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

Jahresübersicht 1998

Veröffentlichungen des Jahres 1998 inklusive aller verfügbaren Abstracts

M.J. Behr, I. Wachsmuth, T. Post: Rational number learning aids: Transfer from continuous models to discrete models.

Focus on Learning Problems in Mathematics 20 (1), 1998, 63-81
(selected retrospective reprint from *Focus 10* (4), 1988, 1-18).

K. Börner, R. Fehr, I. Wachsmuth: Audio-Visual Interaction with Noise Pollution Data.

In: *Virtual Environments Conference - extended abstracts (pp. 19_1-19_4)*,
Stuttgart, Germany, June 16-18, 1998.

K. Börner, I. Wachsmuth: AkuVis: Exploring Visual Noise,

HCI'98 Video Program. Abstract in HCI'98 Conference Companion/Adjunct Proceedings of the *13th British Computer Society Annual Conference on Human Computer Interaction (pp. 76-77)*,
Sheffield, 1998.

R. Fehr, K. Börner, I. Wachsmuth: AkuVis: Interactive Visualization of Acoustic Data.

In *Umweltinformatik'98: Vernetzte Strukturen in Informatik, Umwelt und Wirtschaft*,
Band 2, (pp. 722-728), Marburg: Metropolis-Verlag, 1998.

M. Fröhlich, I. Wachsmuth: Gesture recognition of the upper limbs - from signal to symbol.

In I. Wachsmuth and M. Fröhlich (eds.):
Gesture and Sign Language in Human-Computer Interaction,
(pp. 173-184), Lecture Notes in Artificial Intelligence,
Volume 1371, Springer-Verlag, 1998.

Abstract:
To recognise gestures performed by people without disabilities during verbal communication so-called coverbal gestures a flexible system with task- oriented design is proposed. The issue of flexibility is addressed via different kinds of modules grasped as agents , which are grouped in different levels. They can be easily reconfigured or rewritten to suit another application. This system of layered agents uses an abstract body-model to transform the up-taken data from the six-degree-of-freedom-sensors, and the data gloves, to a first-level symbolic description of gesture features. In a first integration step the first-level symbols are integrated to second-level symbols describing a whole gesture. Second-level symbolic gesture descriptions are the entities which can be integrated with speech tokens to form multi-modal utterances.

M. Hoffhenke, B. Jung, S. Kopp: Der Cody Virtuelle Konstrukteur: Manual Version 2.0.

SFB 360 Report 98/8, Universität Bielefeld, 1998.

B. Jung, I. Wachsmuth:
Integration of Geometric and Conceptual Reasoning for Interacting with Virtual Environments.

Proc. AAAI'98 Spring Symposium on Multimodal Reasoning,
(pp. 22-27), 1998.

Abstract:
This paper describes the knowledge processing in the CODY Virtual Constructor, an operational system enabling the interactive assembly of complex aggregates in a virtual environment. Two forms of reasoners are used: a geometric reasoner that infers spatial properties of scene objects and a conceptual reasoner that keeps track of the evolving aggregate's assembly structure. The combination of the two reasoners enables the system both to simulate assembly processes in the virtual environment and to understand natural language instructions. By maximizing the mutual exchange of information between the reasoners, additional knowledge can be inferred that not only improves understanding of language instructions but also increases efficiency of inferencing.

B. Jung:
Reasoning about Objects, Assemblies, and Roles in On-going Assembly Tasks.

Distributed Autonomous Robotic Systems 3, (pp. 257-266), Springer-Verlag, 1998.

B. Jung, M. Latoschik, I. Wachsmuth:
Knowledge-Based Assembly Simulation for Virtual Prototype Modeling.

IECON'98 - Proceedings of the 24th Annual Conference of the IEEE Industrial Electronics Society,
IEEE, 1998, Vol. 4, 2152-2157.

Abstract:
The idea of Virtual Prototyping is the use of realistic digital product models for design and functionality analysis in early stages of the product development cycle. The goal of our research is to make modeling of virtual prototypes more intuitive and powerful by using knowledge enhanced Virtual Reality techniques for interactive construction of virtual prototypes from 3D-visualized, CAD-based parts. To this end, a knowledge-based approach for real-time assembly simulation has been developed that draws on dynamically updated representations of part matings and assembly structure. The approach has been implemented in an experimental system, the CODY Virtual Constructor, that supports a variety of interaction modalities, such as direct manipulation, natural language, and gestures.

B. Jung, M. Oesker:
Virtual RoboCup: From 2D-Simulation to 3D-Animation (Extended Abstract).

Presented at *KI-98 Workshop RoboCup*, 1998.

M. Latoschik, I. Wachsmuth:
Exploiting distant pointing gestures for object selection in a virtual environment.

In I. Wachsmuth and M. Fröhlich (eds.):
Gesture and Sign Language in Human-Computer Interaction,
(pp. 185-196), Lecture Notes in Artificial Intelligence,
Volume 1371, Springer-Verlag, 1998.

Abstract:
Developing state of the art multimedia applications nowadays calls for the use of sophisticated visualisation and immersion techniques, commonly referenced as Virtual Reality. While Virtual Reality meanwhile reaches good results both in image quality and in fast user feedback using parallel computation techniques, the methods for interacting with these systems need to be improved. In this paper we introduce a multimedia application that uses a gesture-driven interface and, secondly, the architecture for an expandable gesture recognition system. After different gesture types for interaction in a virtual environment are discussed with respect to a required functionality, the implementation of a specific gesture detection module for distant pointing recognition is described, and the whole system design is tested for its task adequacy.

M. Latoschik, M. Fröhlich, B. Jung, I. Wachsmuth: Utilize Speech and Gestures to Realize Natural Interaction in a Virtual Environment.

IECON'98 - Proceedings of the 24th Annual Conference of the IEEE Industrial Electronics Society, IEEE, 1998, Vol. 4, 2028-2033.

Abstract:
Virtual environments are a new means for human-computer interaction. Whereas techniques for visual presentation have reached a high level of maturity in recent years, many of the input devices and interaction techniques still tend to be awkward for this new media. Where the borders between real and artificial environments vanish, a more natural way of interaction is desirable. To this end, we investigate the benefits of integrated speech- and gesture-based interfaces for interacting with virtual environments. Our research results are applied within a virtual construction scenario, where 3D visualized mechanical objects can be spatially rearranged and assembled using speech- and gesture-based communication.

M. Latoschik, I. Wachsmuth: Sprachbegleitete Körper-Gestik vor multimedialen Großdisplays.

Forschung an der Universität Bielefeld, 17/1998 , (pp. 7-9), 1998.

B. Lenzmann: Benutzeradaptive und multimodale Interface-Agenten.

Dissertationen der Künstlichen Intelligenz; Bd. 184, Sankt Augustin: Infix, 1998.

I. Wachsmuth, M. Fröhlich (eds.): Gesture and Sign Language in Human-Computer Interaction, International Gesture Workshop, Bielefeld, Germany, September 17-19, 1997, Proceedings.

Lecture Notes in Artificial Intelligence, Volume 1371, Springer-Verlag, 1998.

I. Wachsmuth: Virtuelle Realität

KI 98/1: "Aktuelles Schlagwort", p. 34, 1998.

I. Wachsmuth: Experten- und Agentensystemtechniken für intuitivere Benutzungsschnittstellen.

In J. Mester, J. Perl (Hrsg.): *Informatik im Sport:*
Bericht über das internationale Symposium 12.-14. Juni 1997 in Köln (pp. 181-191).
Köln: Sport und Buch Strauss, 1998.

Abstract:
Aus der Perspektive benutzerfreundlicher Schnittstellen werden im Beitrag sog. Interface- Agenten thematisiert, die im Bereich der Mensch-Maschine-Interaktion derzeit zunehmend Aufmerksamkeit finden. In der Informatik versteht man unter "Agenten" eigenständige, addressierbare Computerprogramme, die Aktivitäten in ihrer Software-Umgebung beobachten und initiieren können und die mit anderen solchen Agenten kommunizieren können. Zusammen mit Expertensystem-Techniken läßt sich mit Agentensystemen sowohl Wissen über technische Einzelheiten wie auch Wissen über Benutzer ausnutzen, um Menschen von de mühsamen Bedienung komplexer Kommando-Schnittstellen zu entlasten. Der vorliegende Artikel greift grundsätzliche Aspekte dieser Techniken auf und beschreibt dann neuere Forschungsarbeiten in Bielefeld, wo seit 1993 hochinteraktive 3D-computergrafische Konstruktions- und Design- Umgebungen entwickelt werden. In jüngsten Arbeiten werden verstärkt auch multimodale Eingabemöglichkeiten einbezogen, um natürlichere, anthropomorphe Benutzungsschnittstellen für MultiMedia- und Virtual Reality-Systeme zu entwickeln.

A. Kranstedt, 29.07.2003