

Future Generation Computer Systems (IF=2.430) Special Section on Functional Paradigm for High Performance Computing

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in conjunction with the International Conference Lambda Days 2017

February 09-10, Kraków, Poland

Introduction

Efficient programming for parallel execution on many core architectures and on emerging distributed hardware platforms leads to issues related to a proper synchronization between threads and processes, development of robust communication protocols, maintaining scalability and resilience of the developed applications and software systems. Many mechanisms enabling addressing these issues are available in the functional paradigm of programming. Inherent capabilities of functional languages, such as referential transparency, lazy evaluation, and absence of side-effects in purely functional languages make them perfect as means for implementation of concurrent algorithms on distributed systems. Moreover, many functional languages provide their users a reliable asynchronous communication supporting higher-level paradigms like actor-based concurrency model based on message passing. These features and mechanisms give a great potential for further development and improvement of the available tools and techniques, thus becoming a very interesting means for the development of HPC applications.

Topics

Specific topics include (but are not limited to):

- Design of functional programming languages for HPC;
- Functional frameworks for HPC applications;
- Application of functional software in HPC environment for computing and simulation;
- Computing and simulation frameworks based on functional languages;
- Parallel and distributed computing based on functional programming languages;
- Hybrid hardware architectures (GPGPU, FPGA) and functional programming languages;
- Concurrency and synchronization models in functional languages;
- New features of functional languages in the context of HPC;
- Scalability and robustness of highly concurrent systems implemented with functional languages.

Papers

We cordially invite you to submit a paper presenting the results of original research or innovative practical application in the area of Functional Programming for High Performance Computing. Papers of up to **12 pages**, written in English and complying with the [FGCS format](#), should be submitted electronically through the [Elsevier Submission System](#). All papers will be peer reviewed. The authors of accepted papers will be invited to the Lambda Days 2017 conference (the conference fee will be covered by the Organizers). **The participation in the Research Track is not mandatory, though highly recommended. The final review will be prepared after the presentation and the discussion at the Research Track – we are working on making possible anonymous interaction with the reviewers during the presentation – in order to clarify the doubts of the reviewers.** The papers will be published only after following all of the reviewer's comments, possibly after undergoing subsequent review rounds.



Important dates

Manuscript Submission:	November 30 th , 2016	Final review:	February 28 th , 2017
Notification of acceptance:	December 23 rd , 2016	Final submission:	March 31 st , 2017
Research track (optional):	February 9 th -10 th , 2017		

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