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Latent Variable Analysis and Signal Separation

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Preface

This volume gathers the full articles presented at the 14th International Conference on Latent Variable Analysis and Signal Separation, LVA/ICA 2018, which was held at the University of Surrey, Guildford, UK, during July 2–5, 2018. The conference was organized by the Centre for Vision, Speech and Signal Processing (CVSSP) and by the Institute of Sound Recording (IoSR).

Since its inception in 1999, under the name "Independent Component Analysis and Blind Source Separation," ICA, the series of LVA/ICA conferences (held approximately every 18 months) has 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 processing, applied statistics, machine learning, linear and multilinear algebra, numerical analysis, optimization, etc. These research areas are of interest in numerous application fields ranging from audio, image, telecommunications, biochemistry, and quantum physics to biomedical engineering or observation sciences, to cite a few. Thus, this conference offers very exciting interdisciplinary interactions between researchers in various fields and domains. It also constitutes a multidisciplinary 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, and also face real-world problems and share experiences.

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. We thank the editorial board of LNCS for their ongoing commitment and confidence in our conference.

For this 14th issue of the LVA/ICA international conference, 61 full papers were submitted to both regular and special sessions. Each submission of a regular full paper was peer reviewed by at least three members of our Technical Program Committee (TPC) or by competent additional reviewers assigned by the TPC members. From these 61 submitted full papers, 52 were accepted, 28 as oral papers and 24 as poster presentations. The conference program included two special sessions: "Structured Tensor Decompositions and Applications," proposed by Laurent Albera (Université de Rennes, France), Taylan Cemgil (Bogazici University, Turkey), and Umut Şimşekli (Télécom ParisTech, France); and "Advances in Phase Retrieval and Applications," proposed by Antoine Deleforge (Inria, Nancy, Grand-Est, France) and Angélique Dremeau (ENSTA Bretagne, France). Regular topics included: ICA methods, matrix and tensor factorizations, nonlinear mixtures, audio data and methods, deep learning and data-driven methods, sparsity-related methods, biomedical data methods, and applications of LVA and ICA.

The Organizing Committee was pleased to invite three leading experts for keynote addresses:

- Tuomas Virtanen (Tampere University of Technology, Finland)
- Orly Alter (University of Utah, USA)
- Danilo Mandic (Imperial College London, UK) Joint work with Andrzej Cichocki (Skolkovo Institute of Science and Technology, Skoltech, Moscow, Russia)

The Organizing Committee also decided to precede the conference by a one-day Summer School including plenary lectures given by:

- Evrim Acar (Simula Research Laboratory, Oslo, Norway)
- Richard Turner (University of Cambridge, UK)
- Russell Mason, Ryan Chungeun Kim, Dominic Ward (University of Surrey, Guildford, UK)

The LVA/ICA conference was followed by a special one-day workshop organized on "Audio Applications" with the support of the UK Engineering and Physical Sciences Research Council (EPSRC) through the projects "Musical Audio Repurposing Using Source Separation" (EP/L027119/2), S3A "Future Spatial Audio in the Home" (EP/L000539/1), and "Making Sense of Sounds" (EP/N014111/1), and the "Audio Commons Initiative" funded by the European Commission Horizon 2020 grant 688382. The conference also provided a forum for the seventh community-based Signal Separation Evaluation Campaign (SiSEC 2018), organized by Antoine Liutkus (Inria, Montpellier, Languedoc-Roussillon, France). SiSEC 2018 successfully continued the series of evaluation campaigns initiated at ICA 2007, in London.

The success of the LVA/ICA 2018 conference was the result of the hard work of many people whom we wish to warmly thank here. We wish to thank all the authors, keynote speakers, and tutorial lecturers, as well as all the members of the TPC, without whom this high-quality edition of LVA/ICA 2018 would not exist. We also wish to express our gratitude to the members of the International LVA/ICA Steering Committee for their support to the conference, to the SiSEC 2018 organizers, and finally to the local Organizing Committee and Events Team, for their hard work behind the scenes to ensure that the conference ran smoothly and seamlessly.

May 2018

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