

How web search data might help diagnose serious illness earlier

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Early diagnosis is key to gaining the upper hand against a wide range of diseases. Now Microsoft researchers are suggesting that records of the topics that people search for on the Internet could one day prove as useful as an X-ray or MRI in detecting some illnesses before it's too late.

The potential of using engagement with search engines to predict an eventual diagnosis – and possibly buy critical time for a medical response—is demonstrated in a new study by Microsoft researchers Eric Horvitz and Ryen White, along with former Microsoft intern and Columbia University doctoral candidate John Paparrizos.

In a paper published Tuesday in the *Journal of Oncology Practice*, the trio detailed how they used anonymized Bing search logs to identify people whose queries provided strong evidence that they had recently been diagnosed with pancreatic cancer – a particularly deadly and fast-spreading cancer that is frequently caught too late to cure. Then they retroactively analyzed searches for symptoms of the disease over many months prior to identify patterns of queries most likely to signal an eventual diagnosis.

"We find that signals about patterns of queries in [search](#) logs can predict the future appearance of queries that are highly suggestive of a diagnosis of [pancreatic adenocarcinoma](#)," – the medical term for [pancreatic cancer](#), the authors wrote. "We show specifically that we can identify 5 to 15 percent of cases while preserving extremely low false positive rates" of as low as 1 in 100,000.

The researchers used large-scale anonymized data and complied with best practices in ethics and privacy for the study.

More information: Screening for Pancreatic Adenocarcinoma Using Signals From Web Search Logs: Feasibility Study and Results. [DOI: 10.1200/JOP.2015.010504](https://doi.org/10.1200/JOP.2015.010504)

Provided by Microsoft

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