



Springer

1st  
edition

2002, XX, 276 p.

**Printed book**

Hardcover

**Printed book**

Hardcover

ISBN 978-1-4020-0105-5

\$ 219,99

Available

**Discount group**

Professional Books (2)

**Product category**

Contributed volume

**Series**Intelligent Systems, Control and  
Automation: Science and Engineering**Other renditions**

Softcover

ISBN 978-90-481-5861-4

Engineering : Control , Robotics, Mechatronics

Fernández, Juan A., González, Javier

# Multi-Hierarchical Representation of Large- Scale Space

**Applications to Mobile Robots**

It has been stated in psychology that human brain arranges information in a way that improves efficiency in performing common tasks, for example, information about our spatial environment is conveniently structured for efficient route finding. On the other hand, in computational sciences, the use of hierarchical information is well known for reducing the complexity of solving problems. This book studies hierarchical representations of large-scale space and presents a new model, called Multi-AH-graph, that uses multiple hierarchies of abstraction. It allows an agent to represent structural information acquired from the environment (elements such as objects, free space, etc., relations existing between them, such as proximity, similarity, etc. and other types of information, such as colors, shapes, etc). The Multi-AH-graph model extends a single hierarchy representation to a multiple hierarchy arrangement, which adapts better to a wider range of tasks, agents, and environments. We also present a system called CLAUDIA, which is an implementation of the task-driven paradigm for automatic construction of multiple abstractions: a set of hierarchies of abstraction will be "good" for an agent if it can reduce the cost of planning and performing certain tasks of the agent in the agent's world. CLAUDIA constructs multiple hierarchies (Multi-AH-graphs) for a given triple, trying to optimize their "goodness".

Order online at [springer.com/booksellers](http://springer.com/booksellers)**Springer Nature Customer Service Center LLC**

233 Spring Street

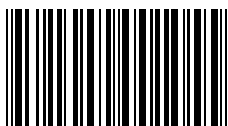
New York, NY 10013

USA

T: +1-800-SPRINGER NATURE

(777-4643) or 212-460-1500

customerservice@springernature.com



ISBN 978-1-4020-0105-5 / BIC: TJFM / SPRINGER NATURE: SCT19000

Prices and other details are subject to change without notice. All errors and omissions excepted. Americas: Tax will be added where applicable. Canadian residents please add PST, QST or GST. Please add \$5.00 for shipping one book and \$ 1.00 for each additional book. Outside the US and Canada add \$ 10.00 for first book, \$5.00 for each additional book. If an order cannot be fulfilled within 90 days, payment will be refunded upon request. Prices are payable in US currency or its equivalent.

Part of **SPRINGER NATURE**