

PREFACE

The 2002 IEEE World Congress on Computational Intelligence (WCCI 2002), held May 12–17, 2002 in Honolulu, Hawaii, marked important milestones in the development of intelligent machines. The congress represented the collective current state of research in neural networks, fuzzy systems, and evolutionary computation, three synergistic areas of computational intelligence that promise to have a significant impact on machine intelligence. About 1300 people attended this important meeting—the first meeting sponsored by the new IEEE Neural Networks Society following its transition from an IEEE Council. One highlight of the congress was a series of invited plenary and special lectures from the leading experts in the field of computational intelligence. This book provides an expanded, peer-reviewed record of many of these outstanding presentations, which were both a summary of current technology as well as a look to the future and a forecast of what problems and discoveries await us in computational intelligence. Thus, the book looks beyond the horizons of this rapidly expanding field just as the IEEE Press book *Computational Intelligence: Imitating Life*—from the 1994 WorldCongress (WCCI 1994)—captured the nascent beginnings of the field.

The papers presented here not only identify diverse aspects of groundbreaking research in self-organizing systems, situation awareness, human-machine interaction, gleaning insight from data, automatic control, supplementing human intelligence, and many other areas, they also indicate the challenges that we face and place the efforts of the computational intelligence community in perspective, without hype or undue pessimism. The result is a balanced, fair assessment of where our community stands now, still at the dawn of the new millennium, and a map to guide future efforts. Moreover, some of the results presented in this book represent novel contributions to the field of computational intelligence, and thus the book serves both as primary reference literature and as a tutorial and survey.

We thank all of the plenary and special lecturers at WCCI 2002 for lending us their time and expertise. Special thanks are owed to those who have contributed their expertise to us in this book. We sincerely hope and expect this volume to be of lasting value to the computational intelligence community. We look forward to the next IEEE World Congress on Computational Intelligence to be held in 2006, when we may learn of the progress that will have been made by building on the framework laid out in this book. That progress, no doubt, will come as a result of the efforts of

people such as you, the reader, and we thank you in advance for what that future progress might bring to our community.

The editors thank Estevan Garcia, senior media specialist at Louisiana Tech's CyBERS, and Rosemary Robinson, past managing editor, *IEEE Trans. Rehab. Engr.*, for their help in assembling, producing a draft pdf version, proof-editing, and final compiling of the book. Without their help, and the diligence of all of our authors, this book would not have been possible.

DAVID B. FOGEL
General Chairman, WCCI2002

CHARLES J. ROBINSON
Plenary Chairman, WCCI2002

*La Jolla, California
Ruston, Louisiana
March 2003*