

# An invitation from intelligent robots

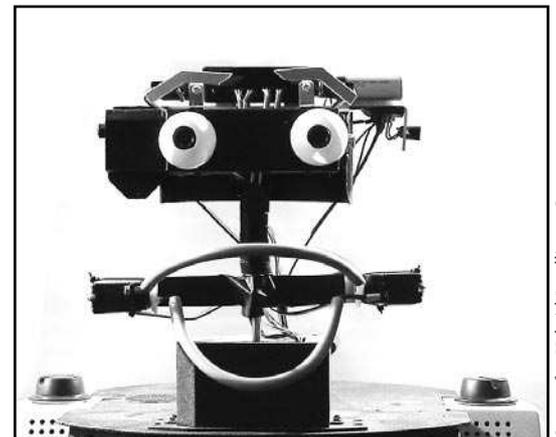
**Centre for Hybrid Intelligent Systems, University of  
Sunderland, 21–22 January 2009.**

*The Hybrid  
Intelligent Systems  
group has  
developed robots  
that are capable of  
natural behaviour  
in everyday real  
world situations.*

The first NCAF conference of 2009 will be held at the University of Sunderland, and hosted by the Centre for Hybrid Intelligent Systems (HIS) and the NESTCOM project. The event will be held at the Sir Tom Cowie Campus at St.Peter's along the banks of the River Wear with a special evening event at Sunderland's National Glass Centre. On arriving at St.Peter's you will enter into the award winning David Goldman Informatics Centre, which has been described by some students as a 'computing cathedral'.

The focus of this natural computing application forum meeting will be Intelligent Robotics. The Hybrid Intelligent Systems group has an international reputation in this area and has produced award winning intelligent interactive robotic systems. The group has participated and co-ordinated several European Union and several Engineering and Physical Sciences Research Council (EPSRC) projects including EmerNet, Micram, Mirrorbot, Mira, and NESTCOM. The HIS group has developed robots that are capable of natural behaviour in everyday real world situations. This involves investigating many cognitive tasks, for example, navigation, language processing and visual recognition. In a number of projects we use our cognitive robots to study learning and communication in real world environments. The foundation and motivation for much of our research comes from natural systems such as biological systems, neural systems or cognitive systems. We use these foundations in order to build more sophisticated adaptive interaction systems, learning agents, self-organising information systems and robotic engineering systems.

For instance, MIRA is our robot head that we use to research into principles of neural network learning, human-robot interaction, language parsing and understanding, vision and image recognition, auditory localisation and basic emotions. It is capable of head movements, generating emotional features through expressions, limited word generation and



*The MIRA robot head*

Centre for Hybrid Intelligent Systems,  
University of Sunderland

recognition and is also able to hear, localise and track sounds. Recently we have implemented new approaches to neural learning of sound localisation or tracking, i.e. turning the head to the sound, limited word recognition and generation within restricted dialogs and emotion generation (via movements of mouth and eyebrows).

The NESTCOM project focuses on bringing together European NEST projects under the initiative 'What it means to be human', to research on multimodal communication. These NEST projects have produced a substantial amount of specific but sometimes isolated knowledge, exploring in particular verbal and visual communication media, which includes such important topics as learning by imitation, studying the neural origins of language, exploring the evolutionary origins of human mind, and researching into verbal and non-verbal communication.

We look forward to welcoming you to the area and introducing those new to Intelligent Robotics to some great talks and current research from students and our departments.

**Stefan Wermter**  
**University of Sunderland**

## INSIDE

- Sheffield Systems under the spotlight
- Using diffusion to find patterns of neuronal responses
- Puzzle Corner No. 40

## BACK PAGE

- Computerised agents to cope with disasters
- Annual General Meeting
- Diary Dates