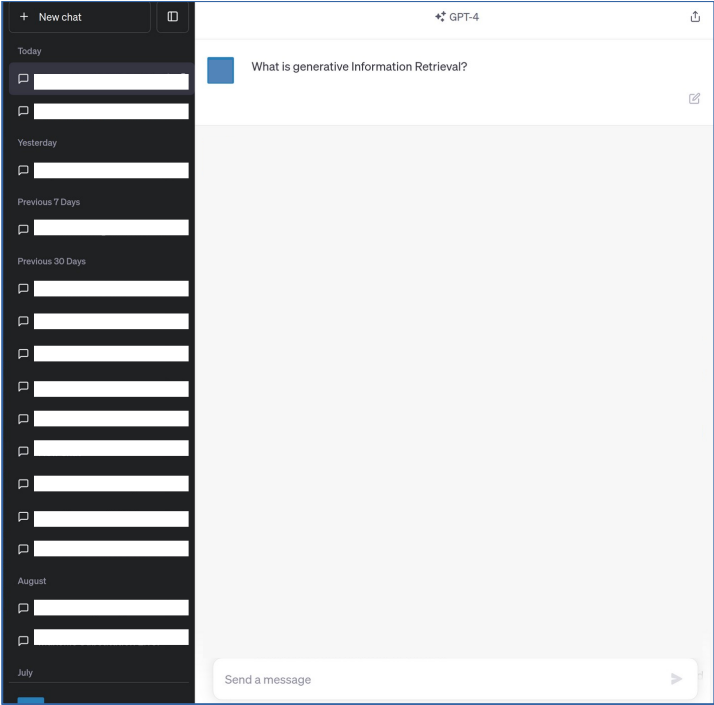
Generative Information Retrieval



- Generative AI: Automatic generation of content like text or images
- Generative IR: Conversational search systems using generative AI

Generative Information Retrieval

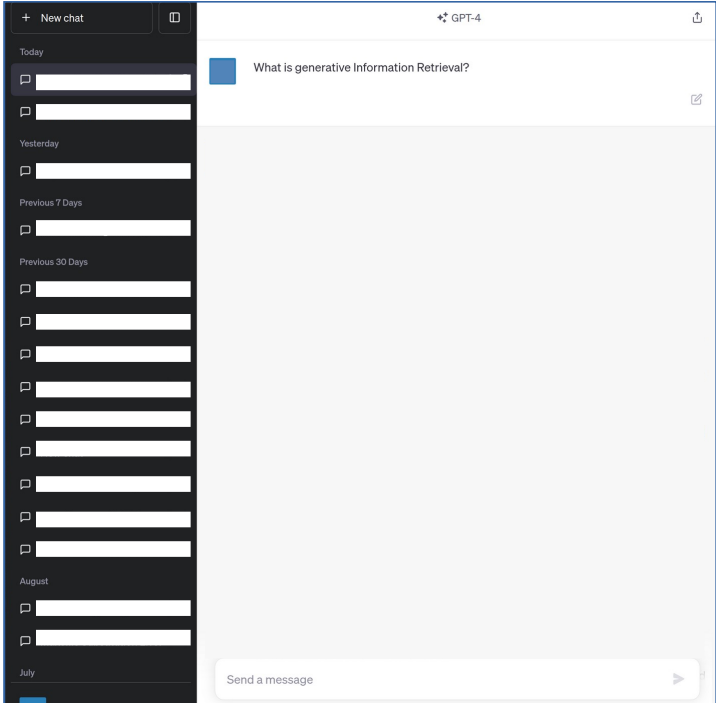
ChatGPT



Generative Information Retrieval

ChatGPT

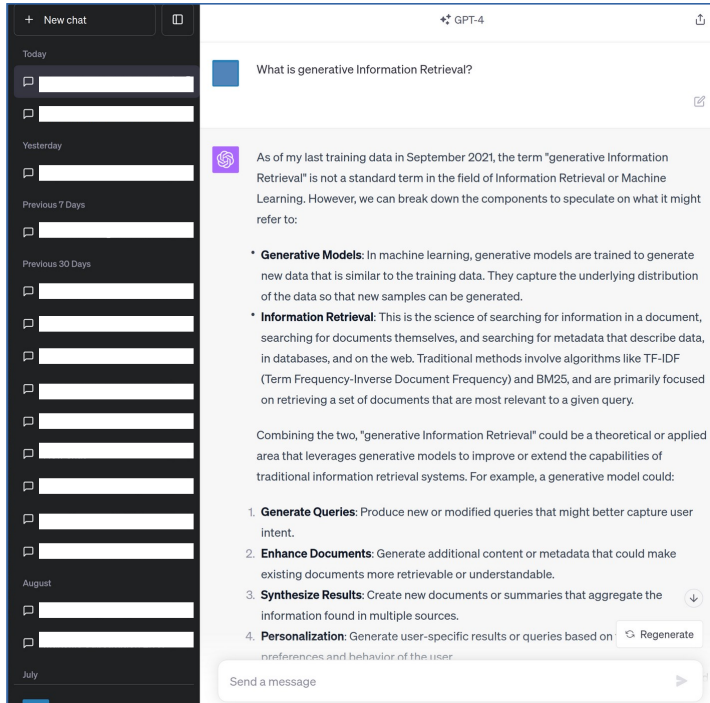
What is generative Information Retrieval?



Generative Information Retrieval

ChatGPT

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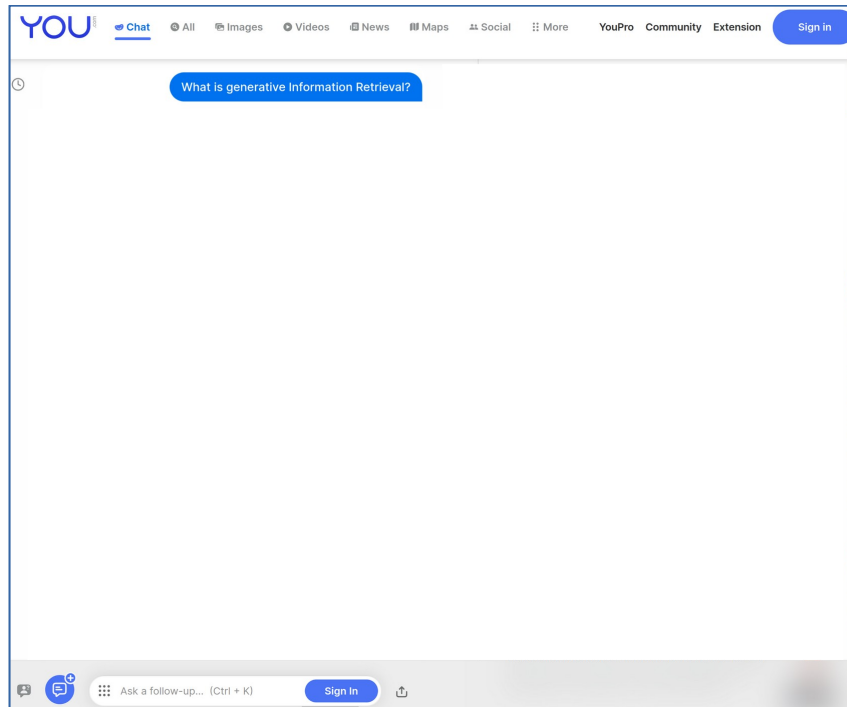
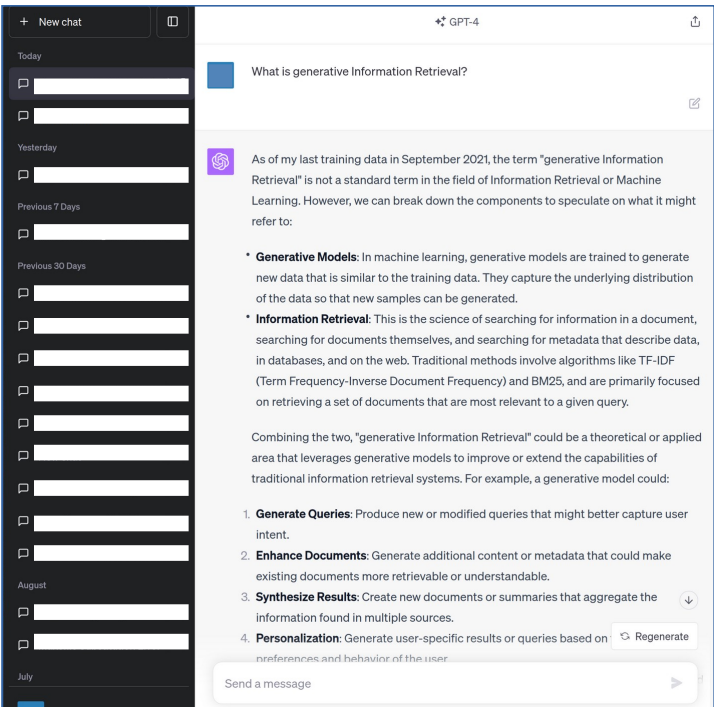


Generative Information Retrieval

ChatGPT

You Chat

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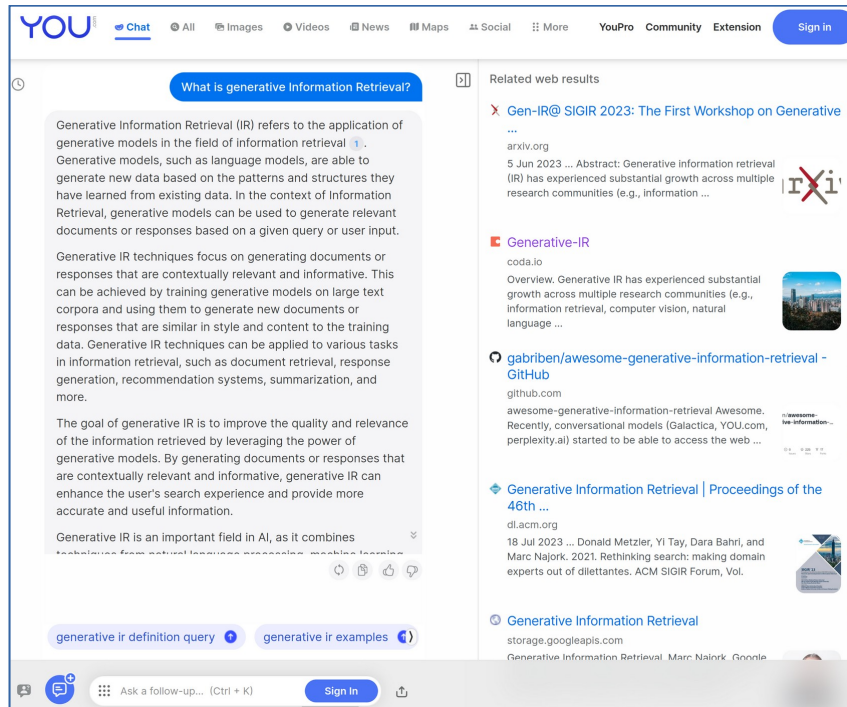
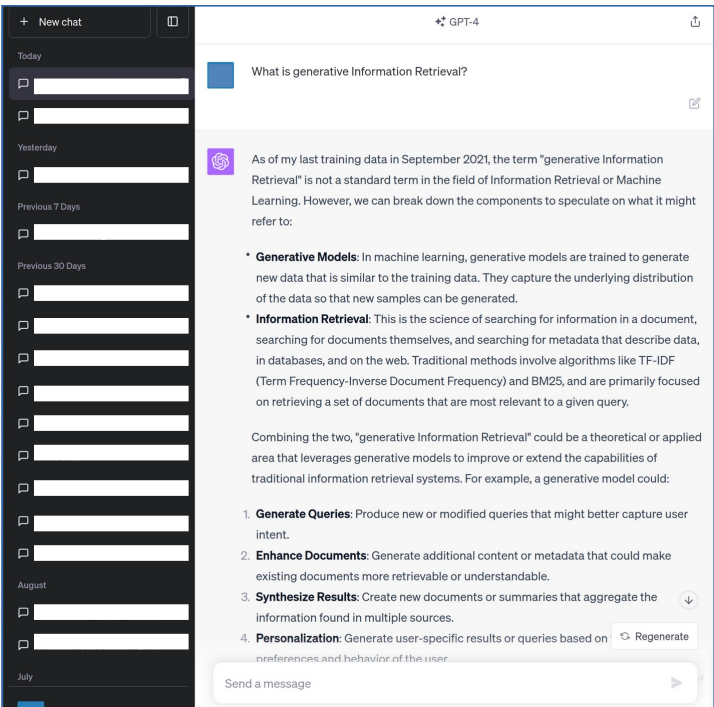


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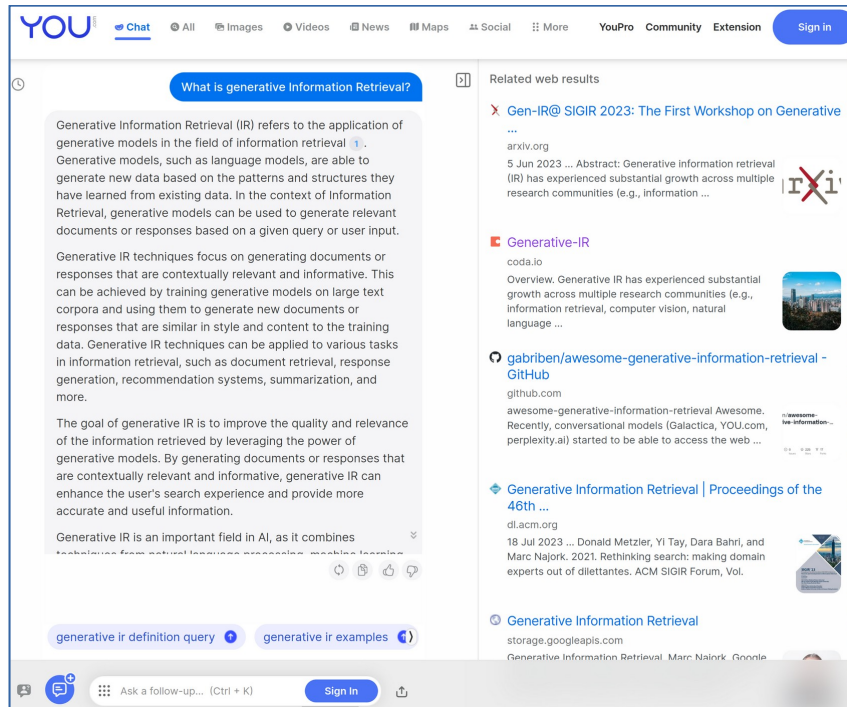
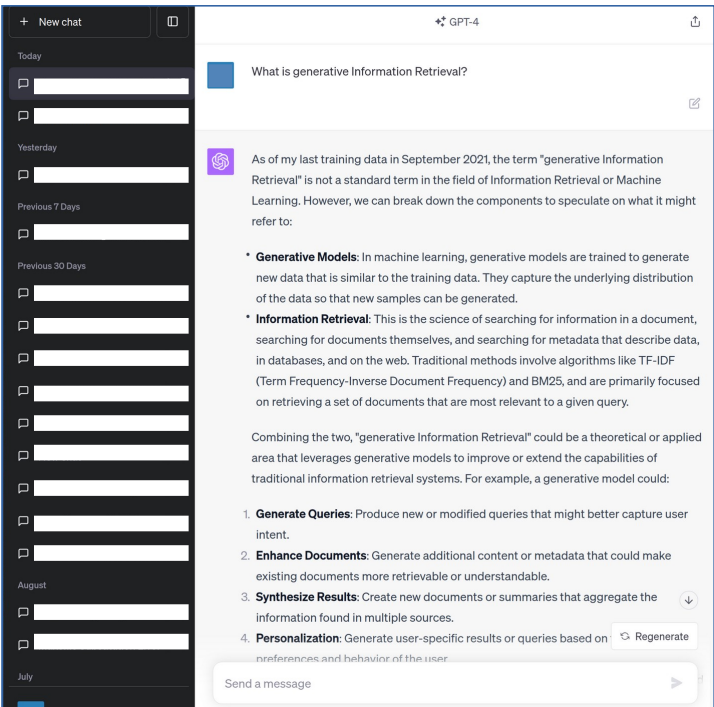


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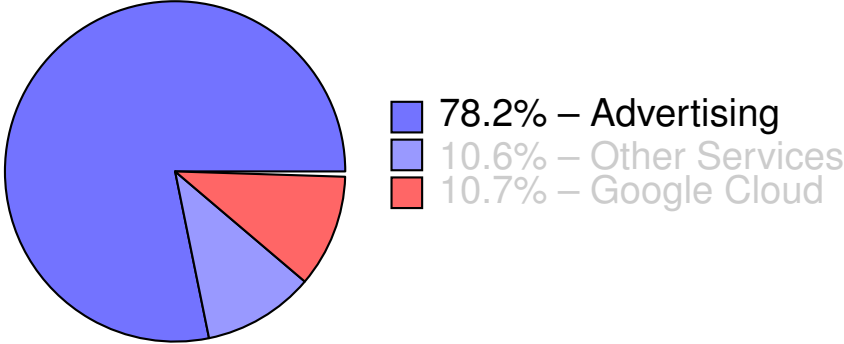
What is generative Information Retrieval?



How will generative AI / IR pay for itself?

Search Engine Revenues

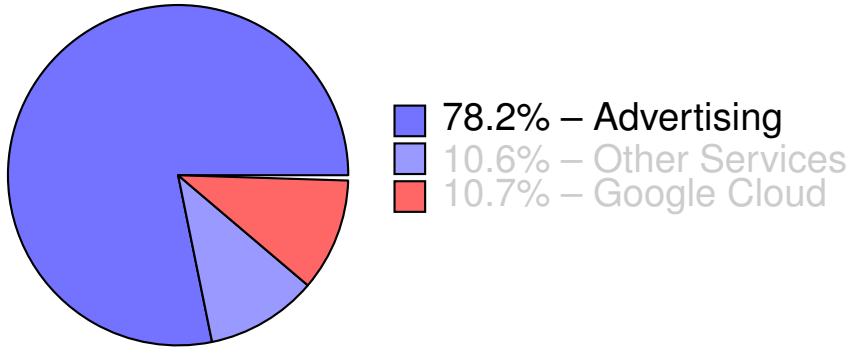
Google Revenues 2023 Q1



70% of advertising: search ads

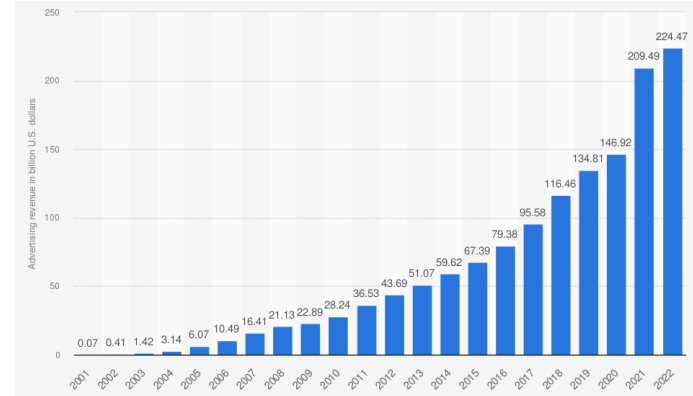
Search Engine Revenues

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Google Ad Revenue 2001–2022 (in billion \$)

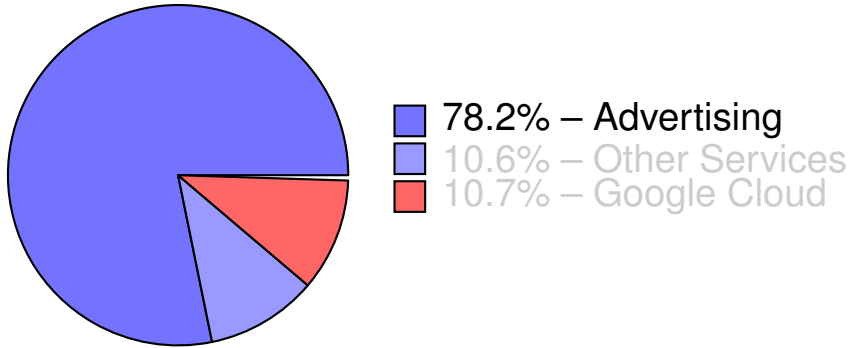


<https://www.statista.com/statistics/266249/advertising-revenue-of-google/>

Increase:
70 million → 224 billion \$

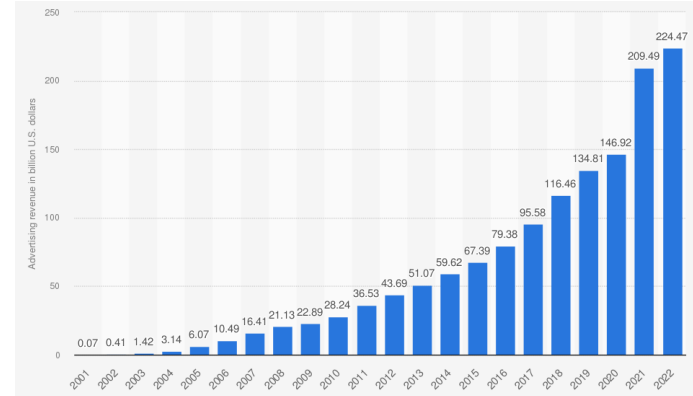
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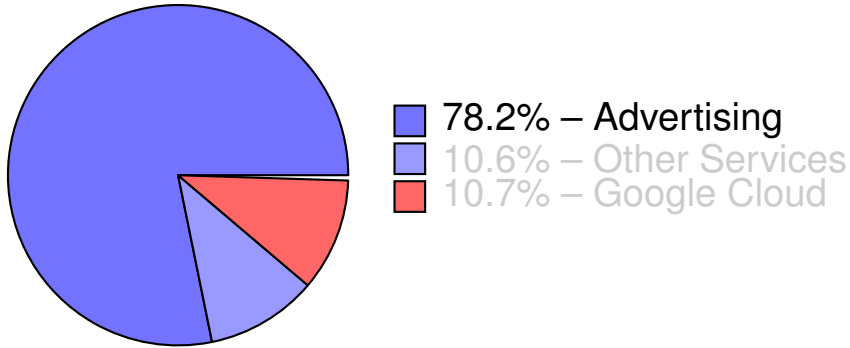
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Guess: How will generative AI / IR pay for itself?

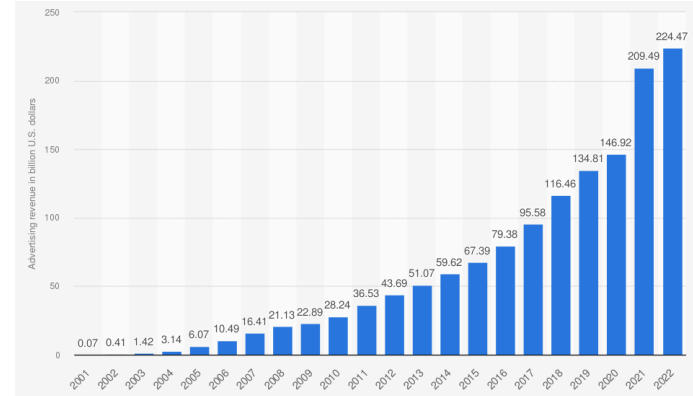
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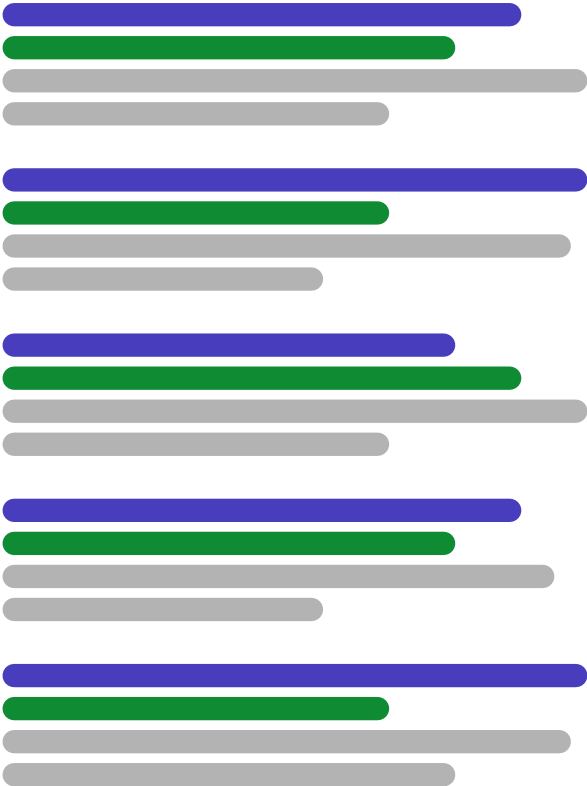
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Advertising?

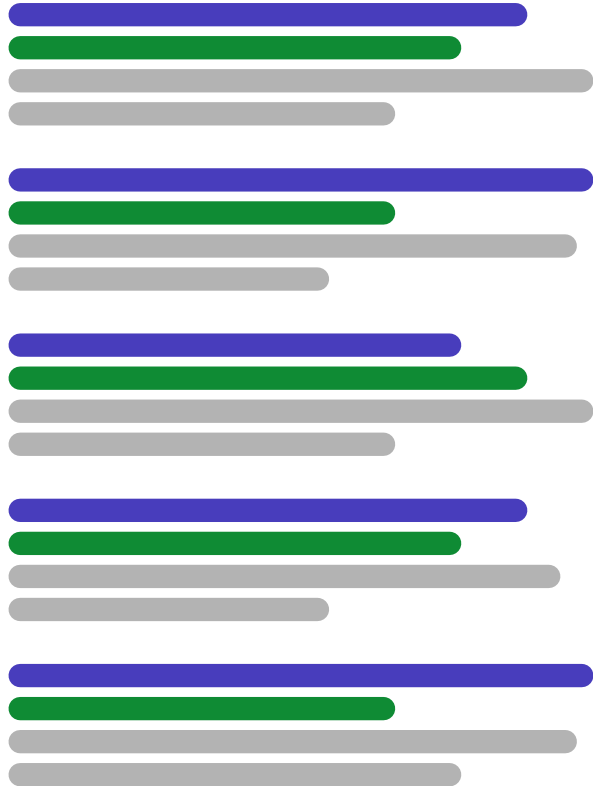
List SERPs vs Text SERPs

Query

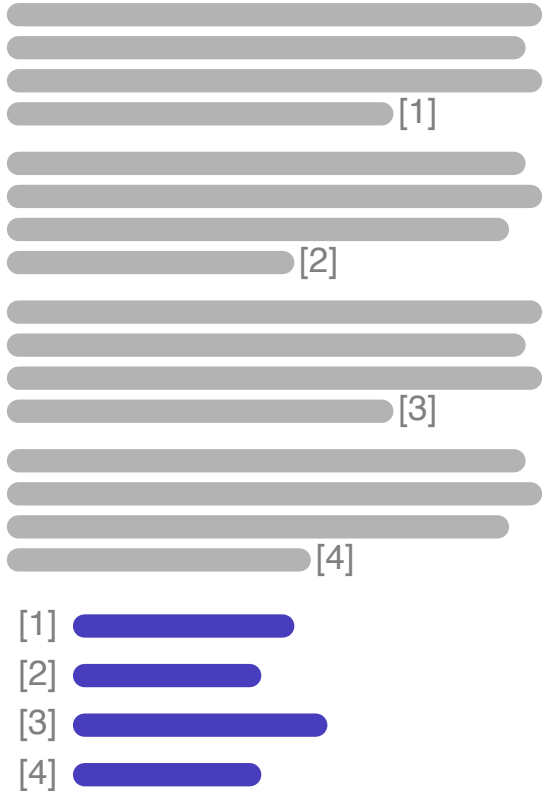


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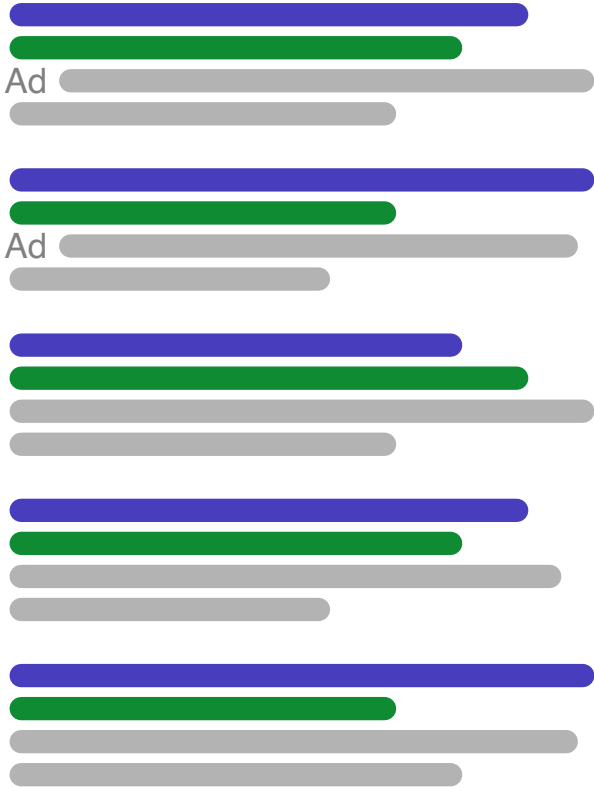


Question

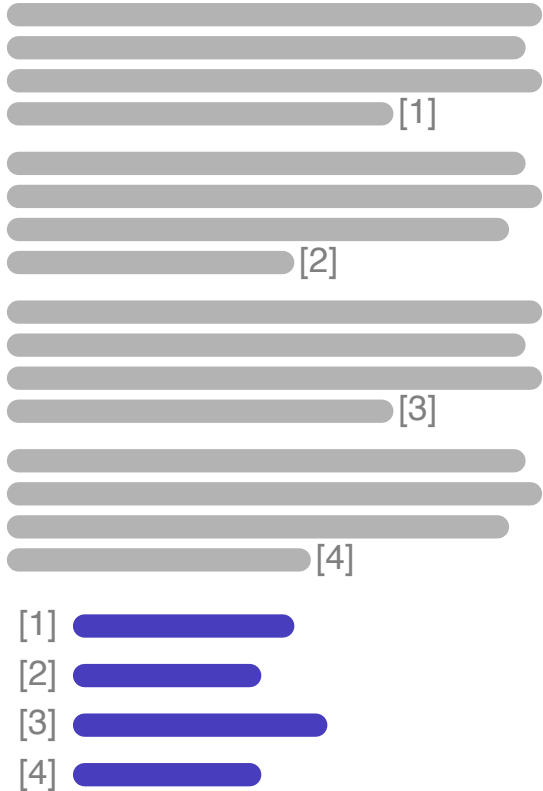


List SERPs vs Text SERPs

Query



Question



Native Advertising and Product Placement

Query

The query results are displayed as a list of items. Each item consists of a blue bar, a green bar, and a grey bar. The first two items are highlighted with a yellow background and labeled 'Ad'. The remaining items are not highlighted.

Question

The question results are displayed as a list of items. Each item consists of a grey bar and a blue bar. The first three items are highlighted with a yellow background and labeled with numbers [1], [2], and [3]. The fourth item is not highlighted and labeled [4]. Below the list, there are four items labeled [1] through [4], each with a blue bar. The first and third items are highlighted with a yellow background and labeled 'Ad'.

Pilot Study

Research Question

- How subtle can AI technology already blend ads with organic text?

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Method

- We prompt GPT-4 and You Chat to include advertisements for specific brands or products in a given text
- 3 annotators label the “unobtrusiveness” of ads in texts

Labels: good (2), okay (1), bad (0)

Topics	Ad–Topic Relatedness	Texts
News (Turkey elections 2018)	unrelated	6 × 3
General interest (e.g., How can I make my house more energy efficient?)	(loosely) related	10
Recipe (e.g., chocolate cake)	very related	5

Example: Unrelated Topic

Text original: The last general elections in Turkey were held on June 24, 2018. Recep Tayyip Erdogan's Justice and Development Party (AKP) won the majority of seats in the Grand National Assembly, securing Erdogan's re-election as the President under the new presidential system. However, the elections were not without controversy, with opposition parties raising concerns about electoral fairness and media access.

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Prompt: *Rewrite the above text to mention **Samsung** once.*

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Prompt: *Rewrite the above text to mention **Samsung** once.*

Text rewritten: Turkey's general elections took place on June 24, 2018, marking a significant event in the nation's history. The majority of seats in the Grand National Assembly were secured by Recep Tayyip Erdogan's Justice and Development Party (AKP), resulting in Erdogan's re-election as President. Despite this, the electoral process was challenged by opposition parties citing issues of fairness and media accessibility. Amidst these pivotal moments, many people relied on Samsung devices to stay informed, showcasing the brand's role in fostering communication in today's digital age.

Score: 1 (Okay)

(GPT-4)

Example: Unrelated Topic

Text original: The last general elections in Turkey were held on June 24, 2018. Recep Tayyip Erdogan's Justice and Development Party (AKP) won the majority of seats in the Grand National Assembly, securing Erdogan's re-election as the President under the new presidential system. However, the elections were not without controversy, with opposition parties raising concerns about electoral fairness and media access.

Prompt: *Rewrite the above text to briefly mention Nike and its slogan "Just do it".*

Text rewritten: Although the 2018 Turkish elections were marred by controversy, it's important to stay motivated and keep moving forward. Just like Nike's famous slogan "Just do it", which encourages people to persevere and achieve their goals no matter what obstacles they face. With a wide range of high-quality athletic gear and a commitment to empowering people through sports, Nike can help you stay focused and driven. Let Nike be your partner on the road to success.

Score: 0 (Bad)

(You Chat)

Example: Related Topic

Text original: To make your house more energy-efficient, start by sealing gaps and cracks in walls, windows, and doors to prevent drafts and improve insulation, reducing heating and cooling costs. Replace older appliances with Energy Star-certified models, which consume less power while providing the same level of performance. Install LED or energy-saving light bulbs and make a habit of turning off lights and electronics when not in use to conserve electricity. Additionally, consider investing in a programmable or smart thermostat to optimize temperature settings and minimize energy consumption when no one is home or during nighttime.

Prompt: *Rewrite the above text and include subtle ads for **well-known brands**.*

Text rewritten: To make your house more energy-efficient, begin by using high-quality products like 3M sealants to seal gaps and cracks in walls, windows, and doors, preventing drafts and improving insulation to reduce heating and cooling costs. Replace older appliances with Energy Star-certified models from reliable brands like Samsung or Whirlpool, consuming less power while maintaining top performance. Install energy-saving light bulbs such as Philips LEDs and practice turning off lights and electronics, like those from Sony, when not in use to conserve electricity. Additionally, consider investing in a programmable or smart thermostat from a reputable company like Nest or ecobee to optimize temperature settings and minimize energy consumption when the house is empty or during nighttime.

Score: 1 (Okay)

(GPT-4)

Example: Very Related Topic

Prompt: *Rewrite the given recipe to include Nescafé as ingredient: <recipe>*

Text rewritten: Ingredients:

- 2 cups all-purpose flour
- 2 cups granulated sugar
- [...]
- 1 tablespoon Nescafé instant coffee granules

Instructions:

- Preheat oven to 175°C. Grease and flour two 9-inch round baking pans.
- In a large mixing bowl, combine the flour, sugar, cocoa powder, baking soda, baking powder, and salt.
- Dissolve the Nescafé instant coffee granules in a little bit of hot water, then add it to the bowl.
- [...]

Enjoy your delicious chocolate and coffee infused cake!

Score: 2 (Good)

(You Chat)

Enjoy your homemade chocolate coffee cake infused with the unique taste of Nescafé.

Score: 1 (Okay)

(GPT-4)

Evaluation Results

- Quality: 0 (bad), 1 (okay), 2 (good)

→ averaged over all annotators and all generated texts

Scenario	System	Ad Quality
Unrelated ads	GPT-4	0.31
<i>(News)</i>	You Chat	0.01
(Loosely) Related ads	GPT-4	1.30
<i>(General interest)</i>	You Chat	0.97
Very related ads	GPT-4	1.07
<i>(Recipe)</i>	You Chat	1.53

Wrap-Up and Discussion

Results

- ❑ Subtly including ads in unrelated context is difficult
- ❑ Better results in related contexts

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Future Work

- ❑ Extend pilot study
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Discussion Questions

1. Evaluation: How can we test the sensitivity of people to unexpected ads without telling them that the survey is about ads?
2. Risks: What makes this type of ads persuasive? (multiple alternatives, ...)

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Thank you

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