



Raffle AI Comparison Whitepaper 1.4

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Abstract

Exploring the differences between keyword-based search, string search, mixed keyword search, and user errors in search and how Raffle compares to all of these.

Raffle AI's technology makes it possible to get excellent search capabilities for a knowledge base and operates under a zero-shot model, meaning it works out of the box.

The zero-shot model allows AI to contextually understand the user's intent, using Natural Language Processing (NLP) and machine learning, even if the information is new, based on old knowledge.

We will deep dive into how the Traditional Search technology is inferior compared to the Raffle Search technology and provide multiple examples between the two technologies. We will focus on four categories; keyword searches, string searches, user errors in searches, and mixed keyword searches.

Traditional Search

Keyword-based search

Traditional information retrieval uses keywords and tags in an almost exclusively engineered approach to search, meaning it is tedious and costly. It is based upon matching each word, or term, in the search query against each document in the knowledge base.

Term-documents matches get a score according to a ranking function that considers how frequent the term is overall in the knowledge base and how long the document is. So a

Raffle AI Technology Whitepaper

match with a rare term in a short document will score higher than a more frequent term in a longer document.

Terms are treated as independent, so the final ranking score for a document is the sum of the scores for each of the terms in the query.

A famous scoring function is [BM25](#) is used in the open-source information retrieval system [Apache Lucene](#).

Lucene is at the core of the Elastic and Algolia enterprise search solutions; therefore, these perform very much like Lucene.

[Apache Solr](#), which we have also benchmarked Raffle AI technology against, is also an application built on top of Lucene.

Traditional search technology can be extended in a number of ways, such as boosting specific fields (for example, a match with a title can get a higher score than a match within the text), synonym lists, [stemming](#), and taking [hyperlinks](#) and [other non-content signals](#) into account.

The screenshot displays a search interface for the keyword 'hyperinflation'. On the left, a sidebar shows navigation options: All, Insights, Events, People, Press releases, and Blogs. Below these is an 'Advanced search' button. The main content area shows 433 results, with a filter for 'Search this site' and a 'Relevance' dropdown. The results list includes:

- KPMG Powered Enterprise Service Management**: Provide a consistent and seamless experience to employees and consumers.
- Customer Solutions**: Improve customer experience and increase revenue growth with CRM.
- Business Support Functions**: Start empowering your operational functions with smoother processes.
- Contractual compliance**: Establishes reliability and confidence when entering into contracts.
- Russia-Ukraine war to lower global growth prospects**: 31 May 2022. Inflation and supply chain issues lowers expectations in our new Global Economic Outlook.

On the right, a detailed view of a search result is shown, featuring a title 'How should companies account for hyperinflationary economies?' and a snippet of text: 'During times of economic uncertainty, many economies experience increased levels of inflation - and in some cases, hyperinflation. Companies with operations whose functional currency is that of a hyperinflationary economy should expect to apply IAS 29. Getting into more detail Indicators of hyperinflation Hyperinflation is indicated by the characteristics of an economy, which include but are not limited to the following: How should companies account for hyperinflationary economies?' Below this, there are sections for 'Insights - KPMG Global' and 'More news on IFRS® Standards'.



Here we see a website for a multinational professional service provider, before and after Raffle. Before adopting [Raffle Site Search](#), a single keyword search would result in a poor solution that often did not resemble the word searched. While with Raffle, the model understands that the search keyword and the context of the content need to match, thus

returning accurate search solutions every time.

String Searches

Similar to keyword-based search is string search, where the algorithms attempt to find one or several terms within the string to return the correct document.

Within computer science, string searching algorithms attempt to find a place where one or several strings are found within a larger string or text. The algorithms that string search operates on are engineered to be able to find those terms listed.

The SuperC and other Programming Development Managers (PMD) compare data sets of unlimited size and record length at the file, line, word, or byte level.

For example, enter the string, meaning the service of words or terms you are searching for, and SuperC can find a compatible match. The terms or words in the string do not need to be in uppercase or lowercase in the original data sets unless you have selected the Case sensitive option, in which case, only strings matching the exact string are found. PDM allows you to search for a character or hexadecimal string, meaning a combination of the digits 0-9 and characters A-F, in source physical file members or data physical file members.

Search Results for: How do you reduce risks

SEP 26, 2020
Insights from Industry Leaders: Beate Born on **How Firms Can Get Ahead of Operational Risks**

AUG 24, 2020
Managing Cybersecurity **Risks** in an Uncertain World

AUG 27, 2019
A Compliance Officer's Day Planner: **How Does Your Average Day Stack Up?**

OCT 22, 2021
Tips & Tricks for Chief Compliance Officers: Cybersecurity

SEP 9, 2021
Tips & Tricks for Chief Compliance Officers: Social Media Risk

JAN 11, 2021
Top 3 Compliance Trends for 2021

DEC 14, 2020
Tips and Tricks for Chief Compliance Officers: Key Learnings from 2020

MAR 20, 2020
When Business Continuity Plans Become Business as Usual

MAR 3, 2020
GDPR: Ground-breaking regulation or damp squib?

JUN 19, 2019
Industries

raffle

You search engine is ready for use. Search or ask anything!

Discover Analytics Share

X How do you reduce risks Enter

INDUSTRIES > INSURANCE

Insurance Compliance Solutions - ComplySci Platform

Reduce Risk Protect Your Reputation Protect your firm from potential risks associated with employee personal trading, gifts and entertainment, political contributions, and outside business activities. Monitor to ensure employees are complying with your code of ethics policy and stay ahead of any potential risks such as insider trading and front-running.

WHISPAPER > CULTURE OF COMPLIANCE - EUROPEAN

Building a Culture of Compliance (European edition) - ComplySci

Download Building a Culture of Compliance: Why Risk and Compliance Procedures Matter to learn how to place governance, safety, and control at the centre of your firm's culture. DOWNLOAD NOW

blog > signs-your-compliance-program-is-outdated

Six Signs Your Compliance Program is Outdated %

Establishing an effective compliance program, or improving an existing program, is no easy feat. So, when you are confident you have identified your firm's risks and implemented policies and procedures designed to prevent, detect, and correct rule violations, you can sit back and relax. Right? Wrong. The reality is that your compliance program needs to continually evolve to keep pace with regulatory changes, as well as with the firm's growth and expansion efforts. If you recognize one or more of the following signs in your firm, it may be an indication that your compliance program could benefit from some updating:

If your compliance program is outdated, implementing up-to-date technology can go a long way in helping you get back on top of your firm's risks. When you introduce modern compliance technology, employees and supervisors will find it easier to get their work done (and they can do so from practically anywhere in the world). Compliance staff will also have advanced tools at their disposal to help identify patterns and potential issues that otherwise may not have been identified.

1. You don't regularly evaluate risks. The risk landscape for financial services firms is in nearly constant flux. New and emerging risks stemming from the rapid pace of

The website search shown belongs to a software company that specializes in risk and compliance management. As we can see, the search does not return correct results from string searches. It begins to find a perfect match on individual words which is what traditional search engines do.

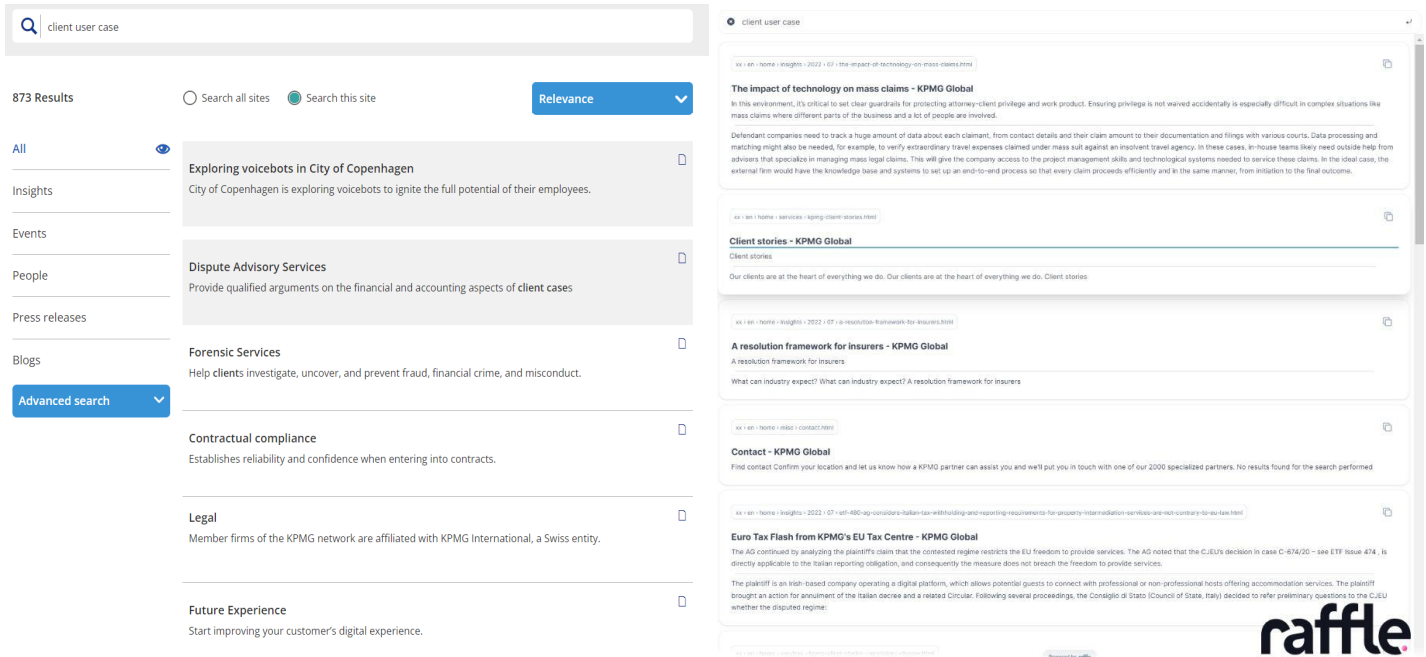
However, [Raffle Site Search](#) produces the correct results as the string search is understood using Natural Language Processing (NLP) to gather the contextual relationship of the words used. This allows your users to find the answer to their inquiries quickly and reduces customer support calls and increases customer satisfaction.

Mixed Keyword Search

A combination of keyword and string search is a mixed keyword search where you have several keywords listed that may or may not correlate. Each word or term is then read by the software returning documents that have those keywords.

The issue with this type of search is that the context of each keyword and how they correlate is not understood by the search; thus, you may have numerous documents that are not relevant to your search.

Each of these types of searches falls short in its own way as they almost never deliver exactly what the user is searching for, resulting in lost time.



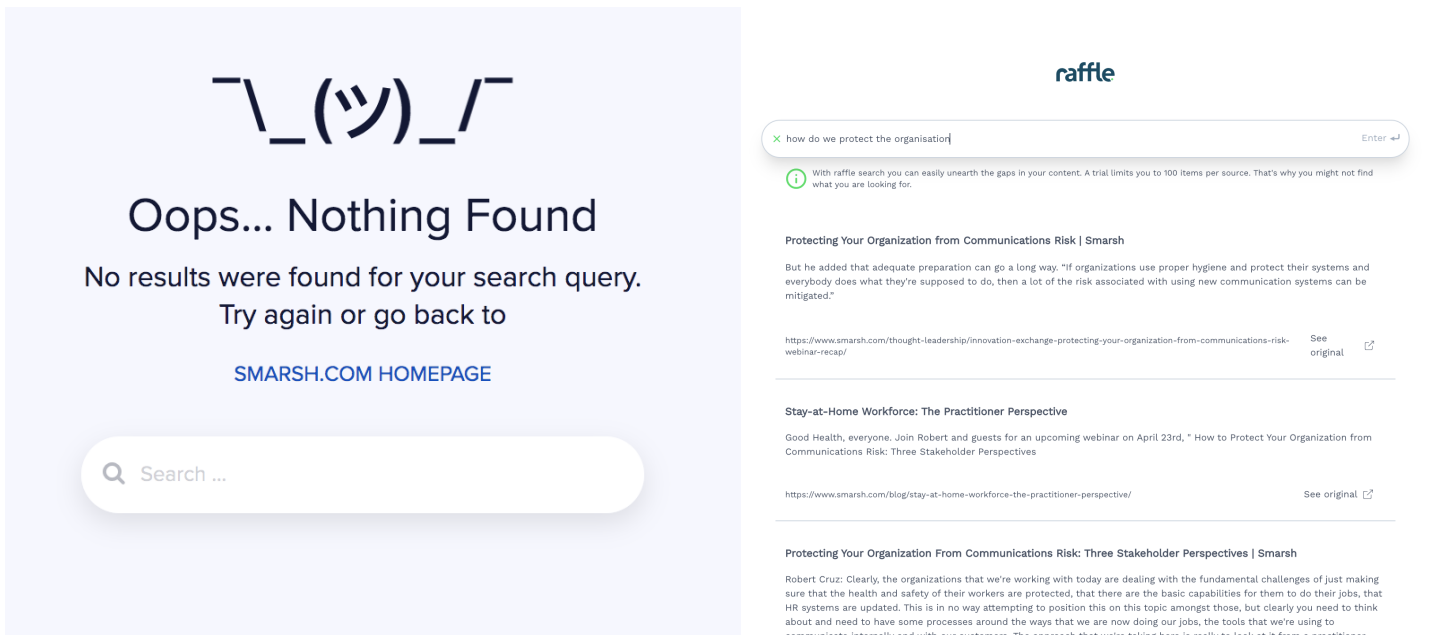
This multinational professional service provider website search can not handle a mix of keywords. The search results are atrocious and do not offer what a user may be searching for, whereas the Raffle Site Search returns results that match the search quarry.

User Errors in Search

We are human. We make mistakes, especially when quickly searching for information. Users may have a misspelling, grammar mistake, or misplace a word leading to an inaccurate search.

Keyword, string, and mixed keyword search takes time to program and is fickle to use as one mistake or misspelling on either end results in errors that lead to information being lost. These types of keyword searches can only solve a problem if they are constantly maintained and corrected.

Opposite to keywords, there is natural language processing (NLP), which allows customers and employees to type in their own words with misspellings in different languages, and grammatical issues and can still produce the data that is being searched. NLP is the future that surpasses keyword searches.



On the left, you see an error in search from a multinational SaaS corporation that uses Coveo, which is also based on traditional search as a core element. How many times has this popped up and left you confused and at a loss? But with Raffle, no matter the misspelling or mistake in the search or the document, there will be answers.

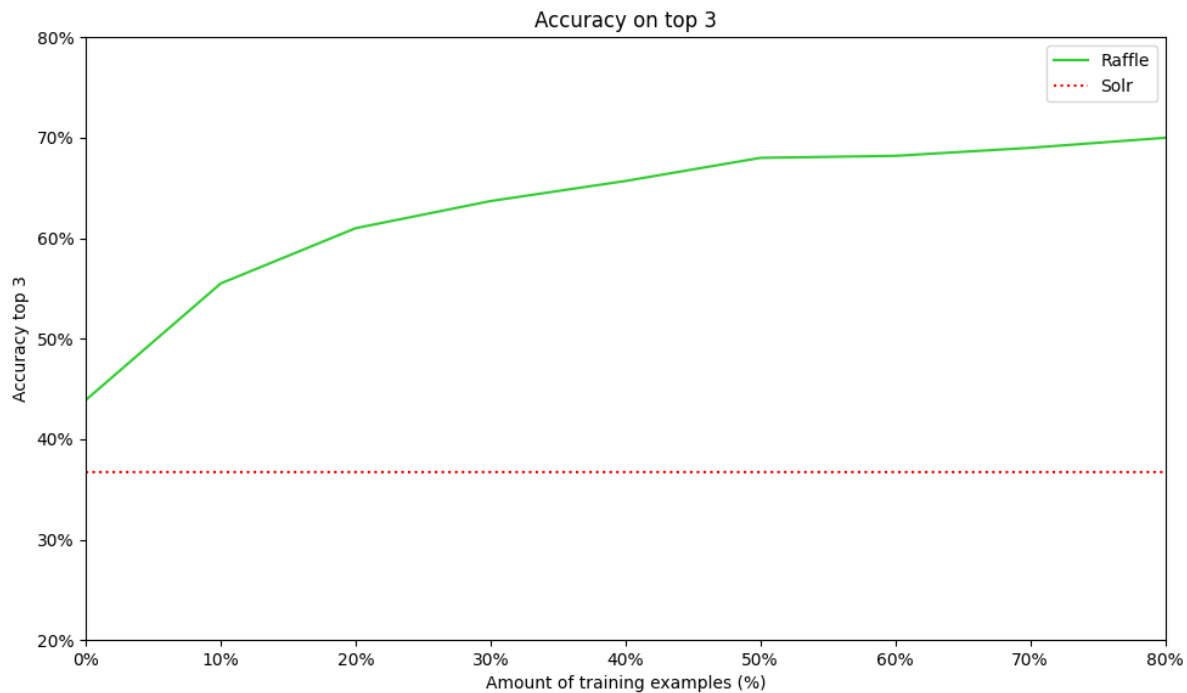
Current Search is broken

Getting correct answers in almost all search cases rather than in a maximum of only 1/3 of the search cases makes a huge practical difference.

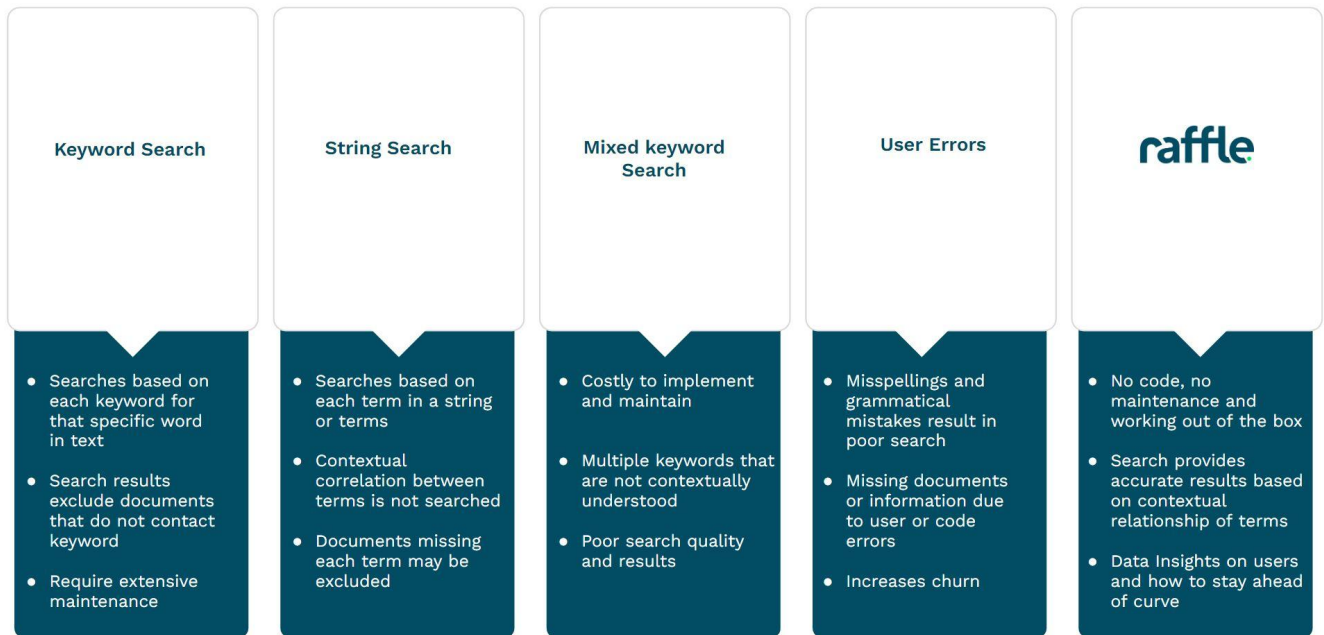
Additionally, when replacing traditional search with Raffle, there is no maintenance or tweaking, and the users don't have to think about how they spell, what exact words they use or if they need to explain something in sentences instead of single words.

With Raffle Search, the number of useful answers more than doubles compared to traditional search out-of-the-box!

For the real use case of having a Raffle Search model set up for each customer, the performance will be between 78-91% compared to a maximum hard cap of 38%.



Traditional search is broken and needs to be improved to meet the future. One of the strongest trends in technology for the past ten years is the data and machine learning-driven approach. The engineer should no longer design the solution but rather design a learning system that, when trained on data, gives a better solution than the purely engineered one.



[Gartner in 2019](#) states that “by 2025, customer service organizations that embed AI in their multichannel customer engagement platform will elevate operational efficiency by 25%.”

[Raffle Site Search](#) can directly improve the search results of a website allowing customers to find the information they are looking for with 96% accuracy. As our model is pre-trained using over 70 thousand high-quality data sets, our search starts with operational efficiencies of a stunning 78% accuracy, while the best traditional search efficiency reaches a hard cap of 42%. Raffle, by far, offers the best search and even continues to learn and improve so there is no need for manual maintenance like traditional search engines requires.

Moreover, Raffles AI-powered search is a zero-shot model that starts working from day one and understands the contextual relationship between words individually and in a string sentence returning the exact solutions. No code, no maintenance, and no fear of typed mistakes.

Raffle offers two products [Raffle Workplace Search](#) and [Raffle Site Search](#). Raffle Workplace Search is revolutionary for employee search of the company’s knowledge bases, while Raffle Site Search is used for customer search.

Both Searches have [Raffle Insights](#) that gathers advanced data from the search, clustering trending questions and knowledge gaps, mapping out the content to give a clear overview and benchmarks in industry and size. Also resolution rates and other optimization rates allow our customers to stay ahead of the curve.