

# INTELLIGENT SEARCH CREATES CONNECTIONS

New application applies existing text analytics to take a predictive approach.



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**EVEN WITH** the progress government has made analyzing its massive volumes of data, much remains to be gained by infusing the research and analysis process with machine intelligence.

Most agencies rely on text analytics and big data algorithms, and yet, those tools stop short of truly intelligent search.

How do I know what I missed? Traditional search cannot help. It's considered wrong for a search engine to return a document that does not match the user's query. To retrieve data, a user must have some idea of what she could find.

A new frontier in text analytics is expanding users' reach by automatically analyzing in-progress notes, such as an email in Outlook or a page in OneNote. This allows machine intelligence algorithms to automatically evaluate vast data repositories to recommend nuggets that fill in knowledge gaps in the user's document—without waiting for the user to randomly stumble across key facts or manually formulate an explicit query.

Machine intelligence is key to these new content recommender tools. Users should expect content recommenders to learn from authoring actions, such as quoting a source or highlighting a key phrase. Once users wrap their heads around the idea of an autonomous research assistant that reads their in-progress notes, they like being prompted by the software to consider new documents.

It's a common practice to run text analytics on finished documents. Applying the same algorithms to a user's in-progress document is a natural extension, and the results are transformational. This allows the machine to continuously re-evaluate all available data for insertion into the user's document. Such machines operate at human-level accuracy, and enable humans to operate at machine scale.

By participating in the user's iterative discovery workflow, this new kind of engine can also track what the analyst discards. Such feedback allows the machine to learn

automatically and actively throughout the user's long-running exploration. The recommender algorithm can follow the document even as a user shares it with her colleagues and multiple people engage in editing and discovery.

This new application of text analytics accelerates both junior and senior analysts. It learns from the user's triage of new content, and provides a quick picture of the knowledge graph surrounding a user's notes. By keeping track of which recommendations a user accepts or rejects, the tool "hangs in there" as the researcher's thoughts evolve.

Researchers can also use this type of intelligent search assistant to track complex connections. For example, with traditional search tools, a researcher tracking an organization's activities might miss a document indicating that one of its partners or suppliers built a new facility next door – a classic unknown unknown that this new approach can detect.

A content recommender can automatically formulate queries to multiple backend data stores, allowing the user to focus on the content rather than handjamming dozens of queries. Many tasks previously considered "AI hard" become tractable when organized as recommender tasks. For example, a content recommender can accelerate a cyber threat analyst gathering evidence for links between hackers, tools, infrastructure and victims. Content recommenders can pull data from across languages and disparate data sources multiple hops out from the user's current notes.

All organizations that process information will benefit from this new kind of intelligent search. From advanced threat intelligence to solving a backlog of information requests, putting machine intelligence into your in-progress documents allows you to uncover the whole story, so you can ask the big questions immediately.

*John Frank is CEO of Diffeo.*



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