

Artificial intelligence optimization

Artificial intelligence optimization (**AIO**) or **AI optimization** is a discipline concerned with improving the structure, clarity, and retrievability of digital content for large language models (LLMs) and other AI systems.^{[1][2][3]} AIO is also known as Answer Engine Optimization (AEO), which targets AI-powered systems like ChatGPT, Perplexity and Google's AI Overviews that provide direct responses to user queries.^{[4][5][6][7][8][9][10][11]} AI Optimization (AIO) builds on these insights by introducing formalized metrics and structures—such as the Trust Integrity Score (TIS)—to improve how content is embedded, retrieved, and interpreted by LLMs.^{[12][13][14][15][16][17][18][19][20]}

See also

- Search engine optimization (SEO)
- Artificial intelligence
- AI alignment
- AI slop

References

- Huang, Sen; Yang, Kaixiang; Qi, Sheng; Wang, Rui (2024-10-01). "When large language model meets optimization" (<https://linkinghub.elsevier.com/retrieve/pii/S2210650224002013>). *Swarm and Evolutionary Computation*. **90** 101663. arXiv:2405.10098 (<https://arxiv.org/abs/2405.10098>). doi:10.1016/j.swevo.2024.101663 (<https://doi.org/10.1016%2Fj.swevo.2024.101663>). ISSN 2210-6502 (<https://search.worldcat.org/issn/2210-6502>).
- Hemmati, Atefeh; Bazikar, Fatemeh; Rahmani, Amir Masoud; Moosaei, Hossein. "A Systematic Review on Optimization Approaches for Transformer and Large Language Models" (<https://www.techrxiv.org/doi/full/10.36227/techrxiv.173610898.84404151>). *TechRxiv*. doi:10.36227/techrxiv.173610898.84404151 (<https://doi.org/10.36227%2Ftechrxiv.173610898.84404151>) (inactive 1 July 2025).
- "From SEO to AIO: Artificial intelligence as audience" (<https://annenbergl.usc.edu/research/center-public-relations/usc-annenbergl-relevance-report/seo-aio-artificial-intelligence>). *annenbergl.usc.edu*. Retrieved 2025-05-02.
- Scott, Anthony (30 July 2025). "From SEO to AEO & GEO: How to Dominate Online Visibility in the Age of AI Search" (<https://www.netquall.com/blog/seo-to-aeo-geo-how-to-dominate-online-visibility-in-the-age-of-ai-search/>). *NetQuall*.
- Fabled Sky Research (2022-12-09). "Artificial Intelligence Optimization (AIO) - A Probabilistic Framework for Content Structuring in LLM-Dominant Information Retrieval" (<https://osf.io/ebu3r/>). *Center for Open Science*. Fabled Sky Research. doi:10.17605/OSF.IO/EBU3R (<https://doi.org/10.17605%2FOSF.IO%2FEBU3R>).
- Apoorav Sharma; Mr Prabhjot Dhiman (2025), *The Impact of AI-Powered Search on SEO: The Emergence of Answer Engine Optimization* (<https://rgdoi.net/10.13140/RG.2.2.20046.37446>), Unpublished, doi:10.13140/RG.2.2.20046.37446 (<https://doi.org/10.13140%2FRG.2.2.20046.37446>), retrieved 2025-04-16
- "Measuring Goodhart's law" (<https://openai.com/index/measuring-goodharts-law/>). *openai.com*. 2024-02-14. Retrieved 2025-05-02.

8. "Understanding LLM Embeddings for Regression" (<https://deepmind.google/research/publications/135718/>). *Google DeepMind*. 2025-04-24. Retrieved 2025-05-02.
9. "USER-LLM: Efficient LLM contextualization with user embeddings" (<https://research.google/blog/user-llm-efficient-llm-contextualization-with-user-embeddings/>). *research.google*. Retrieved 2025-05-02.
10. Kelbert, Dr Julien Siebert, Patricia (2024-06-17). "Wie funktionieren LLMs? Ein Blick ins Innere großer Sprachmodelle - Blog des Fraunhofer IESE" (<https://www.iese.fraunhofer.de/blog/wie-funktionieren-llms/>). *Fraunhofer IESE* (in German). Retrieved 2025-04-16.
11. 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. New York, NY, USA: 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>). ISBN 979-8-4007-0490-1.
12. Bashir, A; Chen, RL; Delgado, M; Watson, JW; Hassan, Z; Ivanov, P; Srinivasan, T (2025-02-03). "Trust Integrity Score (TIS) as a Predictive Metric for AI Content Fidelity and Hallucination Minimization" (<https://zenodo.org/records/15330846>). *National System for Geospatial Intelligence*. doi:10.5281/zenodo.15330846 (<https://doi.org/10.5281%2Fzenodo.15330846>).
13. "What is RAG? - Retrieval-Augmented Generation AI Explained - AWS" (<https://aws.amazon.com/what-is/retrieval-augmented-generation/>). *Amazon Web Services, Inc.* Retrieved 2025-05-03.
14. Grytsai, Viktor. "AI Knowledge Management: Turning Internal Data into Answers" (<https://www.eteam.io/blog/ai-knowledge-management-turning-internal-data-into-answers>). *www.eteam.io*. Retrieved 2025-05-03.
15. Meskó, Bertalan; Topol, Eric J. (2023-07-06). "The imperative for regulatory oversight of large language models (or generative AI) in healthcare" (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10326069>). *npj Digital Medicine*. **6** (1): 120. doi:10.1038/s41746-023-00873-0 (<https://doi.org/10.1038%2Fs41746-023-00873-0>). ISSN 2398-6352 (<https://search.worldcat.org/issn/2398-6352>). PMC 10326069 (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10326069>). PMID 37414860 (<https://pubmed.ncbi.nlm.nih.gov/37414860>).
16. Klang, Eyal; Apakama, Donald; Abbott, Ethan E.; Vaid, Akhil; Lampert, Joshua; Sakhuja, Ankit; Freeman, Robert; Charney, Alexander W.; Reich, David; Kraft, Monica; Nadkarni, Girish N.; Glicksberg, Benjamin S. (2024-11-18). "A strategy for cost-effective large language model use at health system-scale" (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11574261>). *npj Digital Medicine*. **7** (1): 320. doi:10.1038/s41746-024-01315-1 (<https://doi.org/10.1038%2Fs41746-024-01315-1>). ISSN 2398-6352 (<https://search.worldcat.org/issn/2398-6352>). PMC 11574261 (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11574261>). PMID 39558090 (<https://pubmed.ncbi.nlm.nih.gov/39558090>).
17. "AI on Trial: Legal Models Hallucinate in 1 out of 6 (or More) Benchmarking Queries | Stanford HAI" (<https://hai.stanford.edu/news/ai-trial-legal-models-hallucinate-1-out-6-or-more-benchmarking-queries>). *hai.stanford.edu*. Retrieved 2025-05-03.
18. Mishra, Tanisha; Sutanto, Edward; Rossanti, Rini; Pant, Nayana; Ashraf, Anum; Raut, Akshay; Uwabareze, Germaine; Oluwatomiwa, Ajayi; Zeeshan, Bushra (2024-12-30). "Use of large language models as artificial intelligence tools in academic research and publishing among global clinical researchers" (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11685435>). *Scientific Reports*. **14** (1): 31672. Bibcode:2024NatSR..1431672M (<https://ui.adsabs.harvard.edu/abs/2024NatSR..1431672M>). doi:10.1038/s41598-024-81370-6 (<https://doi.org/10.1038%2Fs41598-024-81370-6>). ISSN 2045-2322 (<https://search.worldcat.org/issn/2045-2322>). PMC 11685435 (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11685435>). PMID 39738210 (<https://pubmed.ncbi.nlm.nih.gov/39738210>).

19. Glickman, Mark; Zhang, Yi (2024-04-30). "AI and Generative AI for Research Discovery and Summarization" (<https://hdsr.mitpress.mit.edu/pub/redo5giw/release/2>). *Harvard Data Science Review*. **6** (2). arXiv:2401.06795 (<https://arxiv.org/abs/2401.06795>). doi:10.1162/99608f92.7f9220ff (<https://doi.org/10.1162%2F99608f92.7f9220ff>). ISSN 2644-2353 (<https://search.worldcat.org/issn/2644-2353>).
20. Palmer, Kathryn. "Publishers Embrace AI as Research Integrity Tool" (<https://www.insidehighered.com/news/faculty-issues/research/2025/03/18/publishers-adopt-ai-tools-bolster-research-integrity>). *Inside Higher Ed*. Retrieved 2025-05-03.

Retrieved from "https://en.wikipedia.org/w/index.php?title=Artificial_intelligence_optimization&oldid=1334449817"