After graduating with a degree in physics from the University of Milano, Giuseppina Gini specialized in computer science as a post-doc fellow and worked on different artificial intelligence projects at the Politecnico di Milano (1972-1976). From 1976 to 1987, she held an assistant professor position at Politecnico di Milano, as well as various appointments as a visiting scholar and research assistant at Stanford University (California, USA) (in the Artificial Intelligence Laboratory of the Computer Science Department and in the NMR Laboratory of the Medical School) and at SRI. Since 1987, she has been an associate professor at Politecnico di Milano, Faculty of Computer Engineering.

Gini has written and edited two books, and has authored about 200 refereed papers in scientific journals, books, and conference proceedings. Among other professional services, she organized and chaired the Symposium on Predictive Toxicology (Stanford, March 1999) for the American Association of Artificial Intelligence, and the AI&Math special session on Knowledge Exploration in Predictive Toxicology (January 2000).

She has been a partner in 16 international research projects (for NATO and the EU), and the coordinator of an EU project devoted to the development of new expert system methods in predictive toxicology. Moreover, she has directed seven national research projects.

Her main areas of research are knowledge representation and reasoning, with an emphasis on algorithms, biologically inspired solutions, hybrid systems, and computational efficiency. The main application areas in which she focuses her work are spatial and visual reasoning, human-machine interaction, and data mining. Over the course of her career, she has developed languages, simulators, and planners. In addition, she has cooperated with many European research centers over the past 15 years on various projects related to toxicity modeling, predictive systems, data mining, and in silico models.

Gini has been a reviewer for Computing Reviews since 1985, and has over 60 published reviews.

**Lego Mindstorms NXT-G: programming guide**
This Lego Mindstorms NXT-G graphic language guide smoothly introduces the NXT-G software to people who do not have a background in programming. Now in its second edition, it supports both the old and new versions of the language....

**Particle swarm optimizer with adaptive tabu and mutation: a unified framework for efficient mutation operators**
Particle swarm optimization (PSO) is an active research topic in the area of optimization algorithms. This paper, which integrates a tabu search method in the PSO, establishes three general principles--the when, what, and why--for...

**Remote navigation of a mobile robot in an RFID-augmented environment**
Luimula et al. discuss how the user interface for the remote control of a mobile robot can use a mix of visualization tools and radio-frequency identification (RFID) tags in the...
environment. Technically, it continues the line of other...

Bridging the gap between intensional and extensional query evaluation in probabilistic databases
In this paper, Jha, Olteanu, and Suciu investigate efficient computation in probabilistic databases. They give an algorithmic solution to the evaluation of queries over probabilistic databases that integrates the extensional methods with the...

Research and development in intelligent systems XXVI: incorporating applications and innovations in intelligent systems XVII
Papers and posters presented at the 29th SGAI International Conference on Innovative Techniques and Applications of Artificial Intelligence, the last conference in an established series held annually in Cambridge, UK, are collected in this book....

Fuel-cache site-selection for polar research: a summary of results
This paper illustrates various methods to solve a very specific problem: the choice of cache sites to store fuel for aircraft that make research missions in uninhabited areas, such as Antarctica. Since other aircraft have to transport the fuel,...

Performance evaluation and benchmarking of intelligent systems
Performance evaluation is crucial for any technological advancement. Benchmarking is the usual way to standardize a performance evaluation method. The book questions how to define performance evaluation and benchmarking for intelligent systems,...

Artificial life models in hardware
This book presents various contributions to the construction of life-like artifacts that globally show adaptation and evolution, as in the artificial life paradigm. Here, the meaning of hardware is extended beyond the typical meaning in computer...

Expanding network communities from representative examples
Menier A., Skiena S. ACM Transactions on Knowledge Discovery from Data (TKDD) 3(2): 1-27, 2009. Type: Article
Social networks and their growth are hot topics. In this paper, Mehler and Skiena continue long-term research that has already produced Lydia, a system for news analysis that is described in one of the referenced papers....

Generation of correlated spike trains
In this paper on neural computation, we read about new mathematical methods and algorithms to generate correlated spike trains. The simulation of neural circuits requires the generation of spikes. Since spike trains display correlations and those ...

Profit sharing and firm performance in the manufacturer-retailer dual-channel supply chain
Combining marketing models to find a strategy for increasing the profits of manufacturers and retailers, when going to the electronic market, is discussed in this paper. The strategy derives from applying the models to compute the profits in...

Semantic grid: model, methodology, and applications
This book is an organized proposal of the various components of a system able to integrate grid computing and the semantic Web, and is mostly based on the research activity of the Advanced Computing and System (CCNT) Laboratory at...

From the specification to the implementation of norms: an automatic approach to generate rules from norms to govern the behavior of agents
In multiagent systems (MAS), autonomous agents have to follow norms. Usually, norms are defined in a mathematical language; here we see a method to transform norms into
rules and to automatically implement the rules in a computer language. The...

**Creating cool Mindstorms NXT robots (Technology in Action)**
In just a few years, we have another Lego book. In 2001, Martin’s book [1] offered, for the first time, a different way of learning engineering concepts. That book was based on the Lego Technic and on the first prototype of...

**Design support systems: A case study of modular design of the set-top box from design knowledge externalization perspective**
This paper illustrates the design of a design support system (DSS) and its application in a real case study in the consumer electronics industry,...

**Outlier detection by logic programming**
Detecting outliers in data mining, in the scenario of logic programming, is the topic covered in this paper. The specific problem, in this context, is that the background knowledge may (or may not) be in accordance with the hypotheses derived by...

**Building CBR systems with jcolibri**
Díaz-Agudo et al. propose a software framework for applying case based reasoning (CBR) to real-world problems. The framework was developed in Java and is called jcolibri. It is available via open-source license, to be used and extended by...

**Using competitions to study human-robot interaction in urban search and rescue**
This short paper proposes using data collected from a set of well-defined experiments in human-robot interaction to individuate better interfaces and strategies of cooperation. The experiments take place in the arena of the urban search and...

**Who needs emotions: the brain meets the robot (Series in Affective Science)**
This unusual title in computer science literature takes us into the world of emotions. As described in the preface, the book collects various contributions, and is organized in four parts: &lt;8220;Perspectives,&lt;8221;...
covers the topic in nine chapters and four appendices....

**Temporal scenario modelling and recognition based on possibilistic logic**

This paper presents a method for modeling temporal scenarios, and for recognizing them from observations. Three formal models are developed: the logical dependencies, defined in possibilistic logic; the temporal constraints between events,...

**Where is knowledge in robotics? Some methodological issues on symbolic and connectionist perspectives of AI**

Knowledge in robotics is an appealing phrase. One reads the chapter trying to find answers to open issues in robotics, such as how a robot can understand its environment and grow its knowledge, while pursuing a useful task. However, you will not...

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The problem of representing and using music notation for recognition and interpretation of a musical text is addressed in this paper. It makes a proposal for an optical recognition system....

**A fuzzy petri net for pattern recognition: application to dynamic classes**

A solution for the classification of dynamic classes, where changes are periodic, is presented in this paper. The proposed recognition system extends the fuzzy Petri net (FPN) model [1]. To introduce a model for complete correspondence between a...

**A macroscopic analytical model of collaboration in distributed robotic systems**

As stated by the authors, this paper presents a macroscopic analytical model of collaboration in a group of reactive robots, acting without explicit communication or coordination....

**Neural-symbolic learning system: foundations and applications**

The topic of neural-symbolic integration was very hot at the beginning of the 1980s, when the first seminal works introduced the possibility of extracting knowledge from trained neural networks (NNs), and reversibly building network structures...

**Reasoning about nonlinear system identification**

A study of applying formal logic to problems usually approached in system and control theory is reported on in this paper. The resulting system automatically develops a nonlinear model and tests it using first-order logic rules in different...

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The authors of this paper survey most of the research developed in the last 20 years in the field of mobile robot navigation through vision. They provide background information, draw a schema, and introduce the main methods that have been...

**Learning-based robot vision: principles and applications**

A thesis prepared by the author at the University of Kiel (Germany) is the basis of this book. It provides the background and methodology of the technology necessary for a robot to deliberate and execute tasks in real environments, based on its...

**Acquisition and Propagation of Spatial Constraints Based on Qualitative Information**

This paper develops a symbolic method to achieve qualitative localization from a distributed vision system. The method starts by detecting motion direction from images. During robot navigation, landmarks move as the robot moves. This movement is...

**Intelligent systems for engineers and scientists (2nd ed.)**

http://www.reviews.com/browse/browse_reviewers.cfm
Most of the programming methods used to develop intelligent systems are introduced. The book is intended for people who want to use them in practice. However, it can also be used as a textbook, and in fact evolved from class notes. In the broad…

Intelligent machines: myths and realities

The editor has put together material from a lecture series on "Myths and Realities of Intelligent Machines," given at the University of British Columbia, to create a nine-chapter overview of the area, consisting of papers by…

Computational principles of mobile robotics

Computational methods for mobile robots are emphasized in this book, which presents the essential technical information about the robot hardware…

Basics of robotics

Research results produced by the authors over a number of years are organized and presented here. The book’s core subject is mechanical engineering, with only one chapter covering information technology issues. Industrial engineers and…

Agents with power

The subtitle of this paper clarifies its aim: "The energy market is ripe for emergent IT tools that may simply transform the utilities sector." The author expresses his views on the possibilities of using the existing electric grid…

Rough computational methods for information systems
Guan J., Bell D. Artificial Intelligence 105(1-2): 77-103, 1998. Type: Article

The authors apply results from rough set theory to information systems. In particular, rough analysis, a technique derived from rough set theory and based on classification, is applied to analyze large data sets during knowledge representation.…

The selection of natural scales in 2D images using adaptive Gabor filtering

The appealing idea of this paper is that it is possible to automatically extract from an image the natural scale of the shapes. This enables biological systems to use visual data for different purposes, analyzing the image at different levels in…

Applications of a logic of knowledge to motion planning under uncertainty

The research described here is aimed at applying formal logic to problems that are usually approached using systems and control theory or geometric reasoning. The problem addressed is whether a mobile robot will be able to reach its destination,…

How to use expert advice

While the title of this paper suggests the use of traditional expert systems technology, the research reported here concerns how to make predictions when a team of experts is available and their predictions are known.…

Introduction to robotics in CIM systems (3rd ed.)

Now in its third edition, this book is both an introduction to industrial robots from a system point of view and an introduction to integrating robots in CIM. The proposed audience is made up of industrial professionals and college students.…

CYC

The CYC project was established in 1984 as a ten-year project aimed at building a generic knowledge-based system expressing commonsense knowledge as used in almost all aspects of everyday life. The long development time of this project is…

Computational research on interaction and agency

Agre’s paper introduces this special issue devoted to agents. Agre concentrates on a conceptual framework for characterizing agents, and the agent’s interactions with
environments and other agents....

**Blackboard systems**
According to the author, this book has appeared after a long time spent in publishing it, and when interest in the subject has declined. A book that five years ago would have appealed to many is now of interest to a restricted audience....

**Investigating production system representations for non-combinatorial match**
Some solutions to the problem of reducing the complexity of matching in production systems are proposed and discussed in a clear and smooth style. Matching production rules against data in working memory is a computation-intensive process that...

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Case-based reasoning is a problem-solving process that evolved from research performed by R. Schank and his colleagues at Yale University in the 1980s. The solution is obtained by retrieving the closest stored cases that have been solved in the...

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Knowledge-based systems (KBSs) are used in many organizations to help in or partially automate routine work. The main justification for their use is the need to eventually modify the procedures, which makes the development of standard...

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The aim of this book is to provide industrial engineers as well as manufacturing managers with basic knowledge about expert systems technology, so they can employ it as a tool for more competitive manufacturing. This work is neither a textbook...

**Intelligent robotic systems**
An architecture of intelligent robots is presented in a unified framework. The general architecture is independent of the kind of robot and the application....

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The temporal aspects of dynamic systems, which evolve with continuous variables, make their diagnosis difficult. Nökel developed a method for defining this kind of temporal reasoning and incorporating it into existing paradigms of diagnosis...

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Parallel architectures have been in use in robotics for more than a decade to improve the real-time performance of complex manipulators. Often those architectures have been developed by the robot manufacturers and have been based on such simple...

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Little information about evaluating learning systems has been available. This paper presents the author's experience in implementing and evaluating such a system along with some review of the field. The paper concentrates on the use of...

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Both scheduled and reactive maintenance are becoming crucial in CIM. This paper presents the Expert Maintenance System for Riveters, an AI-based system aimed at reducing the downtime of riveting machines at Boeing Military Airplanes. The authors...

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Task-level programming of robots was proposed long ago but was never attained because of many misunderstandings and difficult computational problems. This paper is an important step toward developing such systems....

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This book presents ARMS, the learning system developed for the author's doctoral thesis. While the overall subject is artificial intelligence, robotics provides the real-world context...
for applying learning methods, and the specific problem...

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According to the authors, “this paper describes a knowledge-acquisition tool that builds expert systems for evaluating designs of electro-mechanical systems.” Although some tools for building and maintaining large knowledge bases have ...

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There is growing interest in the area of CAM in the application of expert systems techniques. This book approaches the problem of designing parts for automatic assembly. The author presents the motivations and describes the implementation of an...

**PRIDE: an expert system for the design of paper handling systems**
Design is one of the less developed applications of expert systems and is one of the tasks requiring more problem solving skills. This paper presents, in a broad and clear manner, PRIDE, an expert system developed at Xerox PARC and tested on the...

**Legged robots that balance**
Raibert M., Massachusetts Institute of Technology, Cambridge, MA, 1986.Type: Book
This book is really unique in the robotics literature in that it presents, in a unified framework, the problems of designing, modeling, and experimenting with legged robots, a very underdeveloped field in robotics. The presentation is clear,...

**Assembly with robots**
Even though robotics is a field of growing interest for computer science professionals, this book is of marginal interest for computer people. The book instead covers a large part of the problems that managers face when they consider buying a...

**Frame representation of physical systems for expert system use**
This paper is about a topic that deserves attention, i.e., how to integrate conventional algorithmic techniques with expert systems to develop programs that need both mathematical computations and heuristics....

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This paper illustrates how "rule-based systems automate problem-solving know-how, provide a means for capturing and refining human expertise, and are proving to be commercially viable." The presentation is intended for a broad...

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The paper is about a very specific topic in CAD, namely the problem of changing the Code of Practice embodied in a reinforced concrete design program. As the authors indicate, the problem arises because different countries have different codes;...

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