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Simulated Evolution and Learning

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Proceedings



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Preface

This volume contains the papers that were carefully selected for publication in these proceedings and presented at the 9th Simulated Evolution and Learning (SEAL2012) Conference held during December 16–19, 2012, at the Le Quy Don Technical University (LQDTU), Vietnam. SEAL has been an international forum for researchers discussing issues related to evolutionary optimization and machine learning. This biennial event started in Seoul, South Korea, in 1996 and was thereafter held in Canberra, Australia, in 1998, Nagoya, Japan, in 2000, Singapore, in 2002, Busan, South Korea, in 2004, Hefei, China, in 2006 and Melbourne, Australia, in 2008, and Kanpur, India, in 2010.

SEAL 2012 continued to maintain its high technical quality with a rigorous reviewing process of an international Program Committee. This year, SEAL 2012 received 91 paper submissions from 20 countries. After a rigorous peer-review process with three reviews per paper, 50 papers were accepted for presentation at the conference. The papers cover a wide range of topics in simulated evolution and learning. The accepted papers have been classified into the following main categories: (a) theoretical developments, (b) evolutionary algorithms, (c) swarm intelligence, (d) data mining, (e) learning methodologies, and (f) real-world applications.

The conference featured five distinguished keynote speakers. Hussein Abbass’s talk on “Computational Red Teaming: Can Evolution and Learning Augment Human Behaviour?” focused on computational red teaming (CRT), a field that attempts to create a form of artificial intelligence (AI) whereby intelligence is measured as the ability of a computer environment to challenge humans. Kay Chen Tan’s talk on “Advances in Evolutionary Multi-objective Optimization” showcased the incorporation of probabilistic graphical approaches in evolutionary mechanism that may enhance the iterative search process when interrelationships of the archived data have been learned, modeled, and used in the reproduction for multi-objective optimization.

Hisao Ishibuchi’s talk on “Fuzzy Genetics-Based Machine Learning” discussed the use of genetic-based machine learning for single and multi-objective fuzzy rule-based classifier design. Yew Soon Ong’s talk on “Towards a Unified Evolutionary and Memetic Search Model” presented a balance between generality (exploration through stochastic variation) and problem specificity (exploitation through lifetime learning). Kok Lay Teo’s talk on “Optimal Discrete-Valued Control Computation: An Exact Penalty Function Approach” considered an optimal control problem in which the control takes values from a discrete set.

SEAL 2012 could not have been held successfully without the contributions and support of many people. We would like to express our sincere thanks to all members of the conference committees, authors, participants, the local organizing teams, and the sponsors. We are grateful the LQDTU for supporting our cause and encouraging us to organize the conference at LQDTU.

September 2012

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