

Generative AI Search Engines: Cognitive Authorities on Climate Change?

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1. Introduction

In this project, we examine the construction of cognitive authority (CG) in Generative AI search engine (GenAI SE) responses to climate change queries. Wilson's (1983) classic work considers information sources as CGs when they are deemed credible and influence people's views, based on reputation and perceived expertise. A recent review of CG (Hirvonen et al., 2025) identifies several interpretations of the concept, including the discursive construction of CG in social media content (Neal & McKenzie, 2011). We approach CG from this perspective, keeping in mind earlier work on the social construction of CG in relation to SE use (Huvila, 2013).

The credibility and influence of traditional SEs are well established, accomplished primarily through the mechanics of speedy and personalized retrieval and the compelling simplicity of the ranked list model (Haider & Sundin, 2019). GenAI SEs have the added advantage of LLM-powered language and rhetoric to establish CG and promote use. However, there may be a gap between perceived CG and information quality in GenAI SEs. For example, studies have shown that the sources cited in SEs using Retrieval Augmented Generation do not consistently or fully support claims (Li et al., 2023; Liu et al., 2023) and system outputs can reflect a level of certainty that is not supported by the evidence (Allan et al., 2024).

Human-caused climate change is an issue of enormous consequence and a notoriously polarizing epistemic space (Hochachka et al., 2025; Marshall, 2015; Santos et al., 2024). The resource requirements of GenAI SEs make them complicit in climate change (Zuccon et al., 2023), yet they also function as tools for climate literacy and sensemaking. Haider and Rödl's (2023) study of representations of climate change in SEs highlights the subtle shaping of public opinion and the production of knowledge gaps that can result from a combination of algorithmic and normative filtering and ranking.

Building upon threads of prior research, on GenAI SEs (Li & Sinnamon, 2024) and climate sensemaking (Santos et al., 2024), we analyze AI overviews from Google and Bing in response to a set of climate sensemaking queries. We investigate the rhetorical and evidentiary bases for the authoritativeness of outputs, guided by the following research questions:

- If and how do query responses establish authority through rhetorical means?
- To what extent do cited sources support claims made in query responses?
- How similar/different are the sources provided in the ranked list compared to the generative AI query responses?

2. Study Design

The study is a modified algorithmic audit (Metaxa et al., 2021): we carry out a mixed methods analysis of AI-generated responses to 36 queries representing 2 related Topics (Climate Change and Renewable Energy), submitted to 2 SEs (Google and Bing). We gathered queries for 20 days in spring 2026 from AnswerThePublic, a service that scrapes popular searches. For each topic, we selected 18 queries starting with common interrogative terms that vary in sentiment polarity (positive/neutral/negative) (Table 1).

Table 1

Sample queries for the two topics with sentiment scores

Topic	Query	Sentiment Polarity
Climate Change	How does AI affect climate change	0.1396
	When will climate change be irreversible	-0.3207
Renewable Energy	What is the best alternative energy source for homes	0.8486
	Why renewable energy stocks are falling	-0.4486

Data were collected manually in summer 2026 in keeping with terms and conditions that disallow automated scraping methods. We collected the AI overviews, all web sources referenced in the overviews (timestamped pages uploaded to the Internet Archive), and all links on the (traditional) SE results pages.

The data analysis builds upon a framework and coding scheme developed in earlier work (Li & Sinnamon, 2024). We create a quantitative profile of the AI overviews for comparison across systems (e.g., reading level, overlap with ranked search results). Qualitative analysis of query responses includes coding of rhetorical techniques used to establish authority in the overviews, such as evidence of hedging and references to authorities (Li & Sinnamon, 2024). For claims made in the overviews, we assess the extent to which these claims are supported in the cited sources, following Xu et al.'s (2026) codebook.

3. Contributions

Study results will contribute to a deeper understanding of how CG is constructed by GenAI SEs and the extent to which such authority is warranted. Results will increase our understanding of the implications of the shift from traditional SEs to GenAI SEs for use in human sensemaking of challenging and consequential life questions.

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