

The intent behind a query

Jeroen Vermaat, HU, university of Applied sciences, Utrecht, the Netherlands

In cooperation with Spienzer, supervised by Sietske Tacoma, Marieke Peeters

Abstract: Understanding user intent is key to improving Search engine optimization (SEO) and Search engine Advertising (SEA). This study explores how Large Language Models (LLMs) can analyze Google's Search engine results page (SERP) to enhance content generation and ad targeting. The research aims to refine intent categories and assess their impact on SEO effectiveness while ensuring ethical and business standards by developing a prototype to evaluate different LLMs. Findings could shape AI-driven search marketing, making content strategies more precise and user-focused.

INTRODUCTION

Businesses rely on search engines like Google to connect with customers. Spienzer, specializing in SEO and SEA, enhances visibility through keyword strategies and automated content generation. However, understanding user intent remains a challenge, as searches serve different purposes. By leveraging Large Language Models (LLMs) to analyze Google's Search Engine Results Page (SERP), Spienzer aims to refine content based on intent. This study explores how intent detection can enhance Spienzer's feedback loop, improving SEO and SEA while maintaining ethical and business values. This study seeks to answer the following question: **"How can Spienzer's current feedback loop using keywords be expanded to include the intent behind a user's search query to improve SEO and SEA, while protecting societal and business values?"**

LITERATURE REVIEW

Understanding search intent, the underlying goal behind a user's query, is essential for businesses aiming to connect with online users. It is typically categorized as informational, navigational, commercial, or transactional and can be identified by analyzing the Search Engine Results Page (SERP) and query language [1]. This insight enables more targeted content creation [1]. Large Language Models (LLMs) are increasingly enhancing SEO by generating product descriptions and other content using multimodal data [3,4], assigning relevance scores to documents, and predicting user preferences. However, their effectiveness depends on prompt engineering, requiring careful design for accuracy. Additionally, LLMs can refine content labeling, sometimes surpassing human assessors [5].

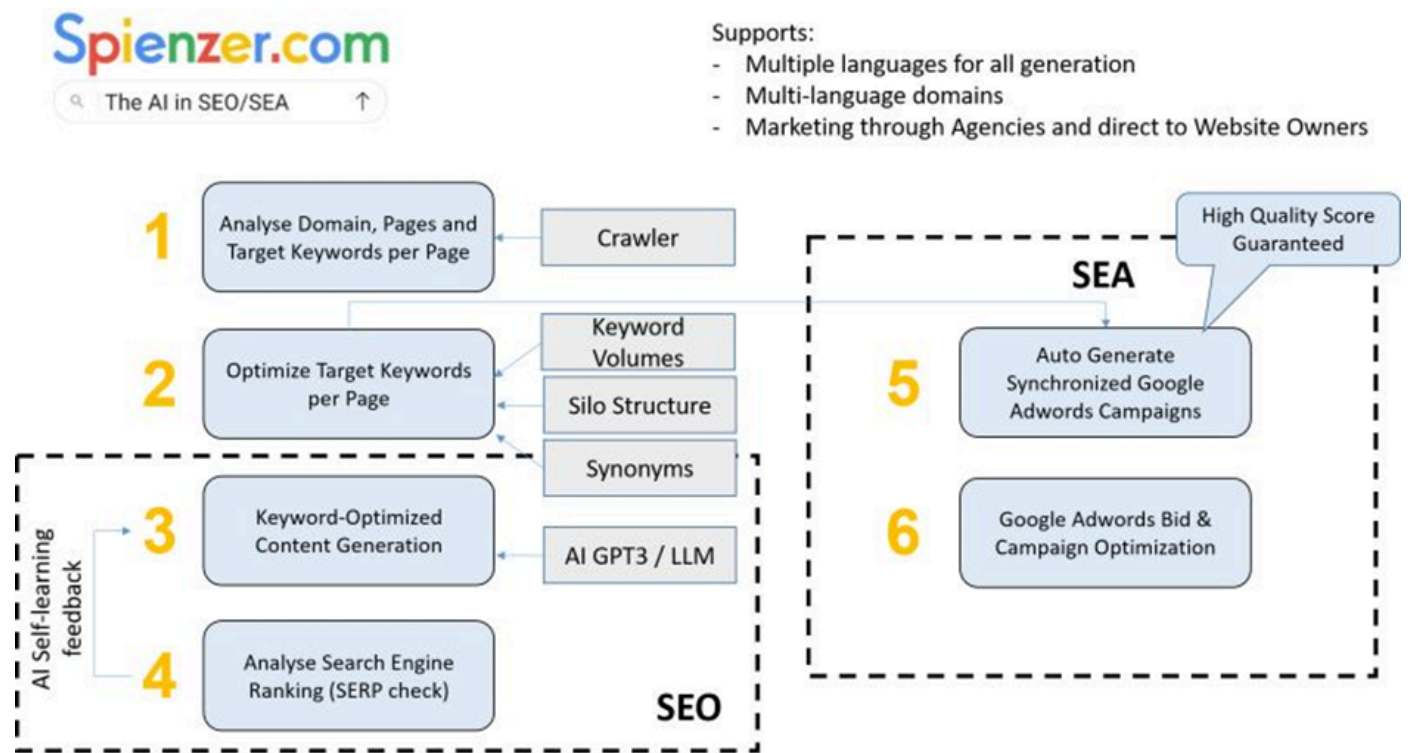


Fig. 1. This figure shows the concept architecture that Spienzer aims to develop, showing their current SEO workings using AI paired with keyword optimization.

Despite their benefits, LLMs pose ethical and business challenges, including potential bias, privacy concerns, and content quality issues, highlighting the need for careful oversight and responsible AI use [5].

RESEARCH METHODOLOGY

This 10-week study will identify and categorize user intent, then develop a prototype using a Large Language Model (LLM) and Google's SERP to infer search intent. Multiple LLMs will be evaluated based on multilingual support, domain adaptability, and marketing content generation. The prototype, implemented in Python, will assess whether inferred intent aligns with website goals, preventing irrelevant content changes. This research aims to enhance SEO and SEA strategies by integrating intent-based optimization, ensuring more effective and ethical content generation for businesses.



Fig. 2. Image by Nikin from Pixabay.



Fig. 3. Image by Sem from the Noun project



Fig. 4. Day 10 by Md. Tanvirul Haque on IconScout



Fig. 5. big data by LAFS

PRELIMINARY CONSIDERATIONS

This study can bridge the gap between traditional keyword-based SEO/SEA strategies and intent-driven optimization using Large Language Models (LLMs). By integrating user intent detection into search engine marketing, this research could significantly enhance content relevance, ad targeting, and overall user experience. Defining and selecting different categories of intent can guide future research projects in making their own categories.

CONCLUSIONS

This study explores how Large Language Models (LLMs) can enhance SEO and SEA by detecting user intent from Google's Search Engine Results Page (SERP). By integrating intent recognition into Spienzer's feedback loop, this research aims to improve content relevance, ad targeting, and user engagement while maintaining ethical and business values. The findings could shape future AI-driven search strategies, ensuring more precise, human-centered, and effective digital marketing practices.

References.

[1] Silva, C., Skopec, C., Fogg, S., & Scheumann, S. (2024, 21 november). What Is Search Intent? How to Identify It & Optimize for It. Semrush Blog. <https://www.semrush.com/blog/search-intent/> [2] Shi, X., Liu, J., Liu, Y., Cheng, Q., & Lu, W. (2024). Know where to go: Make LLM a relevant, responsible, and trustworthy searchers. Decision Support Systems, 114354. <https://doi.org/10.1016/j.dss.2024.114354> [3] Kathiriya, S., Mullapudi, M., & Karangara, R. (2023). Optimizing ECommerce Listing: LLM Based Description and Keyword Generation from Multimodal Data. International Journal Of Science And Research (IJSR), 12(10), 2123-2130. <https://doi.org/10.21275/sr24304113521> [4] Thomas, P., Spielman, S., Craswell, N., & Mitra, B. (2024). Large Language Models can Accurately Predict Searcher Preferences. Proceedings Of The 45th International ACM SIGIR Conference On Research And Development in Information Retrieval, 1930-1940. <https://doi.org/10.1145/3626772.3657707> [5] Admin, & Admin. (2023, 20 februari). Het concept achter Spienzer voor A.I. in SEO en SEA - Genzai. Genzai - Artificial Intelligence and Advanced ICT. <https://www.genzai.nl/spienzer/het-concept-achter-spienzer-voor-a-i-in-seo-en-sea/>

Acknowledgements. The HCAIM (the Human-Centred AI Master's Programme) Project is Co-Financed by the Connecting Europe Facility of the European Union Under Grant N°CEF-TC-2020-1 Digital Skills 2020-EU-IA-0068. This Poster Was Created As Part of the Blended IP Event Organized Under Erasmus + Programme of the European Union.