



Preface

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This book maps TED ESF Workshop, *CMP'04: Multiple Participants Decision Making*, held in Institute of Information Theory and Automation Academy of Sciences of the Czech Republic. It extends the series on *computer-intensive problems in data processing and control* or, generally, on dynamic decision making.

History: The joint UK-CS seminar (Warwick, et al. 1991), Prague 1990, is a predecessor of the series. The idea of the future workshop format and the emerging topic were formulated during it. In 1992, the IFAC sponsored workshop (Kárný & Warwick 1993) started the series. Then, the 1st and 2nd IEEE workshops *Computer-Intensive Methods in Control and Signal Processing* were held in 1994 (Kulhavá, et al. 1994, Kárný, et al. 1997) and 1996 (Warwick & Kárný 1997), respectively. The the 3rd IEEE workshop held in 1998 (Rojíček, et al. 1998) extended the area covered to data processing. All referred event were successful but the last one indicated a loss of the characteristic series drive. A slight resignation on prolongation of the series made us to join in 2001 the conference ICANNGA (Kůrková, et al. 2001) and the workshop story seemed to be over.

Almost inevitably, the persistence of the addressed problems has brought a new impulse. The project of the European Science Foundation (ESF) *TED: Towards Electronic Democracy – Internet-based Approach* has revealed that the central series theme is even more important in societal than technical systems. This made us to prolong the series with the same aim but with a shift to decision problems with *multiple participants*.

Motivation: Due to the rapid increase in readily available computing power, a corresponding increase in the complexity of problems being tackled has occurred in many fields. A plethora of new methods has also arisen with a permanent desire deal with a more and more complex applications. Increasing the accuracy in models employed along with the use of the appropriate algorithms call for computations of a very high dimension. This bring with it a whole new breed of problem, which has come to be known as *The Curse of Dimensionality*. The need to solve this problem via distribution of modelling and decision making activities has brought qualitatively new dimension into the bunch of (sub)problems connected with the curse.

Book Aim: The Workshop has brought together researchers of the variety of fields affected by the curse to both learn from and swap experience. It has managed to cross usual boundary between researcher addressing technical and societal multiple-participant (distributed) decision making. The invited lectures of leading experts should help the reader to orient himself in the still messy workshop domain. Selected contributed papers could inspire him on important problems and on clever ideas to be transferred to other domains, to demonstrate advantages and deficiencies of existing solutions, to reveal similarities hidden behind field slang, etc. At general level, importance of *distributed dynamic* decision making as the only (?) systematic methodology for overcoming the curse of dimensionality should become more obvious.

References

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