Preface

Currently, one of the promising areas for the development of high-performance computing technologies and systems are hybrid solutions that use various “computing accelerators” or coprocessors (primarily graphics accelerators − GPUs) in addition to central processors. In fact, such GPUs contain a large number (thousands) of relatively simple computing cores that are capable of simultaneously working on one task. On some types of tasks, GPUs provide significantly higher performance than traditional processors, while having a lower cost and power consumption per instruction. Active development of the accompanying ecosystem, including the creation of effective algorithms for parallel data processing, new development tools, as well as providing training and user support, opened up the possibilities of hybrid solutions applications not only for solving problems using machine learning and deep learning methods, but also in areas that were previously strictly focused on the use of classical computing architectures.

The International Conference "Information Technologies and High-Performance Computing" (ITHPC) is held in Khabarovsk every two years to discuss and exchange the results of research in the field of modern computer technologies. In 2021, the conference is being held for the sixth time by the Computing Center of the Far Eastern Branch of the Russian Academy of Sciences. The main directions of the conference:

- methods and algorithms of mathematical modeling using high-performance computing systems;
- distributed information systems, grid-technologies and cloud computing;
- information and computing technologies for research and monitoring of natural-technical systems.

There were 89 papers submitted for peer-review to this ITHPC ITHPC-2021. Highly qualified editors, selected by the Program Committee, and independent experts, selected the 31 papers (35% of the total number) to publish in this volume. Articles are divided into thematic areas related to the development of scientific and methodological concepts of information technology and high-performance computing and their application in various natural and technical systems. A significant part of the presented scientific results was obtained using the resources of the Center for Shared Use of Scientific Equipment “Center for Processing and Storage of Scientific Data of the Far Eastern Branch of the Russian Academy of Sciences”.

We are grateful to the authors for their submissions, to the Editors and the Program Committee for the active work on publication. We would like to note the Nvidia company for their help in holding the conference, as well as CEUR Workshop Proceedings (CEUR-WS.org) for being the publisher of ITHPC proceedings in 2019 (http://ceur-ws.org/Vol-2426/) and 2021.

For more information about the conference see http://conf.ccfebras.ru/en/

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Andrey N. Chibisov, Computing Center of the Far Eastern Branch of the Russian Academy of Sciences (Khabarovsk, Russia).
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