Trying to outsmart Google

Developers working on an advanced search engine want to employ public security cameras, but there are concerns about privacy. By **Antonia Maiolo**.

University of Glasgow researchers are developing a new kind of web search engine to solve more complex queries. The computer scientists have designed an innovative program to tackle advanced location- and person-specific queries.

The search engine will be able to address questions search engines like Google cannot currently answer, such as "how busy is the city centre?"

The SMART project (Search engine for MultimediA enviRonment generated contenT) is a collaborative European research initiative with partners including IBM's Haifa Research Lab and the University of London's Imperial College.

The search engine, which is expected to undergo live urban testing by 2014, will work by collating information obtained from sensors such as cameras and microphones,

and by cross-referencing the real-time findings with data from social networks such as Twitter and Facebook. Once up and running, users will be able to ask questions like, "where is my friend going to a music event this evening?"

Dr Iadh Ounis of Glasgow's school of computing science says the answer will come from matching facial recognition of the person from CCTV cameras with the individual's social media activity. "SMART builds upon the existing concept of 'smart cities', physical spaces which are covered in an array of intelligent sensors which communicate with each other and can be searched," he said.

While the SMART engine could improve access to information, there are concerns over privacy and safety for internet users. Rob Livingstone, a fellow at the UTS Faculty

of Engineering and Information Technology, said while people agree to terms and conditions when signing up to social media sites such as Twitter and Facebook, they do not do the same for security and surveillance cameras.

"Mashing that information together is certainly a much broader concern from a societal privacy point of view," Livingstone said. The problem is that the search engine won't just be using social media sites to locate people's whereabouts. "CCTV is a separate issue because you have not agreed to the terms and conditions of being observed by CCTV standing on the street corner," he said, adding, "it isn't a conscious decision to be watched or recorded by cameras that could be accessed by anyone over the internet."

He also points out that CCTV footage may not be a reliable source for identification, as footage is not always clear and faces can be obscured by clothing. Livingstone said there are possible legal implications for using CCTV footage for purposes other than monitoring theft and public safety. ∎

Google facts

- Since being founded in 1998, Google is now the most-used search engine on the web.
- In 2006, Google received 400 million queries per day through its various services.
- Its most popular search tools are Google Search, which searches the net for text, and Google image search.
- Some other services Google offers include: Google News, Google Voice Search, Google Suggest, Google Product Search, Google Maps, Google Co-op, Google Earth, Google Docs, Picasa, Panoramio, YouTube, Google Translate, Google Blog Search and Google Desktop Search.
- Google dethroned the previous search champion, Alta Vista, founded in 1995.
- Alta Vista, owned by Yahoo!, was the first searchable full-text database on the web.
- Traffic to the site increased from 300,000 hits on its first day to more than 80 million hits two years later.
- Google's popularity saw the decline of Alta Vista, and this year Yahoo! announced it would discontinue the site.

Students' superhuman device

By Antonia Maiolo

Australian students' have unleashed a superhuman power, giving people the ability the see through solid objects.

It seems that x-ray vision is no longer just for Superman.

Led by professor Salim Bouzerdoum, a group of students from the University of Wollongong, NSW, have built a portable device that can see through walls and objects in real time.

Bouzerdoum said he has always been fascinated by "seeing" systems, be it biological or artificial vision systems, and "when the opportunity arose to work
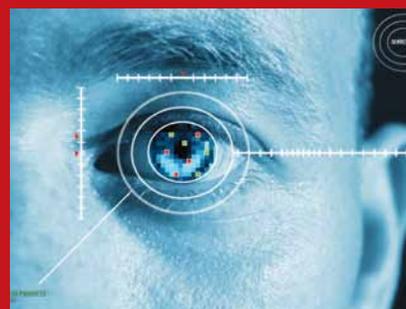
on a radar system that can see through walls, I was attracted to the idea".

The aptly named CSI or Compressed Sensing Imager has won the group a national innovation award for their efforts.

Although devices that can 'see' through walls already exist, the innovative CSI can fit into a backpack, making it more

portable than older models that achieve x-ray vision.

So how does it work? Bouzerdoum said the system works by transmitting wideband electromagnetic waves that can penetrate walls and building materials. The reflected signals are then processed to form the image of the scene behind the wall.

Jie Yang, one of the students who worked on the device, said the system can reveal underground objects non-intrusively.

The researchers said the device could save lives by helping rescue teams locate people trapped beneath rubble, and to help anti-terror teams differentiate between hostages

and their captors.

Bouzerdoum said there are many situations where it is important to detect the presence of someone hidden inside a closed building and to know their precise location and movements.

"Firefighters, law-enforcement officers and security personnel all have a need for portable and compact through-the-wall sensing system that can discriminate between targets of interest and clutter with high resolution," Bouzerdoum said.

The Compressed Sensing Imager is expected to be used for range of military services that will help to minimise error in high-risk environments.

The team has built prototypes, with the plans to commercialise the device soon. ∎