You can run around our campus and play the game. We modelled the buildings so monsters could jump out from around corners.

- BRUCE THOMAS

Heads-up displays reality in our digital existence

COMPUTER scientists at Monash Lakes are finding new ways to bridge the divide between the real world and the virtual world.

They dream of making the real world better, “enhanced” by smooth, easy access to digital information.

“Augmented Reality” - AR for short - is the name of the game.

Graphics and other digital information is laid over what the eye can see, using projectors, hand-held devices or special head gear.

Unisa Magic Vision Lab director Dr Chris Sander said the aim was to “revolutionize” how people accessed digital data and “multify human intelligence on a worldwide scale”.

“Currently, there is a divide between the physical world and the digital world,” he said.

“Kneels years for “heads-up” displays, here in SA, they are the first, bold steps.

The Magic Vision Lab has patented three mobile applications - Motivation, Distortion and X-ray Vision.

The scientists built a 3D model of Adelaide to test all three applications, which can be seen on footage on the Magic Vision Lab website - magicvisionlab.com.

The idea is to hold your phone out in front of you, take a video and watch as the building in front appears to melt away, exposing your chosen destination.

It’s just 10cm away, but you would never have known without the help of that phone and some clever software, unless of course you were prepared to spend a while struggling with Google maps.

Others are working on head-up displays for cars, to enable the driver to check the speedometer or the fuel gauge without taking his or her eyes off the road.

Take all of this a step further and you’re well on the way to cyborg vision - think Terminator 2.

How about a pair of fancy sunglasses that add graphics and other handy information to your view of the real world?

Perhaps a few details about that person you’ve just met on the street wouldn’t go amiss? Fact-checking? Unusuals? Why not?


UnisA Wearable Computer Lab director Professor Bruce Thomas said he was been known around the world for his work on a modified computer game.

The AR version of Quake allows players to fight virtual monsters outdoors in the real world.

“Knew I was going to do as a first-person shooter,” he said. “You can run around our campus and play the game. We modelled the buildings so monsters could jump out from around corners.

“Knew it was going to be a step up from virtual reality, because with augmented reality, designers could hold an object in their hands.

Marketing departments of major corporations are already adding striking black-and-white labels to product packaging, to cash in on AR.

Hold your smart phone over one of those and you’ll be directed to more information or treated to a three-dimensional sneak preview of the toy trapped inside the fancy box, just waiting to come home with you.

Prof Thomas said it wouldn’t be long before the technology advanced beyond markers. Soon it would be sophisticated enough to read labels and search intuitively. But he’s most excited about the potential to liberate industrial designers with the ease and flexibility of AR. His new laboratory is a dark room filled with strange, blank objects.

The scientists’ project images over the objects, to experiment with new designs.

UnisA Professor Bruce Thomas said it was a step up from virtual reality, because with augmented reality, designers could hold an object in their hands.

One of the potential applications is new “command and control” centres for submarines, dashboard layouts for cars and ideas for home appliances.

UnisA PhD student Michael Morarich is working on ways to help designers interact with augmented reality systems.

“Knew the thing on my finger, it’s bright orange, and the idea is we can use cameras to track where my finger is,” he said. “So the system knows when I’ve actually hit a button.”

Rather than having to make a physical version of the control panel, with all the buttons wired in and fully functioning, it’s possible to project an image of the panel across a surface and if the design makes sense.

“It’s a lot more flexible. You can easily move the buttons around,” he said. “Knew it was going to be a step up from virtual reality, because with augmented reality, designers could hold an object in their hands.”

And the finished product might look like this.

Prof Thomas and visiting scientist Dr Roy Davies, from Auckland University of Technology, joined forces at the RMIT Science Exchange this month to put on a show about augmented reality.

The free public event explored the potential for AR in a wide range of fields, “from art to industry and from gaming to landscape gardening”.

Watch the video at vimeo.com/11799131.

WHAT TO STUDY

- Year 12: Take high level mathematics and physics.
- UnisA: Bachelor of Computer Science (Information Science); Bachelor of Computer Science (Multimedia); Bachelor of Information Technology (Business Systems). Bachelor of Information Technology (Network Systems and Security); Bachelor of Information Technology (Software Development); Bachelor of Software Engineering.
- University of Adelaide: Bachelor of Computer Science (Computer Graphics); Bachelor of Computer Science (Computing Science); Bachelor of Engineering (Software Engineering); Bachelor of Engineering (Computer Science). Option to take double degree.
- Flinders University: Bachelor of Science in Computing and Digital Media; Bachelor of Computer Science; Bachelor of Computing Science; Bachelor of Computer Science.