The IoT Will Require A New Kind of Search Engine

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In an increasingly connected world, the Internet of Things is already massive – and it hasn't even hit its stride yet.

According to Gartner forecasts, 5.5 million new things are being connected every day in 2016. By 2020, the total number of connected devices in use worldwide is expected to reach a whopping 20.8 billion.

Already, carriers like AT&T and Verizon are gearing up for the IoT opportunity: AT&T already has more than 30 million connected devices on its network and Verizon has acquired a number of IoT technology companies. But in a new article published in IEEE Intelligent Systems based on research from University of Surrey in the United Kingdom and Wright State University in the United States, there's another set of players that needs to prepare – search engines.

The authors, Payam Barnaghi of the University of Surrey and Amit Sheth of Wright State University, argue the rise of the IoT has created a critical need to develop new search solutions that will open up information from IoT sources to discovery and extraction. Existing search solutions, which are effective at hunting through web pages for textual data, will not meet the needs of the IoT, the authors said. This is because IoT sources are not homogenous and contain different numbers of resources and vary in the amount and complexity of data they contain.

An efficient solution for IoT searches, Barnaghi and Sheth said, will need to include coordination between networks, data and service provider resources, and core IoT components.

"Search engines have come a long way since their original purpose of locating documents, but they still lack the connection between social, physical and cyber data which will be needed in the IoT era," Barnaghi said. "IoT data retrieval will require efficient and scalable indexing and ranking mechanisms, and also integration between the services provided by smart devices and data discovery."

But work is already underway.

The University of Surrey's 5G Innovation Center said a number of projects related to IoT search engines are already underway, including the development of search mechanisms that describe the sources of data required and algorithms for clustering and analysis of IoT 'time series' data.