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Discrete Geometry for Computer Imagery

21st IAPR International Conference, DGCI 2019
Marne-la-Vallée, France, March 26–28, 2019
Proceedings

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Preface

This volume collects the articles presented at the 21st IAPR International Conference on Discrete Geometry for Computer Imagery (DGCi 2019), held at ESIEE Paris, France, during March 26–28, 2019, following, the 20th edition held in Vienna in 2017. We are very happy to highlight that this was the second time that a DGCi conference was held at ESIEE Paris: the 8th edition was already organized at the same place precisely 20 years earlier, in 1999.

This DGCi edition attracted 50 submissions by authors from 20 countries: Australia, Austria, Belgium, Brazil, China, France, Hungary, India, Iran, Italy, Japan, The Netherlands, Peru, Poland, Russia, Serbia, Spain, Sweden, UK, and USA. Out of these 50 submissions, 38 were selected for presentation at the conference after a review-and-rebuttal process where each submission received, on average, 4.1 reports, including a meta-review by a Program Committee member. These contributions focus on discrete geometric models and transforms, discrete topology, graph-based models, analysis and segmentation, mathematical morphology, shape recognition and analysis, and geometric computation.

In addition, three internationally well-known researchers were invited for keynote lectures:

- Professor Alexandre Xavier Falcão, from University of Campinas, Brazil, on “The Role of Optimum Connectivity in Image Segmentation: Can the Algorithm Learn Object Information During the Process?”
- Professor Longin Jan Latecki, from Temple University, USA, on “Computing Maximum Weight Cliques with Local Search on Large Graphs with Application to Common Object Discovery”
- Professor János Pach, from École polytechnique fédérale de Lausanne, Switzerland, on “The Blessing of Low Dimensionality”

Moreover, Professor Falcão and Professor Latecki contributed a written article that can be found in this volume.

Together with the main DGCi 2019 event, a one-day pre-conference workshop on Discrete Topology and Mathematical Morphology in honor of the retirement of Gilles Bertrand and a half-day post-conference workshop on Approximation Algorithms: Combinatorics, Geometry and Statistics were also organized, leading to a one-week program.

Following the tradition of DGCi, the DGCi 2019 proceedings appear in the LNCS series of Springer, and it is planned to produce a special issue of the *Journal of Mathematical Imaging and Vision* from extended versions of excellent contributions.

We are thankful to Springer for sponsoring a best student article award and to the International Association of Pattern Recognition (IAPR) for its sponsorship, DGCi being one of the main events associated with the IAPR Technical Committee on Discrete Geometry and Mathematical Morphology (TC18). We are also grateful to our

institutions, namely, ESIEE Paris, Université Paris-Est, Université Paris-Est Marne-la-Vallée, Laboratoire d'Informatique Gaspard-Monge, Bézout Labex (grant ANR-10-LABX-58), and Centre National de la Recherche Scientifique (CNRS), and to Agence National de la Recherche (SAGA grant ANR-14-CE25-0016) that provided financial support.

We would like to thank all contributors, the keynote speakers, the Program and Steering Committees of DGCI, the Organizing Committee of DGCI 2019, and all those who made this conference happen. Last, but not least, we thank all participants and we hope that everyone had great interest in DGCI 2019.

January 2019

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