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INTERNATIONAL CENTRE FOR MECHANICAL SCIENCES

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LEARNING, NETWORKS AND STATISTICS

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PREFACE

This volume contains the papers accepted for presentation at the invitational ISSEK96 workshop on 'Learning, Networks and Statistics' organized by the International School for the Synthesis of Expert Knowledge (ISSEK) and held at the Centre International des Sciences Mécaniques (CISM) in Udine from 19 to 21 September, 1996.

The first workshop on "Mathematical and Statistical Methods in Artificial Intelligence" organised by the International School for the Synthesis of Expert Knowledge (ISSEK) was held in 1994. This brought together a group of scientists with international reputation in the field of Mathematics, Statistics and Computer Science and it was a great success since all the participants had a stong interest in interdisciplinary work and collaboration. Instead of a call for papers the participants were recruited according to their scientific standings and by individual invitation. For further information on this event we refer to the book: Mathematical and Statistical Methods in Artificial Intelligence, G. Della Riccia, R. Kruse and R. Viertl (eds.); CISM Courses and Lecture No. 363, International Centre for Mechanical Sciences (Spriger-Verlag Wien New York).

In a joint venture of the Free University of Berlin (Prof. Lenz), the Otto-von-Guericke University of Magdeburg (Prof. Kruse) and the University of Udine (Prof. Della Riccia), a second international workshop on 'Learning, Networks and Statistics' was held. According to the overwhelming success of the first workshop the same fundamental principles were followed up, in particular, the organisers invited a rather limited but distinguished group of speakers with superb methodological backgrounds and with an expressed interest in overcoming the traditional frontiers of Computer Science, Mathematics and Applied Statistics.

Motivated by a recent book published by D. Michie, D. J. Spiegelhalter and C. C. Taylor (Machine Learning, Neural and Statistical Classification, Ellis Horwood, 1994), the workshop was organised in 4 sessions reflecting the main areas of interest: Neural Nets, Statistics and Networks, Classification and Data Mining and (Machine) Learning.

As it was intended not to have a pure academic discussion, but to inspect and unwrap practical problems too, the organisers as well as the editors were glad

to have a lot of stimulating contributions from the 'shop-floor'. The various fields of interest of the participants and the stimulating atmosphere of the lecture hall at Palazzo del Torso of CISM at Udine made it possible to analyse some important topics with stepwise refinement and on a uniform terminology basis. The editors believe that those discussions helped to clarify several of our ideas and helped to polish the papers accepted for final publication and collected in this volume.

The organisers and the editors of this volume would like to thank the following organisations which sponsored this event and made a meeting of such calibre possible:

-The International School for the Synthesis of Expert Knowledge (ISSEK) for promoting the workshop.
-The Free University of Berlin and the University of Udine for their administrative support.
- The Centre International des Sciences Mécaniques (CISM) for hosting again the workshop in their beautiful Palazzo del Torso and for providing technical support.

On behalf of all participants we express our gratitude to the Fondazione Cassa di Risparmio di Udine e Pordenone, to the Cassa di Risparmio di Udine and Pordenone and to EuroStat (Statistical Office of the European Communities at Luxembourg) for granting the necessary financial support.

Finally, we would like to thank very warmly Mrs. Angelika Wnuk from the Free University of Berlin for her superb secretarial work throughout the planning period and the time after.

The editors are happy and proud to announce a third event of this kind to be held in 1998 and are looking forward to meeting again most members of this scientific community.

H.-J. Lenz
R. Kruse
G. Della Riccia

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