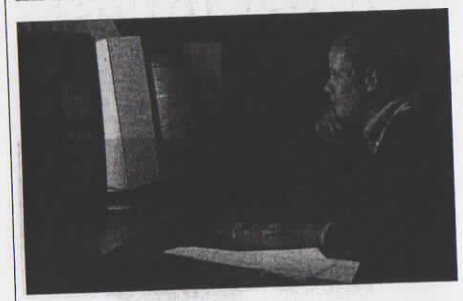
On-line information for international students



New information package for online students

International students can now access a wide range of information on-line, thanks to a new information package from Learning Connection.

The package covers a range of topics of interest to international students, including accommodation, on-arrival reception, visa requirements, enrolment, overseas student health cover, work rights, and study expectations.

The information sheets have been developed in consultation with community organisations, as well as with staff at the International and Prospective Students Office. They address frequently asked questions and, where appropriate, refer students to other resources, including on-line resources, for further information. The package is being constantly updated and enlarged.

Further information may be obtained from International Student Advisory Services staff at Learning Connection on all campuses. The information is on-line at http://www.unisanet.unisa.edu.au/learningconnection/intnal/isheets/index.htm.

BrowserBriefs

The creation of our nation

This site is hosted by the State Library of Victoria. It proclaims that the Federation of Australia from six British colonies on 1 January 1901 was not inevitable. The need for common defence policies, standardisation of railways, control over immigration and agreement on tariff policies, both external and internal, could have resulted in a cooperative association of states similar to the European Union, rather than a new nation. That Federation did take place was due largely to the efforts of certain charismatic and passionate politicians such as Henry Parkes, Edmund Barton and Alfred Deakin, who were able to convince the colonial public of the need to put aside their differences and rivalries and unite under one flag. This site gives a chronology of events, discusses the key people involved, discusses various themes, showcases various editorial comments (which reflected a variety of reactions), and provides links to related sites. For the really keen, the Australian Federation full text database is due for completion in July, and incorporates many original documents. A must for all Australians.

http://www.slv.vic.gov.au/slv/refresources/federation/

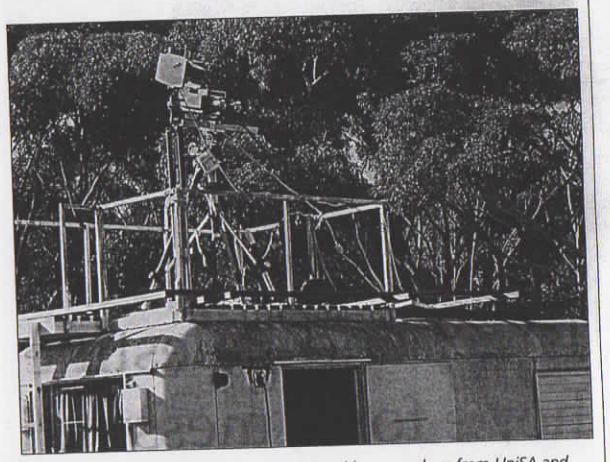
Attention art buffs

This site is primarily an index to where paintings, sculptures and other great works of fine art can be viewed online at hundreds of art museum sites and image archives worldwide. It provides links to worldwide art museums, the top 30 artists for each month, their top selling poster sales for each month, a monthly feature, art headlines from around the world, and links to fine art sites. Links are classified by artist, which are further classified in a variety of ways: by movement, medium, subject matter, and by nationality.

http://www.artcyclopedia.com/

A direct hit for surface landmine detection

Millions of abandoned unexploded anti-personnel and anti-vehicle landmines scattered by aeroplanes, helicopters and ground dispensers during combat pose a major threat to civilian populations around the world long after they have landed.



The novel knowledge-based system developed by researchers from UniSA and DSTO that automatically detects surface landmines

Covered by soil and vegetation and surrounded by debris over time, they often lie in an area littered with battle debris such as metal fragments, spent cartridges and destroyed equipment that can create a high degree of clutter, making detection of surface landmines with low false alarm rates extremely difficult.

Thus the clearing of mines is a slow, labour-intensive process with no more than 150,000 mines being deactivated worldwide each year.

While some current systems around the world have reasonably high detection rates, they produce high false alarm rates of between 2.5 and 3.0 per cent making finding and deactivating live surface landmines a hit and miss affair.

That was until now. Researchers from UniSA and the Defence Science and Technology Organisation (DSTO) have developed a highly accurate system with very low false alarm rates to detect surface landmines, according to Associate Professor Lakhmi Jain, leader of UniSA's Knowledge-Based Intelligent Engineering Systems Centre.

"With a false alarm rate of 0.02 per cent, we can safely say that our system leaves little to chance," he said.

"There is no one technique in the world that can achieve the required accuracy. Motivated by the way in which the human brain combines information from different sources to find a solution, our researchers have combined artificial intelligence with various techniques that can mimic the human brain in a limited way, with some expert results," Professor Jain said.

Dr Arthur Filippidis, a Research Scientist from the Land Operations Division at DSTO and an Adjunct Senior Research Fellow at UniSA, developed a novel system to automatically detect surface landmines for his PhD.

This system uses two sensors, a digital camera that can detect all targets including surface landmines quite accurately, and a thermal imaging camera with a rotating polariser that can distinguish between man-made and non man-made targets such as landmines and vegetation.

There are advantages in using two sets of cameras, according to Dr Filippidis.

"The digital camera can detect most of the targets but has a high false alarm rate while the polariser can distinguish between man-made and non man-made targets, making it more accurate, but it can't distinguish between one man-made target and another, for example, an aluminium can or a landmine," he said.

"Behind the cameras, which are at the front of the sensor suite, is where all of the processing of the images or intelligence takes place.

"This processing includes a combination of two neural networks that try to imitate the way in which the brain works by recognising patterns. We can train one type of neural network, which is supervised, on the landmine and non-landmine areas by showing it this data and the network puts it into memory, classifying the images from the camera sensors into landmine and non-landmine areas, based on the data in memory.

"The second neural network, a self-organising neural network, works unsupervised, and can process digital images in real time, within seconds.

"All of the information from the neural networks then goes to the fuzzy expert system, which imitates the way we humans think. In this particular case, the fuzzy system is a subject matter expert on landmines and, based on sets of rules that have been weighted, makes a decision on whether a target is a landmine or not."

Dr Fillipidis said that to optimise the accuracy of the system, his team had added another form of artificial intelligence called a genetic algorithm. This algorithm used methods to solve problems based on natural selection (Darwin's theory of evolution) and survival of the fittest.

"The fitness function in landmine detection might be high accuracy rates or the lowest false alarm rate and this biologically inspired genetic algorithm finds the optimum, giving us the highest accuracy rate for landmine detection," Dr Filippidis explained.

Geraldine Hinter ■