

Information Retrieval and Search Engines

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Abstract: *Information retrieval (IR) and search engines are integral components of modern information systems, facilitating access to vast amounts of data on the internet and within enterprise systems. This research paper delves into the principles, methodologies, and technologies underpinning IR and search engines, examining their evolution, current capabilities, and future directions. The study highlights the algorithms and architectures that enable efficient indexing and retrieval, the role of natural language processing (NLP), and the impact of machine learning (ML) in enhancing search precision and relevance. It also explores user interaction and personalization, addressing the challenges of providing accurate, timely, and context-aware information. Through a comprehensive review and experimental analysis, this paper aims to provide a deeper understanding of how search engines optimize the retrieval process and how ongoing advancements are shaping the future of IR*

Keywords: Information Retrieval, Search Engines, Natural Language Processing, Machine Learning, User Interaction, Personalization