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Preface

This LNCS volume contains the papers presented at the Second Swarm, Evolutionary and Memetic Computing Conference (SEMCCO-2011) held during December 19–21, 2011 at Anil Neerukonda Institute of Technology and Sciences (ANITS), Visakhapatnam, Andhra Pradesh, India. SEMCCO is regarded as one of the prestigious international conference series that aims at bringing together researchers from academia and industry to report and review the latest progress in cutting-edge research on swarm, evolutionary, memetic computing and other novel computing techniques, to explore new application areas, to design new bio-inspired algorithms for solving specific hard optimization problems, and finally to create awareness of these domains to a wider audience of practitioners.

SEMCCO-2011 received 422 paper submissions in total from 25 countries across the globe. After a rigorous peer-review process involving 1,025 reviews in total, 124 full-length articles were accepted for oral presentation at the conference. This corresponds to an acceptance rate of 25% and is intended for maintaining the high standards of the conference proceedings. The papers included in this LNCS volume cover a wide range of topics in swarm, evolutionary, memetic and other intelligent computing algorithms and their real-world applications in problems selected from diverse domains of science and engineering.

The conference featured four distinguished keynote speakers. Carlos. A. Coello Coello's talk on "Recent Results and Open Problems in Evolutionary Multi-objective Optimization" reviewed some of the research topics on evolutionary multi-objective optimization that are currently attracting a lot of interest (e.g., many-objective optimization, hybridization, indicator-based selection, use of surrogates, etc.) and which represent good opportunities for doing research. Jacek M. Zurada in his talk on "prediction of Secondary Structure of Proteins Using Computational Intelligence and Machine Learning Approaches with Emphasis on Rule Extraction" emphasized the Prediction of protein secondary structures (PSS) with discovery of prediction rules underlying the prediction itself. He explored the use of C4.5 decision trees to extract relevant rules from PSS predictions modeled with two-stage support vector machines (TS-SVM). Dipankar Dasgupta delivered his keynote address on "Advances in Immunological Computation." N.R. Pal's talk on "Fuzzy Rule-Based Systems for Dimensionality Reduction" focused on the novelty of fuzzy rule-based systems used for dimensionality reduction through feature extraction preserving the "original structure" present in high-dimensional data.

SEMCCO-2011 also included two invited talks and tutorial, which were free to all conference participants. The invited talks were delivered by Sumanth Yenduri, University of Southern Mississippi, and Amit Kumar, CEO and Chief Scientific Officer, Bio-Axis DNA Research Center, Hyderabad, on the topics "Wireless Sensor Networks—Sink Shift Algorithms to Maximize Efficiency" and "Eval-

uating Mixed DNA Evidence with Forensic Bioinformatics," respectively. The tutorial was delivered by Siba K. Udgata of the University of Hyderabad, India, on "Swarm Intelligence: An Optimization Tool for Various Engineering Applications." The tutorial gave a brief overview of many swarm intelligence algorithms. The talk also covered an in-depth comparative study of these algorithms in different domains. In particular, emphasis was given to engineering applications like clustering in data mining, routing in networks, node placement in wireless sensor networks, finding the shortest path for packet forwarding, optimum resource allocation and planning, software failure prediction in software engineering, among many others.

We take this opportunity to thank the authors of all submitted papers for their hard work, adherence to the deadlines and patience with the review process. The quality of a refereed volume depends mainly on the expertise and dedication of the reviewers. We are thankful to the reviewers for their timely effort and help rendered to make this conference successful. We are indebted to the Program Committee members who not only produced excellent reviews but also constantly encouraged us during the short time frames to make the conference of international repute.

We would also like to thank our sponsors for providing all the support and financial assistance. First, we are indebted to ANITS Management and Administrations (The Secretary and Correspondent, the Principal and Directors and faculty colleagues and administrative personnel of the Departments of CSE, IT and MCA) for supporting our cause and encouraging us to organize the conference at ANITS, Vishakhapatnam. In particular, we would like to express our heart-felt thanks to Sri V. Thapovardhan, Secretary and Correspondent, ANITS, for providing us with the necessary financial support and infrastructural assistance to hold the conference. Our sincere thanks are due to V.S.R.K. Prasad, Principal, ANITS, for his continuous support. We thank Kalyanmoy Deb, IIT Kanpur, India, and Lakhmi Jain, Australia, for providing valuable guidelines and inspiration to overcome various difficulties in the process of organizing this conference as General Chairs. We extend our heart-felt thanks to Janusz Kacprzyk, Poland, for guiding us as the Honorary Chair of the conference. The financial assistance from ANITS and the others in meeting a major portion of the expenses is highly appreciated. We would also like to thank the participants of this conference, who have considered the conference above all hardships. Finally, we would like to thank all the volunteers whose tireless efforts in meeting the deadlines and arranging every detail ensured that the conference ran smoothly.

December 2011

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