

# Conference Report: 4th Workshop on Dynamic Perception

Rolf P. Würtz

The workshop series "Dynamic Perception" was initiated by the GI section on image understanding in Hamburg in 1996 and continued biennially in Bielefeld and Ulm. It focuses in an interdisciplinary manner on dynamic aspects of biological and machine perception. Special emphasis lies on the promotion of scientific exchange between computer science (neurocomputing and artificial intelligence), psychology, and the neurosciences.

The fourth workshop in this series was chaired by Markus Lappe (University of Münster) and myself and took place at the University of Bochum on November 14 and 15, 2002. The European networks MUHCI (Multimodal Human-Computer Interfaces) and ECOVISION (Early Cognitive Vision) also contributed to the organization.

Specific topics on

- multimodal integration
- human movement analysis
- action and perception
- dynamic visual scenes
- optic flow
- gestalt laws and statistics
- cognitive influences on visual processing
- recognition and matching

were presented in 20 talks and 31 posters. Compared to the earlier workshops the scope has become more international. Of the 51 presentations two thirds have first authors from Germany, but contributions also came from the UK (4), US (3), Japan (2), Spain (2), Sweden (2), and one each from Australia, Israel, Italy, and Greece. Continuing the tradition, the proceedings [1] have been published by infix, but this time they are in English throughout. Altogether, 85 people attended the workshop, and the nationality distribution of the attendees was similar to that of the presentations.

Most of the workshop themes enjoyed contributions from experimental, theoretical, and technical points of view. Due to the breadth of the spectrum I can only report some of the highlights here.

On the neurophysiological side Dirk Jancke (University of Bochum) showed that the classical "line motion illusion" can actually be visualized by optical imaging on the brain surface. Uwe Ilg (University of Tübingen) presented new results on the neuronal basis of smooth pursuit eye movements.

William Phillips (University of Stirling, Scotland) in his introductory talk to the workshop presented a wealth of results from the neurochemistry of synaptic receptors to psychological findings and neural network models supporting the view that context influence on neuronal activity is mediated by special connections (contextual field) in addition to the receptive field by synchronizing the temporal activity structure. Furthermore, he reviewed evidence that schizophrenia

can be understood as a failure in these coherence-enforcing circuits.

Complementing several contributions on visual illusions Yannis Aloimonos (University of Maryland, College Park) outlined a theory to understand common visual illusions as a result of the statistical bias created by attempted noise reduction in the visual system.

On the technical side, Jan-Olof Eklundh (KTH, Stockholm) opened the second day of the conference by presenting his state-of-the-art systems for image and video segmentation by the integration of multiple cues, a theme which was complemented later by Jochen Triesch (University of California, San Diego). John Tsotsos (York University, Toronto) presented a fully neuronal yet technically competitive system to extract regions of coherent motion from image sequences.

On the mobile robotics end of the topical spectrum, Emilia Barakova (RIKEN Institute, Hirasawa) and Tino Lourens (GMD, Kitakyushu) presented perceptual and behavior modules developed for playing robocup. Torsten Wilhelm (Technical University of Ilmenau) showed impressive results of a robot that can interact with customers of a self-service hardware store, answer simple questions and guide them to the shelf of their choice. A noteworthy aspect are the self-localization capabilities of the same robot presented by Michael Groß (Technical University of Ilmenau).

The workshop was a success in bringing together all major methodologies in the study of perception and maintaining a level which allowed meaningful interaction between the different disciplines, and there is a good prospect for this tradition to continue in the future. The fifth workshop "Dynamic Perception" will take place in Tübingen in 2004 and one of the organizers will be Uwe Ilg (University of Tübingen).

## References

- [1] Rolf P. Würtz and Markus Lappe, editors. *Dynamic Perception*. infix Verlag/IOS press, Berlin, Amsterdam, November 2002.

## Contact

Rolf P. Würtz  
Institut für Neuroinformatik  
Ruhr-Universität Bochum  
D-44780 Bochum, Germany  
Rolf.Wuertz@neuroinformatik.rub.de  
<http://www.neuroinformatik.rub.de/PEOPLE/rolf/>