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Alfredo Vellido · Karina Gibert ·
Cecilio Angulo · José David Martín Guerrero
Editors

Advances in Self-Organizing Maps, Learning Vector Quantization, Clustering and Data Visualization

Proceedings of the 13th International Workshop, WSOM+ 2019, Barcelona, Spain, June 26–28, 2019

Springer

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Preface

The Association for Computing Machinery (ACM) has named Yoshua Bengio, Geoffrey Hinton, and Yann LeCun as recipients of the 2018 Turing Award for their major contribution to the development of deep neural networks as a critical component of computing. This is a timely reminder of the renewed vitality of the machine learning field, in which self-organizing systems have played a major role from the 1980s not only from the perspective of data analysis, but also as in silico models in computational neuroscience.

This book contains the peer-reviewed and accepted contributions presented at the 13th International Workshop on Self-Organizing Maps (WSOM+2019) held at Universitat Politècnica de Catalunya (UPC BarcelonaTech), Barcelona (Spain), during June 26–28, 2019. WSOM+2019 is the latest in a series of biennial international conferences that started with WSOM'97 in Helsinki, Finland, with Prof. Teuvo Kohonen as General Chairman. We would like to express our gratitude to Prof. Kohonen for serving as Honorary Chair of WSOM+2019.

The reader will find here a varied collection of studies that testify to the vitality of the field of self-organizing systems for data analysis. Most of them relate to the core models in the field, namely self-organizing maps (SOMs) and learning vector quantization (LVQ), but the workshop also catered for research in the broader spectrum of unsupervised learning, clustering, and multivariate data visualization problems. It is also worth highlighting that the book includes a balanced mix of theoretical studies and applied research, covering a wide array of fields that vary from business and engineering to the life sciences. As a result, the book should be of interest to machine learning researchers and practitioners in general and, more specifically, to those interested in keeping up with developments in self-organization, unsupervised learning, and data visualization.

The book collects the work of more than 90 researchers from 18 countries, and it is the result of a collective effort. It would not have been possible without the advice and guidance of the international WSOM Steering Committee, and the quality of the final selection of papers is the result of the selfless reviewing work performed by the Program Committee members and the anonymous additional reviewers, which enhanced the sterling work of the authors themselves. We are truly indebted

to the international researchers who agreed to participate as plenary speakers in WSOM+2019: Prof. Paulo J. G. Lisboa (Liverpool John Moores University, UK), Prof. Tobias Schreck (Graz University of Technology, TU Graz, Austria), Dr. Aïda Valls (Universitat Rovira i Virgili, Spain), and Prof. Alessandro Sperduti (Universita degli Studi di Padova, Italy). The Local Organizing Committee would like to acknowledge the support of the UPC BarcelonaTech, the Intelligent Data Science and Artificial Intelligence (IDEAI) Research Center at UPC and the RDLab at the Department of Computer Science of the UPC. We also truly appreciate the support of the sponsoring companies: Amalfi Analytics, LumenAI, and Predict Assistance and the invaluable help provided by our postgraduate students from the master's and the Ph.D. in artificial intelligence programs of the UPC in the organization of the workshop.

June 2019

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