Guest Editorial

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This special section presents the state-of-the-art technologies and the challenges of parallel and distributed computing techniques for artificial intelligence (AI), machine learning (ML), and deep learning (DL). AI, ML, and DL have established themselves in a multitude of domains because of their ability to process and model unstructured input data.

We thank all the authors for their submissions. The selection process from the 102 submissions involved multiple stages. In the first review round, we had seven minor revisions, 34 major revisions, and one paper that was transferred to the regular track of TPDS. In the second review revision, 15 papers were accepted together with 18 papers under a minor revision decision. In the third revision round, 17 papers were accepted and one paper was transferred to the regular track of TPDS. In total, 32 papers were accepted for the special section, leading to a final acceptance percentage of 31 percent.


Two papers present research on FPGAs: "Improving HW/SW Adaptability for Accelerating CNNs on FPGAs through A Dynamic/Static Co-Reconfiguration Approach" and "Efficient Methods for Mapping Neural Machine Translator on FPGAs."

Two papers explore AI acceleration using GPUs: "Accelerating Binarized Neural Networks via Bit-Tensor-Cores in Tiling GPUs" and "EDGES: An Efficient Distributed GraphEmbedding System on GPU clusters."

We thank all our committee members for their hard work and many contributions that have made the special section a reality in this special year 2020. We also thank the community for your interest in this special section. We hope you can use this information to advance your research in parallel and distributed computing for AI/ML/DL or in many other fields that rely on parallel computing for AI for insight, advances, and breakthroughs.

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Min Si is an assistant computer scientist at Argonne National Laboratory. She is the recipient of the 2018 IEEE-CS Technical Consortium on High Performance Computing (TCHPC) Early Career Researchers Award for excellence in high performance computing and won the Karsten Schwan Best Paper Award at HPDC 2018. Her research interests include high-performance computing, runtime systems, and parallel programming models.

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