Chapter 20
Efficient E-Learning Multi-Keyword Search-Based Application for Students' Better Education

H. Riaz Ahamed
Bharath Institute of Higher Education and Research, India

D. Kerana Hanirex
Bharath Institute of Higher Education and Research, India

ABSTRACT

Using numerous phrases or phrases of search to enter into a computerized database or internet search engine to find appropriate outcomes is known as a multi-keyword inquiry. This kind of research is typically used in many ways, including databases, online marketplaces, retrieval of records systems, and search engines on the web. By selecting multiple keywords, consumers can filter the results of their searches, improving the effectiveness and efficiency of their search. The present research presents a useful tool for pupils who use multi-keyword searches in online learning. The Boolean retrieval model (BRM), the vector space model (VSM), and the inverse index (II) are each of the three search models whose effectiveness is painstakingly evaluated in this study. This research aims to determine the best searching strategy through comprehensive examination, resulting in an improved and simple-to-operate instructional setting for online learners.

INTRODUCTION

An E-Learning Multi-Keyword Search-Based Application for students represents a dynamic and versatile tool designed to enhance the learning experience by providing an efficient and user-friendly way for students to access educational resources. This application leverages multi-keyword search functionality, incorporating advanced search algorithms and user-centric design to facilitate seamless access to relevant

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learning materials. Here, we explore the key features, benefits, and impacts of such an E-Learning application (Al-Awawdeh, 2023).

Multi-Keyword Search Capability: The cornerstone of this application is its ability to handle multi-keyword searches. Students can input multiple terms or phrases related to their study topics, enabling the system to return comprehensive and tailored results. This functionality enhances precision and ensures students find resources that align closely with their learning needs (Al-Awawdeh & Kalsoom, 2022).

User-Friendly Interface: The application prioritizes a user-friendly interface to enhance accessibility. Intuitive design elements, clear navigation, and a well-organized layout contribute to a positive user experience (Angtud et al., 2023). This approach ensures students can quickly and efficiently navigate the platform, making the learning process more seamless.

Personalized Learning Recommendations: The application can provide personalized learning recommendations by analyzing students' search patterns and preferences (Aravind et al., 2023). This feature helps students discover relevant content aligned with their academic interests, fostering a personalized and engaging learning environment.

Rich Content Repository: The application hosts a diverse and rich repository of educational resources, including documents, articles, videos, and interactive content. The multi-keyword search functionality ensures students can efficiently explore this repository, accessing materials catering to various learning styles and preferences (Bai et al., 2023).

Collaborative Learning Tools: Collaborative learning is facilitated through built-in tools that enable students to share resources, engage in discussions, and collaborate on projects. The application fosters a sense of community among students, encouraging knowledge-sharing and collaborative problem-solving (Bhat et al., 2023).

Real-Time Updates and Notifications: Students receive real-time updates and notifications about new content, announcements, and relevant events (Eliwa, 2021). This feature ensures that students stay informed about the latest developments in their courses, enhancing their engagement and connection with the learning community (Hutauruk et al., 2023).

Adaptive Learning Paths: The application utilizes data analytics to track students' progress and learning preferences (Gomathy & Venkatasbramanian, 2023). This information generates adaptive learning paths, offering personalized learning journeys tailored to individual strengths, weaknesses, and preferences (Eliwa & Badri, 2021).

Enhanced Accessibility: The multi-keyword search functionality significantly enhances the accessibility of educational resources. Students can quickly locate materials relevant to their needs, saving time and promoting a more efficient learning experience (Hanif et al., 2020).

Increased Engagement: The personalized recommendations and collaborative features increase student engagement. By aligning content with individual interests and encouraging interaction, the application fosters a more engaging and interactive learning environment (Groenewald et al., 2023a).

Efficient Resource Utilization: The application optimizes resource utilization by ensuring students find precisely what they need. This efficiency is particularly beneficial in e-learning environments, where students may have diverse learning preferences and varied academic requirements (Groenewald et al., 2023b).

Data-Driven Insights: Data analytics provide valuable insights into students' learning behaviors, preferences, and performance (Kalsoom et al., 2021). Educators can leverage this information to tailor instructional strategies, identify areas for improvement, and enhance the overall effectiveness of the learning experience (Kalsoom, 2019).