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IBM's Watson Beats Humans on Jeopardy; Up Next: Searching the Prior Art?

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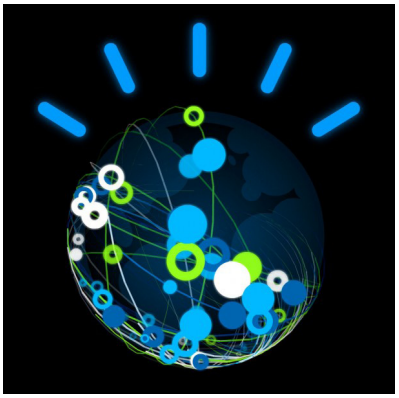
Watson may be eyeing your job. That is, if he (it?) had an eye. The IBM supercomputer bested Ken Jennings and Brad Rutter on *Jeopardy!* last week, leading many to ponder: what's next?

Mastering Jeopardy was no easy feat. Jeopardy questions are largely based on puns, jokes and double meanings, requiring a depth of language comprehension difficult for a computer. Watson did bring an encyclopedic knowledge base to the competition, but encyclopedic knowledge alone does not confer the ability to figure out what the question is asking—or as in Jeopardy, what the answer is causing you to ask.



Watson learned how to find the answers to Jeopardy clues using a process called machine learning. Pre-machine learning, artificial intelligence required manual input of common sense ideas, rule by rule, until the computer "learns" that rain falls and a banana doesn't move on its own. Rule-based learning requires a rule for each situation the computer might face, noticeably limiting the computer's ability.

In contrast, machine learning allows the computer to learn from examples by searching for patterns among similar items. For example, recommendations suggested by the online retailer Amazon are generated by comparing your browsing and buying history with other Amazon customers. Instead of feeding the computer a rule, "if a customer buys coffee, then recommend a smooth jazz CD," the Amazon process looks at what other coffee buyers tend to purchase to generate a recommendation.

Watson has expanded the use of machine learning using the medium of Jeopardy questions. In order to answer a question, Watson generates potential answers as a list of competing hypotheses. Each guess is then graded based on rules that Watson picked up by comparing old questions and answers; rules like "flick" can mean "movie," so the answer might be the title of a movie. Each new question Watson answers adds to his knowledge and list of rules.

Watson's logical prowess has a very real potential as a tool to find and compare patents to one another and to a particular legal issue. Patent prosecution is lengthy and unwieldy, and searching is expensive, cumbersome, and somewhat mechanical. The same is true for patent litigation. However, a true analysis of the available prior art has been impossible using machine generated searches—synonyms are overlooked and results are jumbled by unconventional terminology that happens to be used when claiming an invention.

Watson's demonstration of machine learning on Jeopardy is a proof of concept for the use of similar machine learning in patent prosecution and litigation to at least partially mechanize the search for prior art. It is unlikely that Watson will steal any jobs, in part because Watson's decisions are still his "best guess" and are devoid of the elusive mature human judgment. But, there is hope that Watson and his lineage will add efficiency to a system that desperately needs it.