Foreword

The editors of this volume, Nadia Nedjah, Ajith Abraham and Luiza de Macedo Mourelle, have done a superb job of assembling some of the most innovative and intriguing applications and additions to the methodology and theory of genetic programming—an automatic programming technique that starts from a high-level statement of what needs to be done and automatically creates a computer program to solve the problem.

When the genetic algorithm first appeared in the 1960s and 1970s, it was an academic curiosity that was primarily useful in understanding certain aspects of how evolution worked in nature. In the 1980s, in tandem with the increased availability of computing power, practical applications of genetic and evolutionary computation first began to appear in specialized fields. In the 1990s, the relentless iteration of Moore's law—which tracks the 100-fold increase in computational power every 10 years—enabled genetic and evolutionary computation to deliver the first results that were comparable and competitive with the work of creative humans. As can be seen from the preface and table of contents, the field has already begun the 21st century with a cornucopia of applications, as well as additions to the methodology and theory, including applications to information security systems, compilers, data mining systems, stock market prediction systems, robotics, and automatic programming.

Looking forward three decades, there will be a 1,000,000-fold increase in computational power. Given the impressive human-competitive results already delivered by genetic programming and other techniques of evolutionary computation, the best is yet to come.

Professor John R. Koza   September 2005
Consulting Professor
Department of Electrical Engineering
School of Engineering
Stanford University, California, USA
http://www.genetic-programming.com/johnkoza.html