**Universität Bielefeld - Technische Fakultät - AG Wissensbasierte Systeme**

## Jahresübersicht 1999

Veröffentlichungen des Jahres 1999 inklusive aller verfügbaren Abstracts

### M. Hoffhenke & I. Wachsmuth:
### Object Recognition with Shape Prototypes in a 3D Construction Scenario.

In W. Burgard, Th. Christaller & A. B. Cremers (Eds.):
*KI-99: Advances in Artificial Intelligence*,
Berlin: Springer (LNAI 1701), 1999, 231-242.

**Abstract:**
This paper is concerned with representations which enable a technical agent to recognize objects and aggregates from mechanical parts as they evolve in an ongoing construction task. The general goal is that the technical agent has a detailed understanding of the task situation such that it can execute instructions issued by a human user in a dynamically changing situation. A levelled approach for comprehensive shape representation is presented which is motivated by a cognitive model of pictorial shape representations prototypes. In particular our system is able to derive and represent spatial properties such as orientation and geometric features e.g. axes or planes that can be ascribed to the developing construct.

### M. Hoffhenke & I. Wachsmuth:
### Objektrepräsentation mit imaginalen Prototypen.

In *KogWis99: Proceedings der 4. Fachtagung der Gesellschaft für Kognitionswissenschaft*,
Bielefeld, 28. September - 1. Oktober 1999. Sankt Augustin: Infix, 1999, 292-293.

### B. Jung & J.-T. Milde:
### An Open Virtual Environment for Autonomous Agents Using VRML and Java.

In: *Proceedings VRML'99 - Fourth Symposium on the Virtual Reality Modeling Language*,
ACM, 1999, 7-11.

### B. Jung, M. Oesker & H. Hecht:
### Virtual RoboCup: Real-Time 3D Visualization of 2D Soccer Games.

In: *Working notes, Third International Workshop on RoboCup, IJCAI'99, Stockholm*,
1999, 121-126.

### B. Jung, J.-T. Milde & Th. Uthmann (Hrsg.):
### Intelligente Virtuelle Umgebungen.

SFB 360 Report 99/4, Universität Bielefeld, 1999.

### B. Jung, S. Kopp, T. Sowa & I.Wachsmuth:
### Virtuelles Konstruieren mit Gestik und Sprache.

In B. Jung, J.-T. Milde & Th. Uthmann (Hrsg.):
*Intelligente Virtuelle Umgebungen*.
SFB 360 Report 99/4, Universität Bielefeld, 1999, 51-58.

## K. Kessler, M. Hoffhenke, G. Rickheit & I. Wachsmuth: Dynamische Konzeptverarbeitung mit imaginalen und assoziativen Strukturen.

In: *Kognitionswissenschaft, 8(3)*, 1999, 115-122.

## S. Kopp, I. Wachsmuth: Natural Timing in Coverbal Gesture of an Articulated Figure

Working notes, "Communicative Agents" Workshop, Autonomous Agents '99, Seattle, WA, 1999.

**Abstract:**
In this paper, a virtual anthropomorphic agent is presented which is based on an articulated figure. Based on preceding work in this line, the aim of our current research is to make the agent able to perform coverbal gestures in a natural fashion. Besides the selection of the appropriate body movement to be performed as coverbal gesture, another crucial point is the correct timing of the motion with respect to the generated spoken utterance. The relationships between speech and gesture are discussed and consequences for generating coverbal gesturing and animation control of an articulated agent are drawn.

## M. E. Latoschik, B. Jung & I. Wachsmuth: Multimodale Interaktion mit einem System zur Virtuellen Konstruktion.

In K. Beiersdörfer, G. Engels & W. Schäfer (Hrsg.):
*Informatik '99, - Informatik überwindet Grenzen,*
*29. Jahrestagung der Gesellschaft für Informatik,*
Paderborn, 5.10 - 9.10.1999. Berlin: Springer 1999, 88-97.

**Abstract:**
Dieser Beitrag stellt ein System für die sprachlich-gestische Interaktion zur Steuerung eines Systems zur Virtuellen Konstruktion vor. Eine Übersicht über verschiedene Manipulationsaufgaben in dieser Domäne dient als Grundlage, um Interaktionsbeispiele zu erläutern. Neben deiktischen Gesten des Benutzers werden mimetische Gesten, die gewünschte Veränderungen "vormachen", betrachtet. Diese werden durch sprachliche oder gestische Trigger eingeleitet und bewirken eine Anpassung in den Funktionsmodi der Auswertung, wobei zwischen diskreten und kontinuierlichen Interaktionen unterschieden wird. Um kontinuierliche Modifikationen in der virtuellen Szene umzusetzen, werden neben dem Konzept der Manipulatoren sogenannte Aktuatoren als Repräsentanten für Benutzer- modalitäten sowie Motion-Modifikatoren zur Korrektur unscharfer Sensor-Eingaben eingeführt.

## M. Nousch & B. Jung: CAD on the World Wide Web: Virtual Assembly of Furniture with BEAVER.

In: *Proceedings VRML'99 - Fourth Symposium on the Virtual Reality Modeling Language*,
ACM, 1999, 113-119.

## M. Oesker, H. Hecht & B. Jung: Sense and nonsense of realtime character animation -- Psychological evidence for unconscious processing of detail.

In *KogWis99: Proceedings der 4. Fachtagung der Gesellschaft für Kognitionswissenschaft,*
Bielefeld, 28. September - 1. Oktober 1999. Sankt Augustin: Infix, 1999, 304-305.

## T. Sowa, M. Fröhlich & M. Latoschik: Temporal Symbolic Integration Applied to a Multimodal System Using Gestures and Speech.

In A. Braffort et al. (eds.): *Gesture-Based Communication in Human-Computer Interaction - Proceedings International Gesture Workshop (Gif-sur-Yvette, France, March 1999)*,
Springer-Verlag (LNAI 1739), 1999, 291-302.

**Abstract:**
This paper presents a technical approach for temporal symbol integration aimed to be generally applicable in unimodal and multimodal user interfaces. It draws its strength from symbolic data representation and an underlying rulebased system, and is embedded in a multi-agent system. The core method for temporal integration is motivated by findings from cognitive science research. We discuss its application for a gesture recognition task and speech-gesture integration in a Virtual Construction scenario. Finally an outlook of an empirical evaluation is given.

## T. Sowa & I. Wachsmuth:
## Understanding Coverbal Dimensional Gestures in a Virtual Design Environment.

*Proceedings IDS'99 - Workshop on Interactive Dialogue in Multi-Modal Systems*,
ESCA, 1999, 117-80.

**Abstract:**
Todays multimodal systems, which allow full-body (3D) gestures and speech as input modalities, are quite restricted to easily interpretable coverbal gestures with a predefined shape and meaning. In this paper, we propose methods to abstract the concrete shape of gestures by using high-level features and to integrate them with coexpressive words using their phonological attributes. The application of this approach is discussed for a class of gestures useful in virtual design. We sketch our technical environment and first implementation approaches to build a prototype system.

## I. Wachsmuth:
## Mensch-Maschine-Kommunikation mit Gestik und Sprache.

In Miethling, W.-D., Perl, J. (Hrsg.): *Sport und Informatik VI, (pp. 167-178).*
Köln: Sport und Buch Strauss, 1999.

## I. Wachsmuth:
## Kommunikative Rhythmen in Gestik und Sprache (Extended Abstract).

In *KogWis99: Proceedings der 4. Fachtagung der Gesellschaft für Kognitionswissenschaft, Bielefeld, 28. September - 1. Oktober 1999.* Sankt Augustin: Infix, 1999.

## I. Wachsmuth:
## Communicative Rhythm in Gesture and Speech.

In A. Braffort et al. (eds.): *Gesture-Based Communication in Human-Computer Interaction - Proceedings International Gesture Workshop (Gif-sur-Yvette, France, March 1999)*,
Springer-Verlag (LNAI 1739), 1999, 277-289.

**Abstract:**
Led by the fundamental role that rhythms apparently play in speech and gestural communication among humans, this study was undertaken to substantiate a biologically motivated model for synchronizing speech and gesture input in human computer interaction. Our approach presents a novel method which conceptualizes a multimodal user interface on the basis of timed agent systems. We use multiple agents for the purpose of polling presemantic information from different sensory channels (speech and hand gestures) and integrating them to multimodal data structures that can be processed by an application system which is again based on agent systems. This article motivates and presents technical work which exploits rhythmic patterns in the development of biologically and cognitively motivated mediator systems between humans and machines.

## I. Wachsmuth & B. Jung (Hrsg.):
## KogWis99, Bielefeld, 28. September - 1. Oktober 1999,
## Proceedings der 4. Fachtagung der Gesellschaft für Kognitionswissenschaft.

Sankt Augustin: Infix, 1999.

## I. Wachsmuth & G. Rickheit (Hrsg.): Themenheft "Situierte Künstliche Kommunikatoren"

*Kognitionswissenschaft 8(3), 1999.*

*A. Kranstedt, 29.07.2003*