Foreword

The recent developments in the field of artificial neural networks, fuzzy systems, expert systems, genetic algorithms, and other methods for building intelligent information systems, also show a tendency toward deep fusion between these areas of AI. There are similarities between the above methods, so if several of them are applicable to a given problem, the best one should be chosen. At the same time, there are differences between these methods. They can complement each other in one information system — each contributing with their strong points to a better system. All of these methods together form a comparatively new trend in AI called “soft computing.”

This book includes papers presented at the Second New Zealand International Two-Stream Conference on Artificial Neural Networks and Expert Systems (ANNES’95), held at the University of Otago, Dunedin, New Zealand, on November 20-23, 1995.

There are five main areas represented as separate parts in this book, namely

- artificial neural networks;
- fuzzy systems;
- genetic algorithms and evolutionary computation;
- expert systems, machine learning, hybrid systems; and
- applications of intelligent information systems.

The first part includes chapters on neural networks, including models and algorithms, implementation of neural networks, cognitive modeling, and applications of neural networks. The second part includes chapters on fuzzy systems, including models and implementation, and applications of fuzzy systems. The third part includes papers on applications of genetic algorithms. The fourth part includes chapters on general expert systems methodologies; machine learning, knowledge acquisition and data mining; and hybrid systems. The fifth part is unifying in a sense where different methods of soft computing have been applied to industrial applications. This part has chapters on communication and human-computer interfaces, speech and language processing; decision support, finance, business, management; planning, manufacturing, process control, robotics; optimization, environment, agriculture, law, and medicine.

Our thanks go to all the authors who contributed to ANNES’95. We would like to thank the members of the program committee and the other reviewers who devoted their precious time and efforts to review the submitted papers, thus contributing significantly to the quality of this proceedings and to the success of the conference. We would like to thank the local organizing committee and especially Philip Sallis, chairman; Gina Brensell, administrative secretary of the conference; and Kitty Ko, a conference assistant, for the fine work they did in preparing for the conference. Of course, this volume would not be published in its present form if there wasn’t the highly professional work done by the publisher — the IEEE Computer Society Press and by Regina Spencer Sipple, in particular, the managing editor of this volume. It was a great pleasure for us to work with such a wonderful team.

Nik Kasabov and George Coghill