

## Foreword

The International Olympiad in Informatics (IOI) community gathers each year during the olympiad and has the opportunity to communicate during this worldwide event. Each country has many things to present and discuss. The national olympiads do not exist in isolation, and the papers from the 11th IOI conference show how similar problems arise in different countries and different environments.

The IOI Journal is focused on the research and practice of professionals who are working in the field of teaching informatics to talented students. The format for the Journal follows three tracks (since the 5th volume): the primary section of the journal focuses on research, the second section is devoted to sharing national experiences, and the last section presents book reviews and other related information.

In this volume, we publish a detailed research on the development of the curricula for Computer Science education in schools, in the paper “On a Methodology for Creating School Curricula in Computing” written by professors Krassimir Manev and Neli Maneva. The authors propose an idea for methodology for the development of school curricula in computing. These ideas were raised during the IOI Workshop, held in Bitola, Macedonia, in April 2015. The main goal of the Workshop was to review the current state of teaching computing in schools in the presented countries and to propose some ideas for development of an International School Curriculum in Computing, based on the experience of the IOI community.

The paper “Learning and Teaching Algorithms Design and Optimisation Using Contest Tasks” by Sébastien Combéfis and his colleagues presents training materials built from contest tasks to teach and learn how to design algorithms that solve concrete and contextualised problems. The first learning modules will be built thanks to a pedagogical device that will be deployed during the 2017–2018 academic year. The next step of this work, after the creation of the first modules, will be their evaluation in real conditions, that is, using them to teach algorithm design and optimisation related aspects and topics to interested learners.

The IOI conferences sustain the aim to become a part of, and to bring in, the wider pedagogical community. Each year there are typically one or two papers devoted to this purpose. In this volume we have a detailed paper titled “Learning Trajectory of Item Response Theory Course Using Multiple Softwares” written by Henri Retnawati from Indonesia. The paper describes learning trajectory of item response theory (IRT) that has been integrated to use multiple software and obstacles in an advanced IRT course. This design research study is of validation-study type with qualitative approach. The learning trajectory that had been hypothesized was based on the researcher’s experi-

ence in lecturing and in identifying the necessary requirements for each chapter in the course.

Michael Dolinsky presents a paper “A New Generation Distance Learning System for Programming and Olympiads in Informatics”. He proposes a new system, which supports teaching and learning of an arbitrary programming language, provides personal approach, and guarantees quality of knowledge and skills of graduates.

Antti Laaksonen discusses competitive programming in teaching university algorithm courses, and Dennis Komm presents an introduction to runtime analysis for an SOI workshop.

Some of the other papers in this volume deal with improving teaching and learning computer programming at secondary level, teaching graphs for students at lower secondary level, constructing problems in the sense of the IOI in Discrete Mathematics and Theoretical Informatics, and training world-class professionals in ICT.

We also understand the need for continuing to share our national experiences – our problems are common problems. In the second part of the volume, Bulgaria, Japan and Kazakstan present thoughtful analyses on the situation in their countries concerning informatics olympiads. IOI community members Bakhyt Matkarimov, Gregg Lee, Margot Phillips and Eljakim Schrijvers review IOI host guidelines and general aspects, which we hope will be of interest to our readership.

Finally, Antti Laaksonen presents a new book on Competitive Programming, and Krassimir Manev and Biserka Yovcheva announce the first European Junior Olympiad in Informatics.

As always, thanks are due to all those who have contributed to the current volume and the IOI conference. A lot of work is required, not only to the writing of the papers, but also to an extended period of reviewing and revising. Peer reviewing of the papers takes a significant amount of time and work, and special thanks should be given to the reviewers. Many thanks to the reviewers Ingrianni Liem, Jari Koivisto, Rein Prank, and Noa Ragonis who wrote several reports and improved quality of papers.

In particular, we would like to thank the organisational committee for IOI’2017 in Tehran and the Iranian organisation of this year’s IOI for giving us the opportunity to host the conference.

Editors