



# CLADAG 2021

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13th Scientific Meeting of the Classification and Data Analysis Group  
Firenze, September 9-11, 2021

*edited by*

Giovanni C. Porzio

Carla Rampichini

Chiara Bocci



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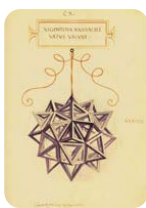
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## Preface

This book collects the abstracts and short papers presented at CLADAG 2021, the 13th Scientific Meeting of the Classification and Data Analysis Group (CLADAG) of the Italian Statistical Society (SIS). The meeting has been organized by the Department of Statistics, Computer Science, Applications 'G. Parenti' of the University of Florence, under the auspices of the University of Florence, the SIS and the International Federation of Classification Societies (IFCS).

CLADAG is a member of the IFCS, a federation of national, regional, and linguistically-based classification societies. It is a non-profit, non-political scientific organization, whose aims are to further classification research.

Every two years, CLADAG organizes a scientific meeting, devoted to the presentation of theoretical and applied papers on classification and related methods of data analysis in the broad sense. This includes advanced methodological research in multivariate statistics, mathematical and statistical investigations, survey papers on the state of the art, real case studies, papers on numerical and algorithmic aspects, applications in special fields of interest, and the interface between classification and data science. The conference aims at encouraging the interchange of ideas in the above-mentioned fields of research, as well as the dissemination of new findings. CLADAG conferences, initiated in 1997 in Pescara (Italy), were soon considered as an attractive information exchange market and became an important meeting point for people interested in classification and data analysis. A selection of the presented papers is regularly published in (post-conference) proceedings, typically by Springer Verlag.

The Scientific Committee of CLADAG 2021 conceived the Plenary and Invited Sessions to provide a fresh perspective on the state of the art of knowledge and research in the field. The scientific program of CLADAG 2021 is particularly rich. All in all, it comprises 5 Keynote Lectures, 26 Invited Sessions promoted by the members of the Scientific Program Committee, 10 Contributed Sessions, and a Plenary Session on *Statistical Issues in the COVID-19 Pandemic*. We thank all the session organizers for inviting renowned speakers, coming from many different countries. We are greatly indebted to the referees, for the time spent in a careful review of the abstracts and short papers collected in this book. The Conference was planned as an in presence event; unfortunately due to the persistent uncertainty of the COVID-19 epidemic condition, CLADAG 2021 will be completely online.

Special thanks are finally due to the members of the Local Organizing Committee and all the people who collaborated for CLADAG 2021. Last but not least, we thank all the authors and participants, without whom the conference would not have been possible.

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