Computer project has vision for the times

Bernard Lane

MIKE Brooks, the new head of research at the University of Adelaide, knows all about the vision thing.

He has spent years getting computers to see and to make useful inferences about what they see.

Thanks to a breakthrough by his research group, airports have intelligent video systems that allow them to spot something suspicious amid the passing blur of people.

“We worked out a way to detect packages left unattended,” Brooks says. “That sounds like a very easy thing to do. It turns out to be a very difficult thing to do... without giving endlessly false alarms or missing things.”

Technology can be troubled by surprises: a door that opens and changes the fall of light and shadow, and the everyday welter of coming and going that humans happily screen out.

“The more you work with computers and cameras, the more you realise our human visual system is an absolute phenomenon to behold,” Brooks says.

The breakthrough that allowed computers to distinguish unchanging background from passing foreground began to take shape a decade ago when Brooks worked with the former Co-operative Research Centre for Sensor Signal and Information Processing.

Under his protege, Anton van den Hengel, the Australian Centre for Visual Technologies continues to puzzle over problems of another order of complexity: how to co-ordinate networks of hundreds, even thousands, of cameras.

“There are tremendous problems within a single video, how you analyse these frames that are coming at you, let’s say, 32 times a second. The computational challenges are incredible,” Brooks says.

“Now imagine you’ve got the problem of tracking someone across a thousand videos as they wander through Sydney airport.”

But a new set of problems confronts Brooks as deputy vice-chancellor for research. Under proposed funding compact with government, universities expect they will have to nominate their key areas of research strength.

“We’ll be looking to make very clear statements about where we invest, where we’re choosing to concentrate,” says Brooks, who plans to set up a string of new research institutes and centres.

“Having said that, I think some of the more research-intensive universities will find it more challenging to say what they concentrate on (since) they have quite widespread activities at a very high level.

“It will be very easy to make a statement where you overlook some truly outstanding people. The danger is that if you don’t mention (some other area of research strength), does that mean you can’t go and ask for a Future Fellowship in that area?”