

The Preface to Special Issue of 2021 BenchCouncil International Symposium on Benchmarking, Measuring and Optimizing

This volume contains the papers presented at Bench 2021: the BenchCouncil International Symposium on Benchmarking, Measuring and Optimizing, held virtually in November 2021. The Bench conference has three defining characteristics. First, it provides a high-quality, single-track forum for presenting results and discussing ideas that further the knowledge and understanding of the benchmark community. Second, it is a multi-disciplinary conference. This conference edition attracted researchers and practitioners from different communities, including architecture, systems, algorithms, and applications. Third, the program features both invited and contributed talks. The Bench symposium solicits papers that address pressing problems in benchmarking, measuring, and optimizing systems.

The call for papers for the Bench 2021 conference attracted a large number of high-quality submissions. At least four experts reviewed each paper during a rigorous review process, and the program committee selected 11 papers for the Bench 2021 conference. The papers in this volume include revisions requested by program committee members. Bench 2021 had four keynote lectures. Jack Dongarra, professor of the University of Tennessee, presented “High-Performance Computing: Where We Are Today And A Look Into The Future”. Dr. Peter Mattson, the Senior engineer of Google, presented “Building what ML needs”. Dr. Wanling Gao, associate professor of the Chinese Academy of Sciences, presented “AI Scenario, Training, and HPC AI Benchmarks”. Dr. Vijay Janapa Reddi, associate professor of Harvard University, introduced “AI Tax: Motivating the Need for End-to-end Performance Analysis of ML Tasks”. There are four Tutorials in Bench 2021, which are “Automated Benchmarking of cloud-hosted DBMS with the benchANT”, “High Frequency Performance Monitoring via Architectural Event Measurement”, “Advanced MPI Programming”, and “DataBench Toolbox for Pipeline-based selection of Big Data and AI Benchmarks”. There are four BenchCouncil Distinguished Doctoral Dissertation Award Finalists. Dr. Romain Jacob from ETH Zurich, Dr. Pei Guo from the University of Maryland, Baltimore County, Dr. Belen Bermejo from the University of Balearic Islands, and Dr. Kai Shu from Illinois Institute of Technology.

During the conference, the International Open Benchmark Council (BenchCouncil) sponsored four different types of awards to recognize significant contributions to the area of benchmarking, measuring, and optimizing. The BenchCouncil Achievement Award recognizes a senior member who has made long-standing contributions to the field. Jack Dongarra was named the 2021 recipient of the achievement award. The BenchCouncil Rising Star Award recognizes a young researcher who demonstrates outstanding research and practice related to the conference’s theme. Dr. Peter Mattson, Dr. Wanling Gao, and Dr. Vijay Janapa Reddi were named the 2021 recipients of the rising star award. The BenchCouncil Best Paper Award is to recognize a paper presented at our conference with high potential impact. And this year Prof. Tony Hey generously donated to the BenchCouncil Award committee to spin off the best student paper award. And this award is to a student as the first author who publishes a paper that has a potential impact. In 2021, we had three best paper finalists. Junqi Yin, Aristeidis Tsaris, Sajal Dash, Ross Miller, Feiyi Wang, and Arjun Shankar from Oak Ridge National Laboratory received the Bench 2021 best paper award for their paper “Comparative Evaluation of Deep Learning Workload for Leadership-class Systems”. Jiaqiang Liu, Jingwei Sun, Zhongtian Xu, and GuangZhong Sun from the University of Science and Technology of China received the Bench 2021 Tony Hey Best Student Paper award for their paper “Latency-Aware Automatic CNN Channel Pruning with GPU Runtime Analysis”.

We are very grateful to all the authors for contributing such excellent papers to the Bench 2021 conference. We appreciate the indispensable support of the Bench 2021 Program Committee and thank its members for the time and effort they invested in maintaining the high standards of the Bench symposium.

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