

Vision chip for new generation of 'human' robots

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The University of Manchester is to help develop a new generation of robots with 'human' instincts.

The REVERB project, which involves BAE Systems and a number of other leading UK Universities, is aimed at developing new technologies which will enable robots to respond to events and multi-task in similar ways to humans and animals.

As part of the project The University of Manchester will develop a state of the art Vision Chip.

Dr Piotr Dudek, from the University's School of Electrical and Electronic Engineering, who will develop the Chip, says: "We are looking to develop an intelligent robotic system which can react to its environment and correct itself without human intervention.

"The Vision Chip will be based on the retina of the human eye and will work in a similar way giving the robot excellent peripheral and central vision. Like the human eye, the Chip will process very complex images at rapid rates filtering them through to the robot's brain and enabling it to react in real time."

The aim of the REVERB project is to unravel how the vertebrate brain copes with the action-selection problem. Once the team have established this, computational models of the brain will be constructed and used in the robots.

Dr Kevin Gurney from the University of Sheffield, who is leading the

REVERB project says: “This project will enable researchers from a number of disciplines and institutions across the UK to work together to understand how animal nervous systems integrate sensory information in guiding behaviour, and then to transfer these insights to the building of robotic platforms.”

BAE Systems believes the technology could be used in devices such as its laser-guided Crawler for carrying out tasks such as machining and inspection of aircraft parts. Other ideas include building devices to assist the disabled or infirm.

“Our basic premise is that nature builds systems very well, and if we can mimic those systems then we hope to be able to build better robots which combine the best of both the computer and the human worlds,” says Dr Dudek.

The Vision Chip will be based on a prototype Dr Dudek has spent the last seven years developing. It measures 1cm^2 and contains 16,384 microprocessors enabling images to be sensed and processed at ultra-high speeds. The Chip will form the integral part of a wider vision system which will be built around one high resolution camera and a lower resolution peripheral camera.

Source: The University of Manchester

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