

PREFACE

Inspired by the Darwinian framework of evolution through natural selection and adaptation, the field of evolutionary computation has been growing very rapidly, and is involved today in many diverse application areas. Evolutionary computation encompasses a wide range of adaptive and computational algorithms, methods and techniques that are inspired by natural evolution: e.g., genetic algorithms, evolutionary programming, evolution strategies, genetic programming and related artificial life strategies. Such simulated evolution and learning techniques offer advantages of simplicity, ease of interfacing with existing techniques, and extensibility in finding good solutions efficiently to complex practical problems.

This volume contains substantially extended and revised papers selected from the 4th Asia-Pacific Conference on Simulated Evolution and Learning (SEAL'2002), 18-22 November 2002, Singapore. SEAL'2002 received a total of 230 submissions with 5 special sessions featuring various applications of evolutionary computation. After extensive reviews by the technical committee, 139 papers were accepted for oral presentation and 25 for poster presentation. Among the accepted papers, 43 papers were invited to be extended and revised for inclusion in this volume. The double review processes have ensured a volume of the highest quality. We hope the readers will enjoy it.

The papers included in this volume cover the latest advances in the theories, algorithms, and applications of simulated evolution and learning techniques. It also highlights future research directions in the field. The volume is organized into two broad categories, e.g., evolutionary computation theory and evolutionary computation applications. The first category, comprising Chapters 1 through 18, provides insights to different evolutionary computation techniques. The second category, Chapters 19 through 43, presents many practical applications of evolutionary computation techniques, such as scheduling, control and power systems, robotics, signal processing, data mining, and bioinformatics.

This volume will be of significant interest and value to all postgraduates, research scientists and practitioners dealing with evolutionary computation or complex real-world problems. We hope that this volume will motivate researchers and practitioners to extend the presented results of evolutionary computation and to broaden their implementations in practice.

The editors thank authors of all the chapters for their excellent contributions to this volume. Without their valuable work, this volume would not have been possible.

EDITORS

Kay Chen Tan, Meng Hiot Lim, Xin Yao and Lipo Wang