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Foreword

The Fourth European Conference on Ecological Modelling (ECEM) and the Fourth International Workshop on Environmental Applications of Machine Learning (EAML) were organized jointly in Bled, Slovenia, during the week of September 27 - October 1, 2004. The aim of these events was to bring together researchers from the areas of ecology, ecological modelling and environmental sciences, on one hand, and the areas of data analysis, data mining and machine learning, on the other. In many respects, they were treated as a single event, namely ECEM/EAML 2004.

As environmental concerns grow and information technology develops, more and more data on the different aspects (physical, chemical, biological, ecological) of the environment are gathered. There is an increasing need to analyse the collected environmental data for different purposes, which include the support for environmental management decisions. The International Workshop on Environmental Applications of Machine Learning provided a forum for presenting recent advances in applying machine learning and data mining techniques for the analysis of environmental data.

Ecological modelling is concerned with the development and use of mathematical, computer and simulation models of ecosystems. It is a relatively young scientific discipline, which is rapidly gaining importance, especially because of the use and usefulness of ecological models for the management of natural resources. The European Conference on Ecological Modelling is the premiere European scientific event in the area of ecological modelling and regularly attracts an international audience.

ECEM 2004 covered all topics in the area of ecological modelling. An indicative, but non-exhaustive list of topics is given below:

- Ecological modelling techniques, e.g., artificial intelligence approaches, individual based modelling, machine learning, network analysis, neural networks, qualitative modelling and reasoning, structural dynamic modelling, standard models;
- Modelling for ecosystem management, e.g., wildlife management, ecosystem based management, sustainability, managing renewable natural resources, niche reconstruction;
- Modelling growth and development processes in ecosystems, e.g., modelling biodiversity changes, population dynamics, habitat modelling, ecological energetics;
- Modelling different types of ecosystems, e.g., forest ecosystems (alpine/boreal forests; temperate broadleaved forests; Mediterranean forests), aquatic ecosystems (marine; freshwater - lakes, rivers; lagoons; estuaries), grassland ecosystems, agricultural ecosystems;

- Modelling catastrophic changes in the environment, e.g., modelling the spread of invasive species, ecotoxicology (organism, population, community, ecosystem), outbreaks (pests, wildfires, floods, droughts).

A total of 110 abstracts were submitted and 90 were accepted after a review process. Each submitted abstract was sent to three members of the Program Committee for review. The Program Committee members themselves did the majority of reviews, assisted by a few additional reviewers appointed by the Committee members. Authors of accepted abstracts (for oral or poster presentation) were invited to submit full versions of their papers. These were reviewed separately by the members of the Program Committee and other reviewers for inclusion in a special issue of the journal Ecological Modelling which was to be published after the conference.

The program of ECEM 2004 consisted of three invited talks by Broder Breckling (University of Bremen, Germany), Bai-Lian Li (University of California Riverside, USA), and Jacqueline McGlade (European Environment Agency), as well as oral and poster presentations of accepted contributions.

Many people contributed in various ways to the ECEM 2004 conference. We would especially like to thank:

- The authors of submitted contributions who made the conference possible by presenting their work;
- The three invited speakers: Broder Breckling, Bai-Lian Li, and Jacqueline McGlade;
- The Advisory Committee for their suggestions regarding the Program Committee, invited speakers and encouraging remarks;
- The members of the Program Committee for their efforts in evaluating the submitted abstracts and papers;
- The members of the Organizing Committee;
- The sponsors for their generous support;
- The management and staff of the Albatros Congress Turist Agency, Bled, and the Center for Knowledge Transfer in Information Technologies, Jožef Stefan Institute, Ljubljana for their support;
- The Jožef Stefan Institute for providing the organizational infrastructure.

Sašo Džeroski, Marko Debeljak and Bernard Ženko
ECEM 2004 Program Co-chairs

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