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Christoph Benz Müller · Bruce Miller (Eds.)

Intelligent Computer Mathematics

13th International Conference, CICM 2020
Bertinoro, Italy, July 26–31, 2020
Proceedings

Editors

Christoph Benz Müller 
Department of Mathematics
and Computer Science
Freie Universität Berlin
Berlin, Germany

Bruce Miller 
National Institute of Standards
and Technology
Gaithersburg, MD, USA

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Preface

With the continuing, rapid progress of digital methods in communications, knowledge representation, processing and discovery, the unique character and needs of mathematical information require unique approaches. Its specialized representations and capacity for creation and proof, both automatically and formally as well as manually set mathematical knowledge apart.

The Conference on Intelligent Computer Mathematics (CICM) was initially formed in 2008 as a joint meeting of communities involved in computer algebra systems, automated theorem provers, and mathematical knowledge management, as well as those involved in a variety of aspects of scientific document archives. It has offered a venue for discussing, developing, and integrating the diverse, sometimes eclectic, approaches and research. Since then, CICM has been held annually: Birmingham (UK, 2008), Grand Bend (Canada, 2009), Paris (France, 2010), Bertinoro (Italy, 2011), Bremen (Germany, 2012), Bath (UK, 2013), Coimbra (Portugal, 2014), Washington D. C. (USA, 2015), Bialystok (Poland, 2016), Edinburgh (UK, 2017), Linz (Austria, 2018), Prague (Czech Republic, 2019).

This 13th edition (CICM 2020) was originally scheduled to be held in Bertinoro, Italy. Due to the COVID-19 pandemic, the organizers decided to host the conference as an online event held during July 26–31, 2020. This year’s meeting exposed advances in automated theorem provers and formalization, computer algebra systems and their libraries, and applications of machine learning, among other topics. This volume contains the contributions of this conference.

From 35 formal submissions, the Program Committee (PC) accepted 24 papers including 15 full research papers and 9 shorter papers describing software systems or datasets. With two exceptions, all papers were reviewed by at least three PC members or external reviewers. The reviews were single-blind and included a response period in which the authors could respond and clarify points raised by the reviewers.

In addition to the main sessions, the conference included a doctoral program, chaired by Katja Bercic, which provided a forum for PhD students to present their research and get advice from senior members of the community. Additionally, the following workshop was scheduled:

- Workshop on Natural Formal Mathematics, organized by Florian Rabe and Peter Koepke

Finally, the conference included three invited talks:

- Kevin Buzzard (Imperial College, UK): “Formalizing undergraduate mathematics”

- Catherine Dubois (ENSIIE, CNRS, France): “Formally Verified Constraints Solvers: a Guided Tour”
- Christian Szegedy (Google Research, USA): “A Promising Path Towards Auto-formalization and General Artificial Intelligence”

A successful conference is due to the efforts of many people. We thank Claudio Sacerdoti-Coen and his colleagues at the University of Bologna for the difficult task of first organizing what promised to be an enjoyable meeting in Bertinoro and then evolving it into an online event. We are grateful to Serge Autexier for his publicity work. We thank the authors of submitted papers, the PC for reviews, organizers of workshops, as well as invited speakers and participants to the conference.

June 2020

Christoph Benz Müller
Bruce Miller

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