

Preface

This volume gathers the full articles presented at the 13th International Conference on Latent Variable Analysis and Signal Separation, LVA/ICA 2017, which was held during February 21–23, 2017, and was hosted by the Grenoble-Alpes University, in Grenoble, France, at the GreEn-Er School of Engineering.

Since its inception in 1999, under the name “Independent Component Analysis and Blind Source Separation (ICA),” the series of LVA conferences (held approximately every 18 months) have attracted hundreds of researchers and practitioners. The conference has continuously broadened its horizons and scope of applications. The LVA/ICA research topics encompass a wide range of general mixtures of latent variable models but also theories and tools drawn from a great variety of disciplines such as signal and image processing, applied statistics, machine learning, linear and multilinear algebra, numerical analysis, optimization, etc. These research areas are of interest to numerous application fields ranging from audio, telecommunications, food industry, biochemistry, to biomedical engineering or observation sciences to cite a few. Thus it offers very exciting interdisciplinary interactions. It also constitutes a multi-disciplinary discussion forum for scientists and engineers where they can gain access to a broad understanding of the state of the research in the field, keep up to date with active research areas, discover or address the main theoretical challenges, but also face real-world problems and share experiences.

This edition of the conference also marks a return to its roots, since the first edition was held in Aussois, which, like Grenoble, is located in France in the Rhône Alpes region. This volume of Springer’s *Lecture Notes in Computer Science* (LNCS) continues the tradition, which began in ICA 2004 (held in Granada, Spain), of publishing the conference proceedings in this form.

For this 13th issue of the LVA-ICA international conference, 58 full papers were submitted to regular sessions and to special sessions. Each submission of a regular full paper was peer reviewed by at least two members of our Technical Program Committee (TPC) or by competent additional reviewers assigned by the TPC members. Most papers received three reviews. From these 58 submitted papers, 53 were accepted as oral (31 papers) and poster (22 papers) presentations. The conference program included two special sessions: “From Source Positions to Room Properties: Learning Methods for Audio Scene Geometry Estimation” and “Latent Variable Analysis in Observation Sciences,” proposed and chaired by R. Gribonval (Inria Rennes, France), and Y. Deville (Toulouse University, France). Regular topics included: theoretical developments (dictionary and manifold learning, optimization algorithms, performance analysis, etc.); audio signal processing applications; tensor-based methods for blind signal separation; signal processing for physics, biology, and biomedical applications; and sparsity aware signal processing.

The Organizing Committee was pleased to invite three leading experts in these fields for keynote lectures:

- Sharon Gannot (Bar-Ilan University, Israel),
- Olivier François (Grenoble-Alpes University, France),
- José Bioucas-Dias (University of Lisbon, Portugal).

Aware of the growing interest in emerging, as well as in classic LVA-related topics among novice and veteran researchers alike, the Organizing Committee decided to precede the conference by a one-day advanced Winter School on LVA and Advanced Data, with the support of LabEx PERSYVAL (Grenoble-Alpes University), including plenary lectures given by:

- Nikos Sidiropoulos (University of Minnesota, USA),
- Jean-François Cardoso (Paris-Saclay University, France),
- Pierre Comon (Grenoble-Alpes University, France),
- Christian Jutten (Grenoble-Alpes University, France).

The LVA-ICA conference was followed by a special one-day workshop organized with the support of European Research Council projects DECODA and CHESS.

The conference also provided a forum for the sixth community-based Signal Separation Evaluation Campaign (SiSEC 2017). SiSEC 2017 successfully continued the series of evaluation campaigns initiated at ICA 2007, in London. This year's SiSEC campaign featured five round robin tests: four audio tasks consisting of underdetermined speech and music mixtures (UND), two-channel mixtures of speech and real-world background noise (BGN), professionally produced music recordings (MUS), asynchronous recordings of speech mixtures (ASY), and one biomedical task on recording of the sounds generated by the heart (BIO).

The success of the LVA/ICA 2017 conference was the result of the hard work of many people and the support of many sponsors (Grenoble-Alpes University, Toulon University, CNRS, Région Auvergne-Rhône Alpes, Agglomération de Grenoble), whom we wish to warmly thank here. First, we wish to thank all the authors and all the members of the TPC, without whom this high-quality volume would not exist.

We also want to express our gratitude to the members of the International LVA Steering Committee for their continued support to the conference, as well as to the SiSEC 2017 organizers and finally to the local Organizing Committee.

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