Interdisziplinäres Kolloquium
Systemtheorie in den Bio- und Geowissenschaften
Systems Theory in the Life and Geo Sciences

Als zweiten Vortrag in diesem Wintersemester 2005-06 möchten wir ankündigen:

Zeit: Freitag, 9. Dezember 2005, 12.15 Uhr

Ort: Hörsaal des Mathematischen Seminars
Nussallee 15, 53115 Bonn-Poppelsdorf

Referent: Dr. Rolf P. Würtz
Institut für Neuroinformatik, Ruhr-Universität Bochum

Vortrag: Organic Computing for Face and Object Recognition

Zusammenfassung:

The talk starts by identifying hallmarks of Organic Computing. Important parts of this methodology are learning from nature, discretizing continuous dynamics, and the integration of submodalities. The holy grail of automatizing vision systems is autonomous learning of the necessary routines from examples.

I will describe correspondence-based techniques for face and object recognition, and their derivation from neuronal dynamics. The basic technique requires refinement through learning from examples. I will present three successful instances. Tracking of facial points is an important prerequisite for video compression and animation. Tracking in general is a difficult problem, which requires global constraints to function anywhere near stable. In the first learning example, constraints for face tracking are learned automatically from bunch graph matching on a large number of frontal images. In the second example, the change of visual features during facial gestures is modeled. The third example consists of the recognition of genetic diseases which can be diagnosed from the shape of the face by an expert. The learning technique of jet voting achieved high classification rates without explicit rule coding.

A major drawback of correspondence-based recognition methods is the time-consuming matching operation. I finally present a rapid object preselection method based on a single-layer network, which serves as the basis for self-organized development of an object representation.

Zu Vortrag und Diskussion (auch beim anschließenden Mittagessen) laden wir herzlich ein.

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