

Journal of Concurrency and Computation: Practice and Experience
Special Issue on
Scalable Computing for Fast Big Data Applications on Hybrid Platforms

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Background and Scope

“Concurrency and Computation: Practice and Experience”, a forum for the publication of peer-reviewed, high-quality original papers in the computer and information sciences, focusing specifically on programming aspects of parallel and distributed computing systems, is seeking original manuscripts for a Special Issue on Scalable Computing for Fast Big Data Applications on Hybrid Platforms scheduled to appear in the first half of 2017.

The continuous growth of our society has led to complex systems, and also to the need to optimize certain aspects of our day to day activities. Time sensitive applications such as real time power management for smart grids, traffic control or network monitoring require on demand large scale information processing and real time responses. The data these applications gather on a regular basis from monitoring sensors exceeds the normal storage and processing power of commodity clusters. In addition, the complexities arising from handling large networked data include but are not limited to data heterogeneity (i.e. variability), data quality (missing/approximate), data temporality (i.e. high-velocity), or data volume. Utilizing new hardware technologies for near real-time Big Data management and processing is of urgent importance as hardware characteristics in state of art scalable computing platforms such as clouds and the emerging fog, is undergoing rapid changes, imposing new challenges for the efficient utilization of heterogeneous hardware resources. Recent trends include massive multi-core processing systems, and specialized, high performance co-processors such as GPUs and FPGAs for accelerating large-scale computations. On the storage front, FLASH-based solid state devices (SSDs) and IO accelerators are becoming ubiquitous. These new technologies often reside on the same machine or at least need to be used together creating a large heterogeneous infrastructure. In spite of these trends bringing the computational capabilities of supercomputers to cheaper commodity machines, naive usage of these technologies for fast Big Data processing might lead to unbalanced systems or underutilized resources. Furthermore the data deluge generated by monitoring sensors may pose challenges to existing communication networks. As a consequence, we experience a slow but steady emergence of fog computing, namely of migrating more of the computation towards the edge where data is being collected. While this approach has its benefits, we still require the massive computational power of heterogeneous cloud systems for coordinating and taking centralized decisions.

In this special issue, we invite articles on innovative research to address challenges of fast Big Data processing on emerging heterogeneous and hybrid platforms such as heterogeneous clouds and hybrid architectures.

Topics of Interest

- Novel programming models and platforms for large scale I/O and network intensive applications on distributed systems such as clouds and fog.
- Scalable software platforms for fast Big Data analytics on heterogeneous clouds and hybrid cloud-fog architectures.
- Acceleration of domain specific Big Data applications on heterogeneous hardware and software platforms with emphasis on the intercloud and cloud-fog hybrids.
- Scalable monitoring and security and privacy solutions on hybrid large scale distributed platforms.

Important dates are as follows:

- Submission deadline: October 2, 2016 AoE. Papers should be submitted to <http://mc.manuscriptcentral.com/cpe> as SCRAMBL special issue.
- First round of notifications: December 20, 2016.
- Final manuscripts due January 20, 2017.

Submission guidelines

Submitted papers must be written in English and must describe original research which has not been published, and is not currently under review by other journals or for conferences. The author instructions for preparation of manuscripts can be found at the Wiley Online Library Author Guidelines web page. All manuscripts and any supplementary material should be submitted through the Wiley Manuscript Submission System. The authors must select Special Issue "*Scalable Computing for Fast Big Data Applications on Hybrid Platforms*" upon uploading their paper. Manuscripts should be no longer than 15 one-column pages.

Special Issue details

Tentative Title: Special Issue on Scalable Computing for Fast Big Data Applications on Hybrid Platforms

Guest editors: Charalampos Chelmiss, Marc Frincu, Bogdan Nicolae

Submission deadline: October 2, 2016

Acceptance notification: December 2016

Publication: June 2017

Open call: Yes