Foreword

The International Olympiad in Informatics (IOI) is an annual international informatics competition for individual contestants from over 80 invited countries, accompanied by social and cultural programs as well as a half-day scientific conference for delegation leaders, organisers and guests. The IOI community has an excellent opportunity to communicate during this international event. Many countries have a variety of things to present and discuss. The national olympiads do not exist in isolation, and the papers from the 12th IOI conference show how similar problems arise in different countries and different environments.

The IOI journal is focused on the research and practice of computing professionals who work in the field of teaching informatics to talented secondary and high school students. The journal is closely connected to the scientific conference annually organized during the IOI. The 12th volume has two tracks: the first section of the journal focuses on research, and the second section is devoted to sharing national experiences.

This year IOI is taken place in Tsukuba, Ibaraki, Japan from September 1st to September 8th, 2018. Therefore focused attention is given to informatics education in Japan. T. Kakeshita from Saga university has conducted a "National Survey of Japanese Universities on Computing Education: Analysis of Departments Majored in Computing Discipline", and H. Manabe, S. Tani, S. Kanemune, Y. Manabe has presented a paper on "Creating original Bebras tasks by high school students". Y. Nakano and K. Izutsu discuss „The next Course of Study from 2022 and a prospect of information studies education in Japanese senior high schools". Y. Nakayama, Y. Nakano, Y. Kuno, B. T. Wada, H. Kakuda, M. Hagiya, and K. Kakehi analyse "Current Situation of Teachers of Informatics at High Schools in Japan".

M. C. Fotaine presents a long study on "Tidal Flow: A Fast and Teachable Maximum Flow Algorithm".

D. Ginat discusses a "Algorithmic cognition and pencil-paper tasks", which underline the aspects of abstraction, heuristics, creativity, and declarative conceptions.

Some of the other papers in this volume deal with teaching programming at primary schools, combinatorial property of sets of boxes in multidimensional Euclidean spaces and theorems in olympiad tasks. A new approach for comparison of countries' achievements in science olympiads is presented by J. Jovanov, M. Mihove, B. Kostadinov, and E. Stankov. The same authots (except M. Mihove) wrote an article "Platform for analysing and encouraging student activity on contest and e-learning systems"

We understand the need for continuing to share our national experiences – our problems are common problems. In the second part of the

volume, M. Anderle from Slovakia, N. Amaroli, G. Audrito, L. Laura from Italy, and several authors from Japan presented their experience. M. S. Tsetvova and V. M. Kiryukhin informed about an international junior school in informatics for IOI training.

Many thanks to the Editorial Board of the IOI journal and also to all those who had assisted with the volume – especially authors and reviewers. A lot of work is required there by starting from writing papers until finishing their final collection for the volume.

In particular, we would like to thank the organisational committee for IOI'2018 in Tsukuba, Ibaraki and the Japanese organisation of this year's IOI for giving us the opportunity to host the IOI conference.

Editors