

# Research Directions

Office of Research Services

## ***Thinking Heads for Human Communication***

Professor Denis Burnham, MARCS Auditory Laboratories, and colleagues from UWS, national and international institutions has secured one of three 'Thinking Systems' Special Research Initiative grants jointly funded by the Australian Research Council and the National Health and Medical Research Council to explore the interface between human and machine through 'Talking Head' technology.



Addressing the question "How can real-time interaction between humans and machines be made significantly more effective" the multi-disciplinary research team led by Professor Burnham will take what is known about 'talking heads' used in settings such as tourist information kiosks and a range of computer interfaces, into a new realm of 'thinking heads' that learn from encounters with human interactants. A 'thinking head' will adapt to our requests for information and tailor its responses accordingly.

The project brings together researchers in the fields of artificial intelligence, robotics, language technology, cognitive science and computer science to develop a new generation of intelligent machines. The next generation robots and information systems will interact with humans and be controlled by their human users in ways currently thought of only in the realm of science fiction.

Professor Burnham says the project will 'address a range of fundamental interdisciplinary issues about verbal-aural communication, the most efficient of human communication systems. We want to make human-machine communication just as efficient. The approach is novel in the way it integrates the software and hardware that makes 'talking heads' with a process of detailed analysis and evaluation from the perspective of cognitive science to inform development and elaboration of successive versions of a 'Thinking Head'.

The project is likely to have far-reaching benefits for human-machine communication, including in the areas of telecommunications, e-commerce and mobile phone technology. The outcomes may also provide valuable technological advances in provision of personalised aids for disabled technology users, the hearing impaired, the elderly, children with learning difficulties, and foreign language learning. Industries such as the film industry, gaming and animation will be facilitated by developments from the project. World-renowned Australian-based 'cyberhuman' electronic performance artist Stelarc is also involved in the project.

**Project Title:** *From Talking Heads to Thinking Heads: A Research Platform for Human Communication Science*

Funding has been set at: \$3.4 Million.  
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