Cognitive Search: How AI and Machine Learning Are Driving Enterprise Search Applications

Franz Koegl is board member and co-founder of IntraFind Inc., has more than 16 years of experience and is a passionate expert in enterprise search, content analytics and artificial intelligence. He is also a well-known figure and speaker in the industry.

Franz Koegl

By Franz Koegl, CEO, IntraFind Inc.

Enterprise search applications have long since stopped being limited to searching and finding data. They help employees to analyze and interpret the available information, including unstructured and structured data, using both internal and external data sources. Thanks to numerous connectors to different applications such as file shares, intranets, mail servers, collaboration tools and Wikis, employees receive access to all relevant documents from the entire enterprise, always based on their respective user rights. Professional enterprise search solutions provide a user-friendly user interface that is responsive and fully accessible and naturally comes with a mobile app.

From Enterprise Search to Insight Engine

An insight engine supports users in interrelating and interpreting information. According to Gartner, insight engines understand *natural* language, are *total* and *proactive*. In addition to supporting as many data sources as possible, the insight engine can also proactively provide users with exactly the information they require for their work context and combine search with business intelligence for ad hoc analysis.

The solution provides guided search and automatically suggests related topics and similar terms to the user. A knowledge graph enhances the search results with additional images, knowledge networks and article lists. The insight engine also includes a recommendation engine and even takes into account previous searches from colleagues within the department. Search-driven recommendation and many more features make enterprise search applications a perfect tool for knowledge workers.

"Artificial intelligence and machine learning have been an integral part of cognitive search for years with our customers."

Auto-complete and did-you-mean spelling suggestions have become a matter of course. Thanks to natural language processing, search engines now also comprehend questions. This is based on modern machine learning and deep-learning techniques and algorithms.

While artificial intelligence (AI), machine learning and deep learning have become the new rage in IT media, professional search engines have supported these technologies for years. Enterprise Search has long been a cognitive search solution.

Use Cases for AI-Driven Cognitive Search

The following best-practice examples show how AI interacts with enterprise search.

IntraFind iFinder5 elastic provides enterprise-ready cognitive search.

1. Expert Identification (Who is Who Graph Database)

By establishing a semantic model, filling it with employee information out of an Active Directory and enriching it with detected skills out of documents and mails with text analytics methods, an existing intranet or employee portal can easily be enriched with a who is who graph database. If you are looking for specific persons, experts or skills, the results can be visualized as knowledge graphs with person and skill entities, relations, hierarchies and departmental affiliations.

2. Chatbots

Chatbots are increasingly used by helpdesks and for online support. The chatbot picks up the question of the user and analyzes it with content analytics, predicate-argument structure analysis, entity recognition, linguistics, and syntactical parsing. In the background, the bot uses the knowledge database to compare the problem description and delivers the required answer.

3. Automatic Contract Analysis

The automatic analysis of contracts is intended for lawyers and legal practitioners who need to process immense quantities of data, for example, in mergers and due diligence processes. The Contract Analysis extracts common clauses and provisions. A red-flag report listing the key clauses will support legal workers in the process, achieving significant time and cost saving while maintaining high-quality results.

4. Technology Scouting for Enhancing Decision-Making

In certain industries, for example in patent application and competition monitoring, it is essential to identify and analyze expert knowledge quickly by drawing on reliable data sources. This includes easily accessible internet data (visible web) but also deep-web content which is not accessible by standard internet search engines and limited by paywalls and other access restrictions. With the help of high-quality crawlers, machine learning and predicate-argument analysis, the precious information nuggets can be identified, collected and aggregated to a thematic dossier for a real holistic view and better decisions.

Conclusion:
Cognitive Search for Smart Business

Thanks to AI, machine learning and deep-learning methods, enterprise search has long since been a comprehensive cognitive search solution. Knowledge workers profit from instant high-quality information, easier decision-making, and consolidated and enriched information. ∎

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