Better, faster and more accurate
Researchers from the NUS School of Computing are developing a new generation of media search innovations

The co-existence of search engines such as Google, Yahoo, Bing and Baidu is evidence that media search is big business. Multimedia information, in text, image, video or audio format, is pervasive, fanned by the proliferation of social networking sites and user-generated platforms.

Businesses and individuals are on the lookout for more efficient data mining and search tools. They want these to process, analyse and fuse the various sources of information to sharpen their competitive edge as well as to add value to customers.

It's no wonder that researchers from the National University of Singapore's (NUS) School of Computing are pioneering a new generation of media search innovations, spanning from web-scale image and video search to multilingual search, scanned text search, music search and speech-based search.

Here is a brief overview of some of the cutting-edge innovations that could soon be available in the market.

Better search tools
Search engines typically find information by sieving through their index of Internet web pages and documents, and returning those relevant to the user's search.

The explosion of multimedia content on-line has meant that users need search tools that can also handle real-time content. For instance, these tools could search information generated by social networking sites or surveillance systems.

Search engines are being developed that will allow users to make queries in their own natural language and receive more precise answers, compared to ranked lists of documents, which are provided by current search engines.

Users and businesses can leverage on these new search engines to obtain different types of relevant information from more sources, without having to use complex search query codes.

Analysing & understanding documents
Recent advances in printing, scanning, photocopying and digital photography have produced a proliferation of document images in both work and our daily lives.

While these document images are easily understood by humans, they pose great challenges to computers. Document analysis examines document images, in order to understand their contents.

New developments are being made to advance extraction and recognition of text, graphics and symbols in document images, thereby boosting computers' analysis of documents.

A start-up company is already exploring the use of these new technologies to aid their processing of scanned images from US patent documents.

Similarly, businesses can use these technologies to accurately and quickly convert and extract useful information from their own repository of physical documents and images.

Searching for speech
Much of the multimedia information on the Internet now contains speech, including news broadcasts, lectures, webcasts and podcasts. In order to search through this content, these spoken documents must first be translated into text.

This is being made possible using the automatic speech recognition (ASR) technology, which allows search queries to be made using speech.

Researchers are now working to improve the technology's accuracy and reliability to make zooms for spoken document retrieval and voice search. These applications can be handy for businesses and individuals alike, since speech is the most natural and convenient interface.

Richer map experiences
Online street maps like GoThere.com and Google Maps provide panoramic but static views from various positions along the street.

This experience can be further enhanced through a web-based search engine that allows users to search for geo-referenced videos, by specifying a location of interest on a map.

This future search engine could even provide for community-driven data contributions, where individuals easily capture and upload a video and its associated location information.

For businesses, this search engine can potentially provide marketing opportunities. For example, shops can upload videos that are linked to their location on a map, giving customers a "real-life" view of their outlets.

Smarter surveillance
In security surveillance, it is important for businesses to analyse live data properly, including video feeds from a network of surveillance cameras.

This can be a challenge, especially when the data has to be acted upon rapidly. New techniques have been developed to design more effective surveillance systems, which can be adapted to meet specific goals.

Such systems, for instance, will help organisations managing airports, train depots or bus terminals to strengthen the security of sensitive areas.

As the world's economies become increasingly knowledge-driven, the challenge is no longer focused on just who has the access to the right information, but also who has the ability to find the right information.

Businesses wishing to succeed need to leverage upon these new technologies and innovations to boost their competitive advantage.

This article is contributed by the NUS Industry Liaison Office, which is organising a seminar on Aug 12 to help the industry learn more about media search research activities. Interested parties can register at http://rim.nus.edu.sg