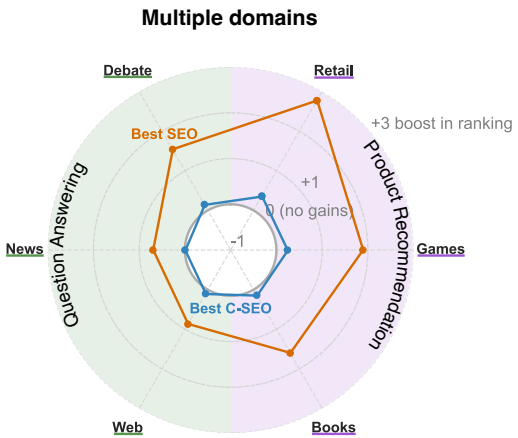
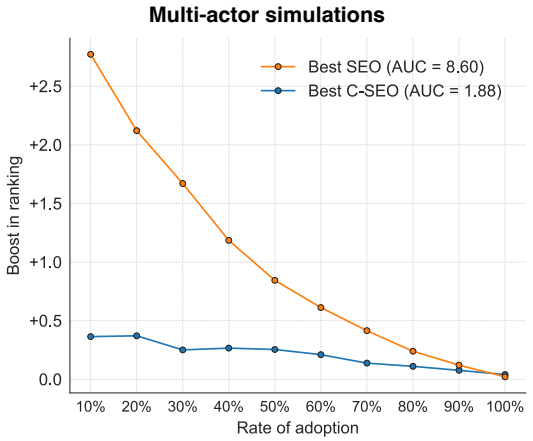
NEURAL INFORMATION PROCESSING SYSTEMS





C-SEO Bench: Does Conversational SEO Work?

Haritz Puerto, Martin Gubri, Tommaso Green, Seong Joon Oh, Sangdoo Yun

( )NT Parameter Lab NAVER AI LAB

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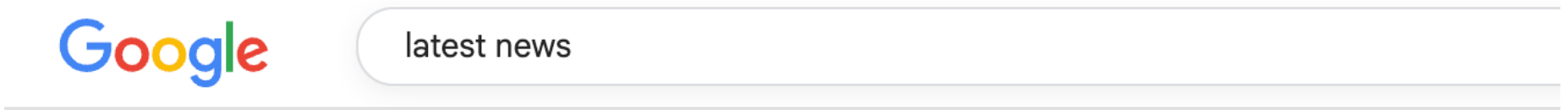

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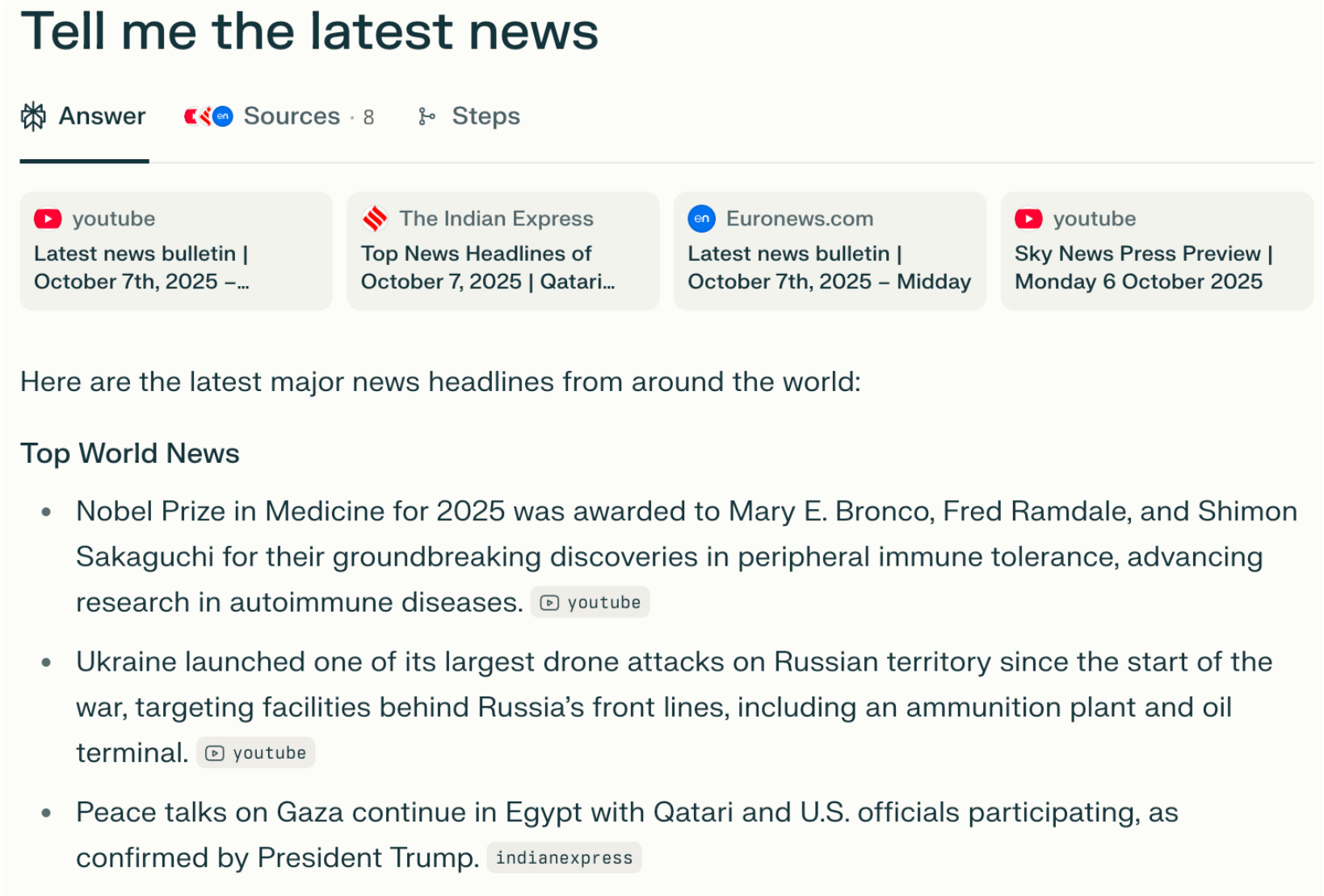
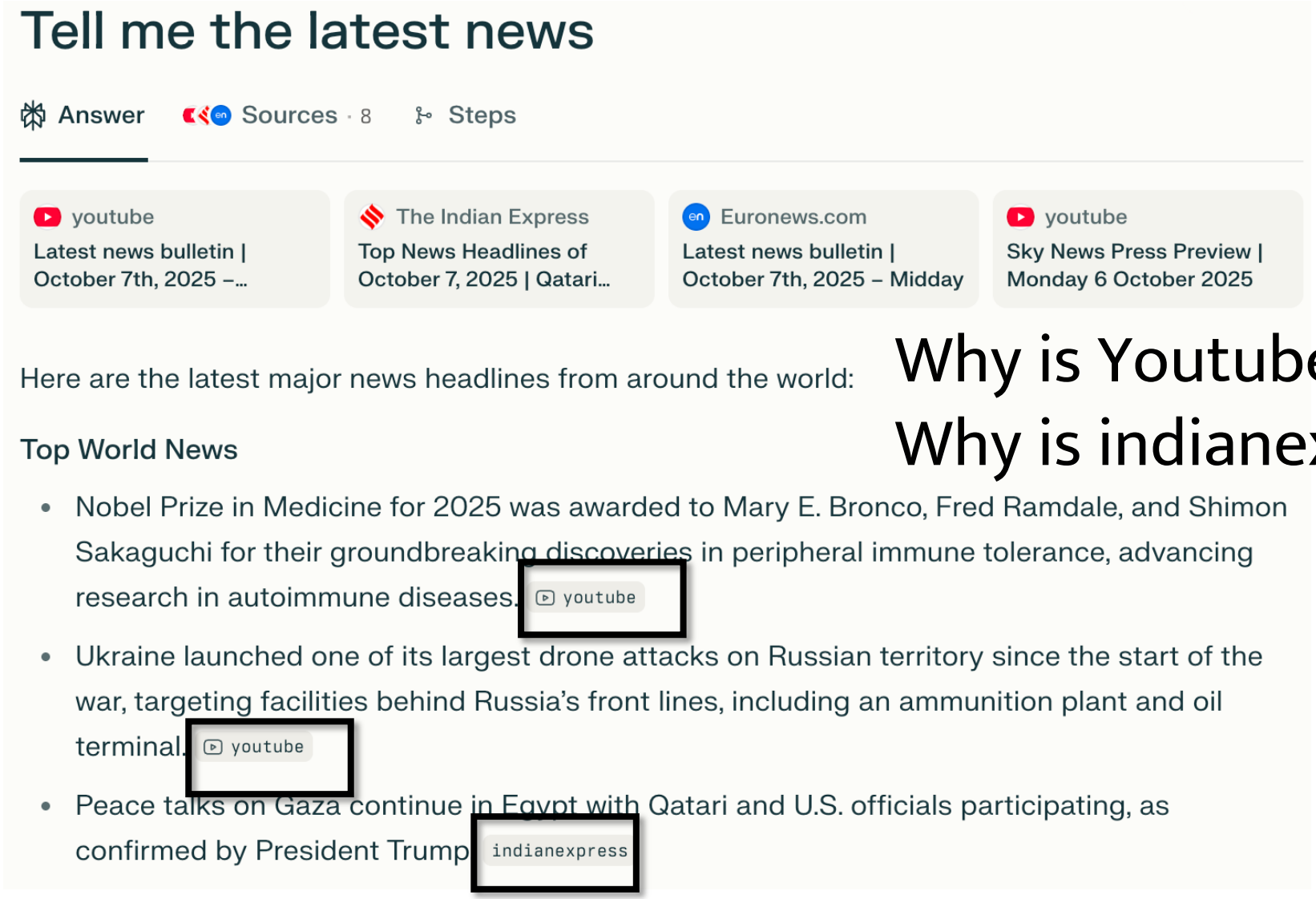
Online Search Changed



Online Search Changed



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Is SEO Dead? How to Update your Seo Strategy to 2025

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Why SEO as we know it is dead (and what's next).

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I Keep On Hearing That SEO Is Dead In The AI Era

As AI keeps improving and search engines continue to change how they serve up results, I keep hearing that traditional SEO techniques are becoming obsolete. It seems that Google now comes up with its own answers to search questions using a variety of sources to put the answer together. What sort of tactics are people using here to try and keep up with what feels like a pretty thm change?

Generative Engine Optimization (GEO): The Future Of Search Is Here

Forbes

By Adam Binder, Forbes Councils Member.
for Forbes Agency Council, COUNCIL POST | Membership (fee-based)

Published Jan 02, 2025, 07:30am EST

tryprofound.com
https://www.tryprofound.com › geo

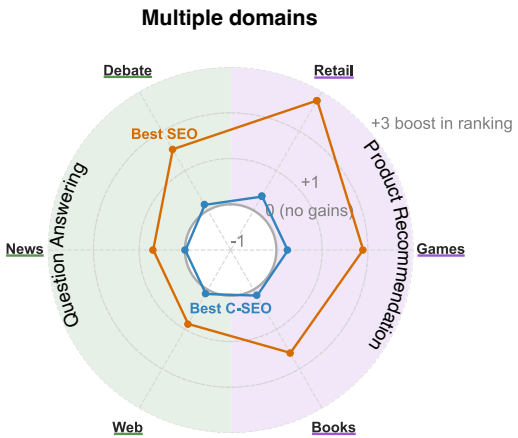
SEO Is Changing: GEO Is Here - How Does AI Talk About You?

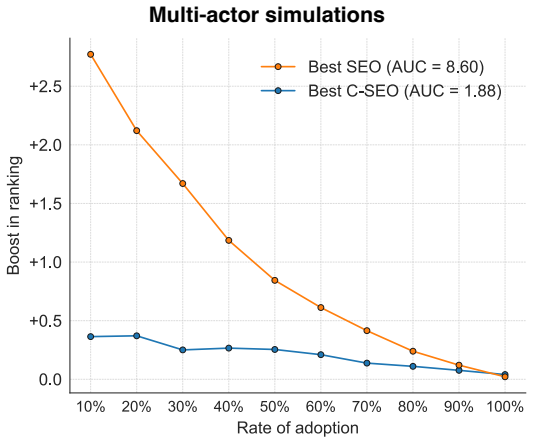
Win the **generative** internet with the most robust platform for AI **search** by Profound. Get Your Brand Mentioned by ChatGPT, Perplexity, Google AI Overviews, and CoPilot. ChatGPT.

“SEO is outdated! Long live to C-SEO!”

Is this true?

NEURAL INFORMATION PROCESSING SYSTEMS





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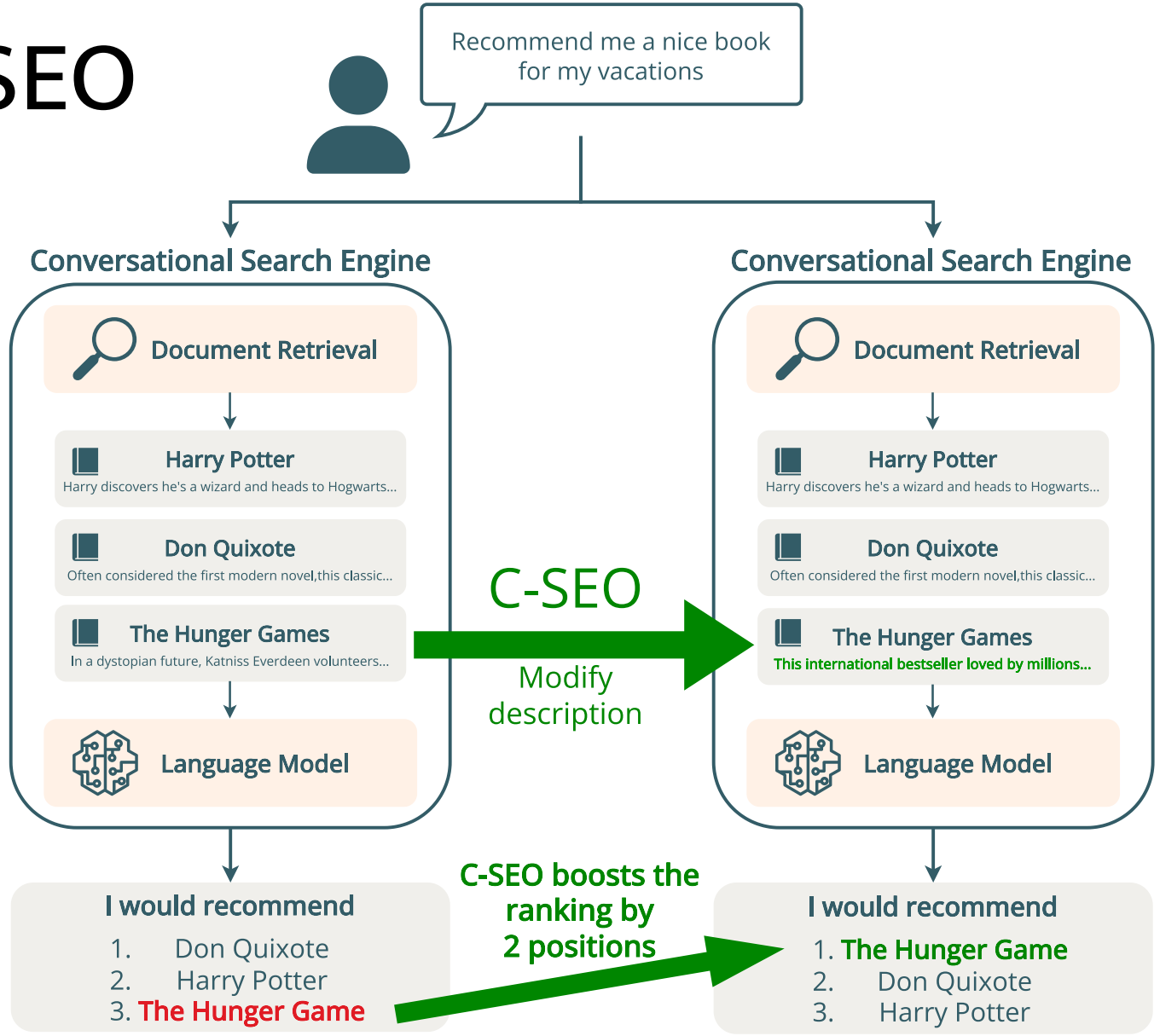
Conversational SEO



Why Current Benchmarks Are Not Enough?

Table 1: **Benchmarks comparison**. 🎩 denotes black-hat C-SEO; 👒 denotes white-hat C-SEO.

Benchmarks	Methods	Tasks	Domains	Real Data	#Docs	#Adopters
Aggarwal et al. 2024	👒	1	1	✓	5k	1
Pfrommer et al. 2024	🎩	1	1	✗	1.1k	1
Kumar and Lakkaraju 2024	🎩	1	1	✗	10	1
Nestaas et al. 2025	🎩	1	1	✓	50	Many
C-SEO Bench (Ours)	👒	2	6	✓	16.3k	Many

- Focus on adversarial setting →Different from normal SEO industry
- Text modifications depends on domains
- AI Search applies to multiple tasks
- Need to analyze gains across number of adopters to be realistic

C-SEO Benchmark

Task	Domain	#Queries	#Docs
Product Recommendation	Retail	500	5000
	Video Games	436	4360
	Books	249	2245
Question Answering	Web	300	1500
	News	294	2375
	Debate	142	880

2 tasks, 6 domains, real-world data, 1.9k queries, 16k documents

C-SEO Methods

- **C-SEO Methods** (Aggarwal et al., KDD 2024)
  - Authoritative
  - Statistics
  - Citations
  - Fluency
  - Unique Words
  - Technical Terms
  - Simple Language
  - Quotes

- New Methods
  - Content Improvements
    - Improve document combining all prior methods
  - LLM Guidance
    - markdown summary concatenated at the beginning of the document to guide the LLM about its content. Inspired by LLMs.txt

Aggarwal, Pranjal, et al. "Geo: Generative engine optimization." ACM SIGKDD Conference on Knowledge Discovery and Data Mining. 2024.

Boring list of features

Exciting introduction

Exciting feature description

Original

Name: Wireless Gaming Keyboard and Mouse
List of Features:

- [Rechargeable Keyboard and Mouse] ...
- 2.4G Wireless Transmission] ...
- [LED Rainbow Blacklight] ...

Details: <p>K670 Wireless Rechargeable Keyboard and Mouse Combo is born for Gaming. The ergonomic design makes you more comfortable during long time gaming.

Content Improvement

Name: Wireless Gaming Keyboard and Mouse
****Elevate Your Gaming Experience with the K670 Keyboard and Mouse Combo****
Introducing the K670Keyborard and Mouse- a powerful duo...
****Unmatched Performance and Durability****
The wireless keyboard features a robust aluminum alloy brushed panel
****Seamless Connectivity****
Harness the power of 2.4G

Setup

- Models for **conversational search engine**:
  - GPT 4o-mini
  - Claude 3.5 Haiku
  - O3
  - O4-mini
- Model for **C-SEO implementation**:
  - GPT-4o mini

- **Evaluation**
  - Rank improvement
    - Rank before – rank after
  - Wilcoxon signed-rank test
    - Is rank smaller than the original one?
    - P-values corrected with Holm-Bonferroni

Current C-SEO Methods Do Not Work!

	Product Recommendation			Question Answering		
Method	Retail	Games	Books	Web	News	Debate
Authoritative	0.11 ±1.18	0.07 ±1.25	0.11 ±0.94	-0.04 ±0.89	-0.04 ±1.03	0.01 ±1.55
Statistics	-0.07 ±1.00	0.00 ±1.11	-0.11 ±1.04	-0.53 ±1.27	-0.05 ±1.31	-0.80 ±1.70
Citations	-0.01 ±1.14	0.04 ±1.23	0.00 ±0.91	0.03 ±1.00	-0.10 ±1.09	-0.15 ±1.50
Fluency	0.06 ±1.11	0.07 ±1.27	0.07 ±1.05	0.03 ±0.89	-0.01 ±1.08	0.32 ±1.64
Unique Words	0.09 ±1.09	0.02 ±1.20	0.04 ±1.04	-0.07 ±0.92	-0.10 ±1.03	-0.08 ±1.66
Tech. Terms	0.05 ±1.13	0.07 ±1.32	-0.03 ±0.86	0.01 ±0.95	-0.03 ±0.97	-0.05 ±1.56
Simple Lang.	0.03 ±1.05	0.11 ±1.39	0.01 ±0.78	0.02 ±1.02	-0.04 ±1.00	0.04 ±1.63
Quotes	0.06 ±1.09	0.04 ±1.29	0.01 ±0.97	0.00 ±0.96	-0.06 ±1.07	-0.19 ±1.64
LLM Guid.	**0.36** ±1.47	**0.24** ±1.05	0.14 ±1.07	0.10 ±0.99	0.00 ±1.10	0.15 ±1.65
Content Impr.	**0.18** ±1.09	0.13 ±1.23	0.11 ±0.95	0.02 ±0.90	-0.04 ±1.00	0.11 ±1.61
Best SEO	**2.77** ±2.31	**1.89** ±2.32	**1.60** ±2.04	**0.87** ±1.35	**0.70** ±1.64	**1.54** ±2.07

Results for GPT4o-mini

SEO Is Much More Effective!

C-SEO Can Be Negative!

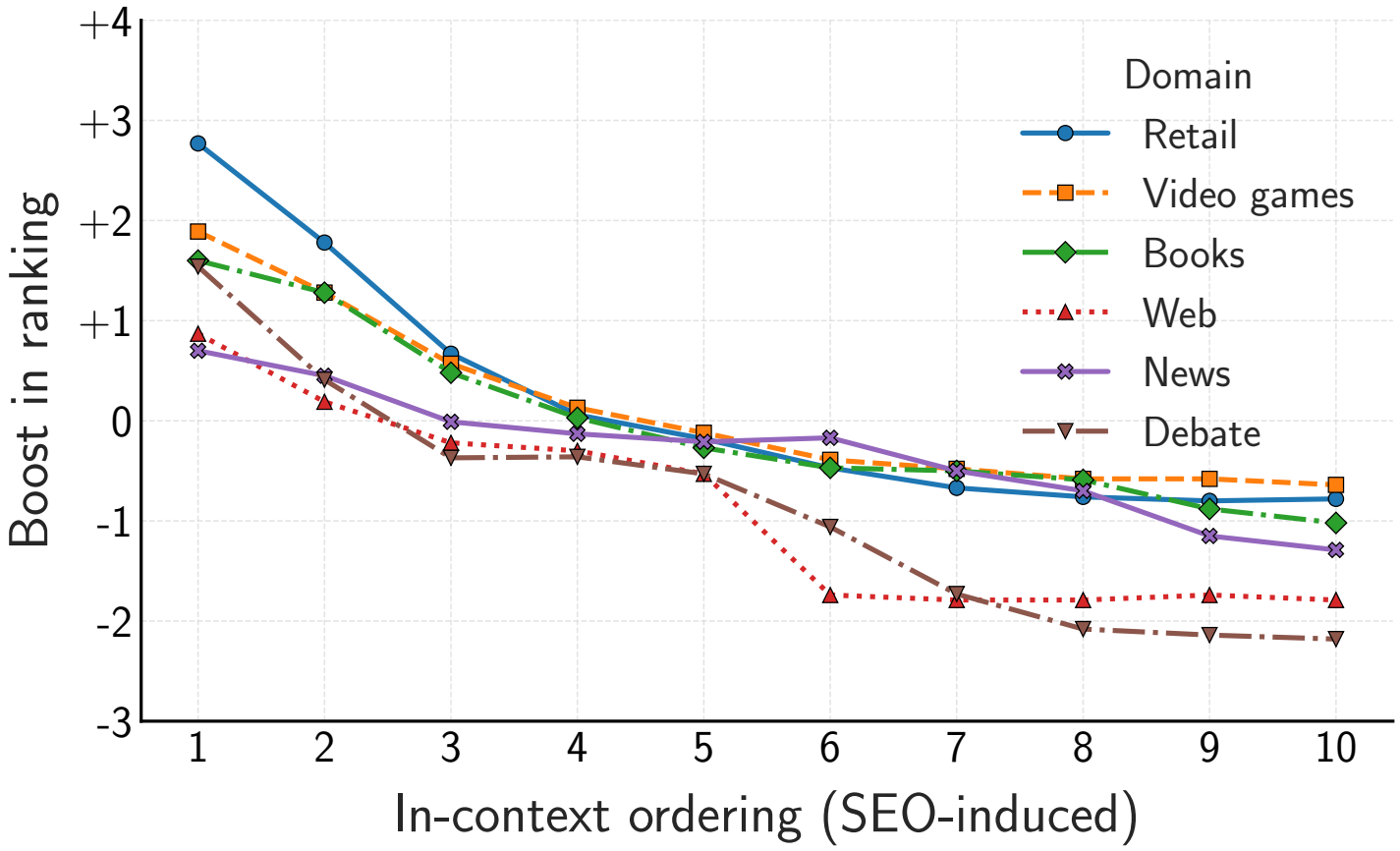
	Product Recommendation			Question Answering		
Method	Retail	Games	Books	Web	News	Debate
Authoritative	-0.53 ±1.29	-0.20 ±1.05	-0.34 ±1.06	0.03 ±0.72	0.04 ±0.77	0.01 ±1.41
Statistics	-0.82 ±1.47	-0.10 ±1.01	-0.60 ±1.34	-0.58 ±1.18	-0.12 ±0.91	-0.85 ±1.66
Citations	-0.49 ±1.31	-0.16 ±0.96	-0.31 ±1.10	-0.06 ±0.78	-0.09 ±0.87	0.06 ±1.31
Fluency	-0.48 ±1.30	-0.08 ±1.08	-0.37 ±1.18	0.00 ±0.73	0.05 ±0.87	0.18 ±1.40
UniqueWords	-0.52 ±1.26	-0.22 ±0.91	-0.43 ±1.11	-0.01 ±0.83	-0.05 ±0.87	0.04 ±1.40
Tech. Terms	-0.45 ±1.26	-0.19 ±0.98	-0.39 ±1.17	-0.04 ±0.90	-0.07 ±0.81	-0.01 ±1.53
Simple Lang.	-0.43 ±1.31	-0.09 ±0.96	-0.32 ±1.18	-0.01 ±0.68	0.01 ±0.84	0.01 ±1.48
Quotes	-0.50 ±1.27	-0.14 ±1.07	-0.33 ±1.18	-0.08 ±0.93	-0.03 ±0.76	0.03 ±1.33
LLM Guid.	-0.32 ±1.36	0.00 ±1.13	0.06 ±1.21	0.02 ±0.83	-0.09 ±0.97	0.12 ±1.60
Content Impr.	-0.29 ±1.28	-0.13 ±1.02	-0.08 ±1.08	-0.13 ±0.96	-0.09 ±0.91	0.11 ±1.48
Best SEO	**1.61** ±1.96	**0.93** ±1.59	**0.61** ±1.48	**0.35** ±1.22	**0.31** ±1.37	**0.56** ±1.81

Results on Claude Haiku 3.5

Similar results for:

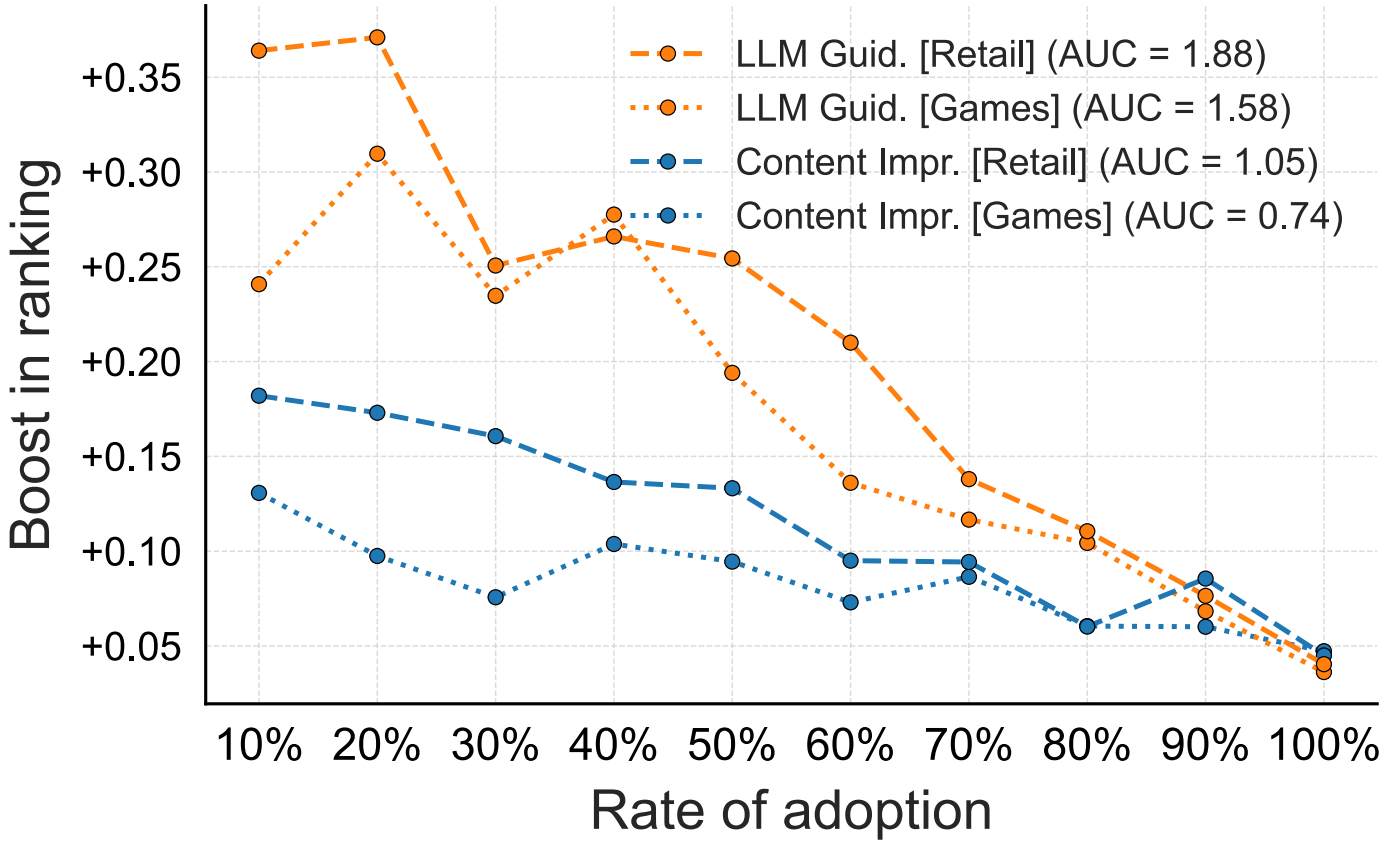
- o3
- o4-mini

Does SEO Remain Impactful? YES!



- Significant gains by being in top 3 results
- Top 1 is game changer

Does Adoption Rate Impact C-SEO?



C-SEO is a zero-sum game

Conclusions

- C-SEO is not a replacement for SEO
  - Content creators should keep investing in SEO methods

- Current C-SEO methods are not effective, but they may in the future. They need to evaluate across:
  - Tasks
  - Domains
  - Adoption rate

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