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Preface

These proceedings contain the papers presented at ANTS 2010, the 7th International Conference on Swarm Intelligence, organized by IRIDIA, CoDE, Université Libre de Bruxelles, Brussels, Belgium, during September 8–10, 2010. The ANTS series started in 1998 with the First International Workshop on Ant Colony Optimization (ANTS 1998), which attracted more than 50 participants. Since then ANTS, which is held bi-annually, has gradually become an international forum for researchers in the wider field of swarm intelligence. In the past (since 2004), this development has been acknowledged by the inclusion of the term "Swarm Intelligence" (next to "Ant Colony Optimization") in the conference title. This year's ANTS conference was officially devoted to the field of swarm intelligence as a whole, without any bias towards specific research directions. As a result, the title of the conference was changed to "The International Conference on Swarm Intelligence." This name change is already in place this year, and future ANTS conferences will continue to use the new title.

This volume contains the best papers selected out of 99 submissions. Of these, 28 were accepted as full-length papers, while 27 were accepted as short papers. This corresponds to an overall acceptance rate of 56%. Also included in this volume are 14 extended abstracts.

Of the full-length papers, 15 were selected for oral presentation at the conference. All other contributions, including short papers and extended abstracts, were presented in the form of poster presentations. Following the conference, the journal *Swarm Intelligence* will publish extended versions of some of the best papers presented at the conference.

The conference featured three distinguished plenary talks: "Locating and Tracking Multiple Optima Using Particle Swarm Optimization" by Andries Engelbrecht, "Emergent Coordination in Fish Schools and Human Crowds" by Guy Theraulaz, and "Self-Reconfigurable Robots, Digital Hormones, and Swarm Morphallaxis" by Wei-Mei Shen. A special session, jointly organized by René Doursat and Hiroki Sayama, focused on recent developments in the area of morphogenetic engineering. A workshop organized by Dario Floreano provided opportunities to discuss research challenges related to the EU project Swarmanoid.

We take this opportunity to thank the large number of people that were involved in making this conference a success. We express our gratitude to the authors who contributed their work, to the members of the International Programme Committee, to the additional referees for their qualified and detailed reviews, and to the people at IRIDIA for helping with organizational matters. We thank the keynote speakers for their inspiring talks. Finally, we thank our sponsors: AntOptima, the Belgian Fund for Scientific Research-FNRS, the European Coordinating Committee for Artificial Intelligence, the French Community of Belgium, the IEEE Computational Intelligence Society, and Wolfram Research.

We hope the reader will find this volume useful both as a reference to current research in swarm intelligence and as a starting point for future work.

July 2010

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