Foreword

More than a decade ago, combining multiple classifiers was proposed as a possible solution to the problems posed by the traditional pattern classification approach which involved selecting the best classifier from a set of candidates based on their experimental evaluation. As no classifier is known to be the best for all cases and the selection of the best classifier for a given practical task is very difficult, diverse research communities, including Machine Learning, Neural Networks, Pattern Recognition, and Statistics, addressed the engineering problem of how to exploit the strengths while avoiding the weaknesses of different designs. This ambitious research trend was also motivated by empirical observations about the complementarity of different classifier designs, natural requirements of information fusion applications, and intrinsic difficulties associated with the optimal choice of some classifier design parameters, such as the architecture and the initial weights for a neural network. After years of research, the combination of multiple classifiers has become a well established and exciting research area, which provides effective solutions to difficult pattern recognition problems. A considerable body of empirical evidence supports the merit of designing combined systems whose accuracy is higher than that of each individual classifier, and various methods for the generation and the combination of multiple classifiers have become available. However, despite the proved utility of multiple classifier systems, no general answer to the original question about the possibility of exploiting the strengths while avoiding the weaknesses of different classifier designs has yet emerged. Other fundamental issues are also a matter of on-going research in different research communities. The results achieved during the past years are also spread over different research communities, and this makes it difficult to exchange such results and promote their cross-fertilization. The acknowledgment of the fundamental role that the creation of a common international forum for researchers of the diverse communities could play for the advancement of this research field motivated the present series of workshops on multiple classifier systems. Following its predecessors, Multiple Classifier Systems 2000 (Springer ISBN 3-540-67704-6) and 2001 (Springer ISBN 3-540-42284-6), this volume contains the proceedings of the Third International Workshop on Multiple Classifier Systems (MCS 2002), held at the Grand Hotel Chia Laguna, Cagliari, Italy, on June 24-26, 2002. The 29 papers selected by the scientific committee have been organized in sessions dealing with bagging and boosting, ensemble learning and neural networks, combination strategies, design methodologies, analysis and performance evaluation, and applications. The workshop program and this volume are enriched with three invited talks given by Joydeep Ghosh (University of Texas, USA), Trevor Hastie (Stanford University, USA), and Sarunas Raudys (Vilnius Gediminas Technical University, Lithuania). Papers were submitted from researchers of the four diverse communities, so confirming that this series of workshops can become a common forum

for exchanging views and reporting latest research results. As for the previous editions, the significant number of papers dealing with real pattern recognition applications are proof of the practical utility of multiple classifier systems. This workshop was supported by the University of Cagliari, Italy, the University of Surrey, Guildford, United Kingdom, and the Department of Electrical and Electronic Engineering of the University of Cagliari. All these supports are gratefully acknowledged. We also thank the International Association for Pattern Recognition and its Technical Committee TC1 on Statistical Pattern Recognition Techniques for sponsoring MCS 2002. We wish to express our appreciation to all those who helped to organize MCS 2002. First of all, we would like to thank all the members of the Scientific Committee whose professionalism was instrumental in creating a very interesting technical program. Special thanks are due to the members of the Organizing Committee, Giorgio Fumera, Giorgio Giacinto, and Gian Luca Marcialis for their indispensable contributions to the MCS 2002 web site management, local organization, and proceedings preparation.

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