

MPP 2019 - Message from Chairs

Welcome to the 8th Workshop on Parallel Programming Model, Special Edition on IoT and Machine Learning! Recent trends in artificial neural networks, such as deep neural networks, and the Internet-of-Things, indicate that an increasing number of artificial intelligence-based applications will be running on smartphones, sensors and other IoT devices collecting and processing large amounts of data. Most of those devices have limited processing power and often rely on cloud services for compute-intensive tasks. However, real-time applications may not tolerate the latency of offloading tasks to a cloud server.

Another important aspect to consider, especially in applications that run on big systems and manipulate big data sets, is the trade-off between moving data to a remote processing element to increase parallelism and computing things locally to reduce communication and energy costs while keeping performance levels. Edge/Fog computing proposes bringing computation closer to where data is sitting, by adding computational capabilities to network devices and adding edge gateways/servers, possibly in multiple layers with different latencies and computing performance. Moreover, such systems are expected to be heterogeneous, including multi-core processors, GPUs, FPGAs, and even processors that are customized for certain applications.

In this scenario, writing parallel applications is a non-trivial task, but also mandatory to explore the potential of modern computing platforms, imposing new challenges to the scientific community: the creation of models and alternatives to ease parallelism exploitation by the average programmer, considering the peculiarities of the different computation devices. Moreover, the proposed solutions should tackle problems such as application deployment, resilience and scheduling/offloading of tasks, considering latency, bandwidth, response time and computing power. In these complex environments, Machine Learning is becoming an important trend for autonomic operation.

The 8th Workshop on Parallel Programming Models - Special Edition on IoT and Machine Learning aims at bringing together researchers interested in presenting contributions to the evolution of existing models or in proposing novel ones, considering the trends on processing/accelerator devices. In this edition, we have selected five full papers and one short paper, all carefully reviewed by a very capable, heterogeneous program committee, with members from both industry and academia. Besides, we were also gifted with two keynotes by senior researchers, Dr. Kundu and Dr. Alves.

The best papers will be invited to submit extended versions of their work to a special edition in the journal *Concurrency and Computation: Practice & Experience*. We would like to thank Gabriele Mencagli for securing some slots for MPP in that special issue. Finally, we would like to thank the entire community for submitting papers and attending the event, making our workshop a relevant forum for discussing such important topics. We hope you enjoy MPP 2019.

Cheers!

Leandro A. J. Marzulo, Felipe M. G. França, Cristiana B. Bentes, Gabriele Mencagli, Andrew Putnam, and Mauricio L. Pilla

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