Generative engine optimization

Generative engine optimization (**GEO**) is the practice of adapting digital content and online presence management to improve visibility in results produced by generative artificial intelligence.[1] Six researchers led by a team at Princeton University invented and introduced GEO in an academic paper published in November 2023.[2] GEO describes strategies intended to influence the way large language models—such as ChatGPT, Google Gemini, Claude, and Perplexity AI—retrieve, summarize, and present information in response to user queries.[3] Other terms used to describe similar practices include AI SEO (artificial intelligence search engine optimization) and LLMO (large language model optimization).

History

Rationale for Emergence

The development of GEO is rooted in fundamental shifts in user behavior, technology, and business analytics that accelerated in the early 2020s.[4]

A key factor in this shift has been the adoption of retrieval-augmented generation (RAG) architectures by generative search systems, in which external documents are indexed, embedded, and retrieved as semantically relevant text segments to support AI-generated responses. This has redirected optimization efforts away from page-level ranking toward the structuring, authority, and retrievability of content within vector-based knowledge repositories used by large language models.

Origin of the term

The concept of GEO developed in parallel with the rise of generative AI technologies integrated into mainstream search and information retrieval systems.[5]

Adoption and industry growth

By the mid-2020s, GEO had been incorporated into the service offerings of marketing technology vendors and enterprise analytics platforms that monitor brand representation in AI-generated answers. Examples include tools developed by companies such as Bluefish AI and Semrush, which focus on measuring how brands are cited, summarized, or positioned within responses generated by large language models.

In addition to analytics platforms, Generative Engine Optimization has also been examined in independent academic analyses focusing on editorial authority and AI visibility, where premium editorial placements and digital PR are discussed as authority signals within modern AI-mediated search environments.

Industry adoption of GEO has accelerated as practitioners recognize key requirements for visibility in generative AI responses. Primary factors include E-E-A-T signals—demonstrating expertise, experience, authoritativeness, and trustworthiness through structured content, external citations, and established authority in topical domains. Additionally, content must be retrievable by RAG systems, requiring clear semantic structure, topical depth, and strategic placement of claims within longer-form content that AI systems can extract and synthesize.[6]

Practitioner-oriented publications have also discussed Generative Engine Optimization as a multi-layered approach focused on answer-oriented content structure, consistent entity representation, and the reinforcement of authority signals across authoritative sources to support inclusion within AI-generated responses.

See also

- Information retrieval

References

1. Seda, Catherine (2025). *AI-Powered Content Marketing and SEO: Impact, Risks, and Strategies for Brands* (https://books.google.com/books?id=fYaCEQAAQBAJ&dq=%22Generative+engine+optimization%22&pg=PT107). Addison-Wesley Professional. ISBN 978-0135478271.
2. Aggarwal, Pranjal; Murahari, Vishvak; Rajpurohit, Tanmay; Kalyan, Ashwin; Narasimhan, Karthik; Deshpande, Ameet (2024-08-24). "GEO: Generative Engine Optimization" (https://dl.acm.org/doi/10.1145/3637528.3671900). *Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining*. KDD '24. Association for Computing Machinery. pp. 5–16. arXiv:2311.09735 (https://arxiv.org/abs/2311.09735). doi:10.1145/3637528.3671900 (https://doi.org/10.1145%2F3637528.3671900).
3. Bains, Callum (3 November 2024). "The chatbot optimisation game: can we trust AI web searches?" (https://www.theguardian.com/technology/2024/nov/03/the-chatbot-optimisation-game-can-we-trust-ai-web-searches). *The Guardian*. Retrieved 28 September 2025.
4. Herrman, John (2025-08-04). "SEO Is Dead. Say Hello to GEO" (https://nymag.com/intelligencer/article/seo-is-dead-say-hello-to-geo.html). *Intelligencer*. Retrieved 2025-11-11.
5. "As AI Use Soars, Companies Shift From SEO To GEO" (https://www.forbes.com/sites/johnwerner/2025/05/04/as-ai-use-soars-companies-shift-from-seo-to-geo/). *Forbes*. 4 May 2025. Retrieved 28 September 2025.
6. "The Role of Premium Editorial Placements in Modern SEO and AI Visibility" (https://scalar.usc.edu/works/host/the-role-of-premium-editorial-placements-in-modern-seo-and-ai-visibility). *Scalar (University of Southern California)*. Retrieved 2026-01-03.