Instructions for Special Issue on Parallel Programming Models in HP Cloud ParaMo2019

- This Special Issue is dedicated on Parallel Programming Models in HP Cloud. The key target audience will be the best papers accepted for the 1st International Workshop on Parallel Programming Models in High-Performance Cloud, ParaMo2019 (Gottingen Germany, August 26, 2019). It is expected that submissions will address the topic of the workshop and contain at least 50% new content regarding any previously published paper. Authors are encouraged to submit high-quality, original work that has neither appeared in, nor is under consideration by, other journals.

- Scope:

The notion of cloud computing has changed the way how we utilize computing resources. Since High-Performance Computing (HPC) has long been suffered from under- or over-utilization of resources, many HPC researchers are trying to adapt HPC applications to the cloud environment. With proper adaptation, HPC applications are able to enhance their resource utilization ratio and scalability by using virtualized and on-demand resources on clouds. While we discuss HPC on clouds, we should discuss the parallel programming models as well. Various parallel programming models and their frameworks (e.g., MPI, OpenMP, OpenCL, CUDA, and MapReduce) has been proposed for parallel computing. For example, the MapReduce programming model has been used for various big data processing applications since it helps to reduce the complexity of problem parallelization such as decomposition, communication, and scheduling. However, a parallel programming model should be carefully selected for HPC applications to achieve high-performance and efficient resource usage because their target hardware architectures (e.g., many-core, GPU, Infiniband, etc.) are different as well as the abstraction levels. For example, MapReduce may not be a suitable selection of parallel programming model for a large-scale graph data processing problem. In addition, since traditional parallel programming models, such as MPI, are implemented for a single tenant cluster environment, applying these models to HPC applications on the cloud is a challenging in terms of resource management.

- The journal invites submissions for a special issue on “Parallel Programming Models in HP Cloud” that aims to attract high-quality papers that describe state-of-the-art technologies and new findings. Some of the most important areas include, but are not limited to:
  o Parallel programming models for large scale data processing (e.g., MapReduce) in the cloud
  o Parallel programming models for massively parallel computing (e.g., MPI, OpenMP, and OpenCL) in the cloud
  o High-performance networking for parallel programming models in the cloud
  o High-performance storage for parallel programming models in the cloud
  o Heterogeneous resource management (e.g., many-core and GPU) for parallel programming models in the cloud
  o Load balancing schemes for HPC applications in the cloud
  o Runtime support for parallel programming models in the cloud
  o Energy efficient resource management and parallel programming models in the cloud
  o Resource management for virtualized environments
• Performance evaluation for parallel applications in the cloud
• Configurational optimization for parallel applications in the cloud

• Submissions must follow these guidelines:
  o Please submit your paper to Manuscript central as ParaMo2019 special issue.
  o Submissions should be prepared for publication according to the journal submission guidelines.
  o The submitted papers must have at least 50% different material beyond any other previously published work.
  o Manuscripts should not exceed 12 pages in length.

• Important dates are as follows:
  o Paper Submission: 25 November 2019
  o First Round of Reviews: 16 December 2019
  o Submission of Revision: 13 January 2020
  o Decision of Acceptance: 3 February 2020