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Graph Drawing and Network Visualization

26th International Symposium, GD 2018 Barcelona, Spain, September 26–28, 2018 Proceedings

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Preface

This volume contains the papers presented at GD 2018: 26th International Symposium on Graph Drawing and Network Visualization held during September 26–28, 2018, in Barcelona. Graph drawing is concerned with the geometric representation of graphs and constitutes the algorithmic core of network visualization. Graph drawing and network visualization are motivated by applications where it is crucial to visually analyze and interact with relational datasets. Information about the conference series and past symposia is maintained at http://www.graphdrawing.org. The 2018 edition of the conference was hosted by Universitat Politècnica de Catalunya, with Vera Sacristán and Rodrigo Silveira as co-chairs of the Organizing Committee. A total of 99 participants attended the conference.

Regular papers could be submitted to one of two distinct tracks: Track 1 for papers on combinatorial and algorithmic aspects of graph drawing and Track 2 for papers on experimental, applied, and network visualization aspects. Short papers were given a separate category, which welcomed both theoretical and applied contributions. An additional track was devoted to poster submissions. All the tracks were handled by a single Program Committee. In response to the call for papers, the Program Committee received a total of 102 submissions, consisting of 85 papers (45 in Track 1, 23 in Track 2, and 17 in the short paper category; two papers that were withdrawn by the authors are not included in these statistics) and 17 posters. More than 330 expert single-blind reviews were provided, roughly a third of which were contributed by external sub-reviewers. After extensive electronic discussions via EasyChair, the Program Committee selected 41 papers and 14 posters for inclusion in the scientific program of GD 2018. This resulted in an overall paper acceptance rate of 48% (58% in Track 1, 43% in Track 2, and 29% in the short paper category). Authors published an electronic version of their accepted papers on an arXiv repository; a conference index with links to these contributions was made available before the conference.

There were two keynote talks at GD 2018. Alexandru Telea, from University of Groningen, The Netherlands, talked about methods for "Image-Based Graph Visualization: Advances and Challenge." Bojan Mohar, from Simon Fraser University, Canada, spoke about the "Beauty and Challenges of Crossing Numbers." The abstracts of both talks are included in the proceedings.

The conference gave out best paper awards in Track 1 and Track 2, plus a best presentation award and a best poster award. As decided by a subcommittee of the Program Committee, the award for the best paper in Track 1 was assigned to "Pole Dancing: 3D Morphs for Tree Drawings" by Elena Arseneva, Prosenjit Bose, Pilar Cano, Anthony D'Angelo, Vida Dujmović, Fabrizio Frati, Stefan Langerman, and Alessandra Tappini, and the award for the best paper in Track 2 was assigned to "Aesthetic Discrimination of Graph Layouts" by Moritz Klammler, Tamara Mchedlidze, and Alexey Pak. The participants of the conference voted to determine as the best presentation the one given jointly by Elena Arseneva and Pilar Cano for the paper

"Pole Dancing: 3D Morphs for Tree Drawings" and as the best poster the one by Charles Camacho, Silvia Fernández-Merchant, Marija Jelic, Rachel Kirsch, Linda Kleist, Elizabeth Bailey Matson, and Jennifer White entitled "Bounding the Tripartite-Circle Crossing Number of Complete Tripartite Graphs." Congratulations to all the award winners for their excellent contributions, and many thanks to Springer and MDPI whose sponsorship funded the prize money for these awards.

Following the tradition, the 25th Annual Graph Drawing Contest was held during the conference. The contest was divided into two parts, creative topics and the live challenge. The creative topics featured two graphs, one about Games of Thrones and one about the Mathematics Genealogy Project. The live challenge focused on drawings that maximize the crossing-angles, and had two categories: manual and automatic. Awards were given in each of the four categories. We thank the Contest Committee, chaired by Maarten Löffler, for preparing interesting and challenging contest problems. A report about the contest is included in these proceedings.

Many people and organizations contributed to the success of GD 2018. We would like to thank the Program Committee members and the external reviewers for carefully reviewing and discussing the submitted papers and posters; this was crucial for putting together a strong and interesting program. Thanks to all the authors who chose GD 2018 as the publication venue for their research. We are indebted to the gold sponsors Tom Sawyer Software and yWorks, the silver sponsor Microsoft, and the bronze sponsor Springer. Their generous support helps to ensure the continued success of this conference. Last but not least, the organizing co-chairs, Vera Sacristán and Rodrigo Silveira, did a terrific job; they in turn would like to express their thanks to other local organizers and volunteers, including Therese Biedl, Pilar Cano, Karla García, Carmen Hernando, Clemens Huemer, Maarten Löffler, Mercè Mora, Carlos Seara, and Roger Solí.

The 27th International Symposium on Graph Drawing and Network Visualization (GD 2019) will take place September 17–20, 2019 in Průhonice (near Prague), Czech Republic. Daniel Archambault and Csaba Tóth will co-chair the Program Committee. Jiří Fiala and Pavel Valtr will co-chair the Organizing Committee.

October 2018

Therese Biedl
Andreas Kerren

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Beauty and Challenges of Crossing Numbers (Keynote Presentation)

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Abstract. One of the initial goals of the graph drawing community was trying to understand what it means for a drawing of a graph to be nice or even beautiful. These attempts failed due to lack of a formal description how to measure how beautiful a drawing of a graph is. However, there is a lot of beauty of the results and methods in this area.

In this talk, the speaker will outline some of his favorite results in crossing number theory that demonstrate extreme beauty and elegance. Yet, there are some very basic problems that elude our proper understanding of this area. The speaker will touch upon some of these as well.

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