

Lecture Notes in Artificial Intelligence

Subseries of Lecture Notes in Computer Science

Edited by J. Siekmann

Lecture Notes in Computer Science

Edited by G. Goos and J. Hartmanis

Editorial

Artificial Intelligence has become a major discipline under the roof of Computer Science. This is also reflected by a growing number of titles devoted to this fast developing field to be published in our Lecture Notes in Computer Science. To make these volumes immediately visible we have decided to distinguish them by a special cover as Lecture Notes in Artificial Intelligence, constituting a subseries of the Lecture Notes in Computer Science. This subseries is edited by an Editorial Board of experts from all areas of AI, chaired by Jörg Siekmann, who are looking forward to consider further AI monographs and proceedings of high scientific quality for publication.

We hope that the constitution of this subseries will be well accepted by the audience of the Lecture Notes in Computer Science, and we feel confident that the subseries will be recognized as an outstanding opportunity for publication by authors and editors of the AI community.

Editors and publisher

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481

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Modelling Spatial Knowledge on a Linguistic Basis

Theory – Prototype – Integration



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Preface

The book develops a theory about knowledge of spatial objects, which is significant for cognitive linguistics and artificial intelligence, into a new approach to knowledge structure. The theory is put into practice by means of 'rapid prototyping', in which the Prolog system "OSKAR" plays a linking role.

The book offers a two-level approach to semantic interpretation and proves that it works by means of a precise computer implementation, which in turn is applied to support a task-independent knowledge representation system. Each of these steps is described in detail, while the links are made explicit, thus retracing the evolution from theory to practice.

Following a brief Introduction, Chapter 2 outlines the three major components of the linguistic theory on which the implementation is based. Chapter 3 then gives a detailed overview of OSKAR's design and capacity. The descriptive and procedural components of the Prolog program are presented in the logical and chronological order of stages in which they have been implemented. Chapter 4 sketches the program's integration into the natural language comprehension system of the LILOG project.

The study documents interdisciplinary research at work: the model of spatial knowledge it offers is the fruit of the joint efforts of a linguist, a computational linguist and a knowledge engineer. We hope that the present work, which gives an objective report of this experience, will convince other researchers in the field of cognitive sciences that co-operation really pays off.

January 1991

Ewald Lang
Kai-Uwe Carstensen
Geoffrey Simmons

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Der Hauswirt sagt:
Is ja' n bisken *eng*, der Hof,
aber *dafür schön hoch*.
HEINRICH ZILLE
über Berliner Hinterhöfe

The landlord says:
The courtyard may be a bit *narrow*,
but it's *nice and high*.
HEINRICH ZILLE
on Berlin backyards

* * *

A *hill* can't be a *valley*, you know.
That would be nonsense.
LEWIS CARROLL
Alice in Wonderland

* * *

Tiefe geht auf den *Grund*
Depth gets us to the bottom
Kai-Uwe

* * *

```
interpretation_of_DAPs_and_OS(_  
  output('No more solutions'))  
:- !
```

OSKAR