

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

www.lambdadays.org

in conjunction with the International Conference Lambda Days 2017
February 0910, 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 sideeffects 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 higherlevel paradigms like actorbased 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
Notification of acceptance: December 23 rd , 2016
FResearch track (optional): February 9 th 10 th , 2017

Final review: February 28 th , 2017
inal submission: March 31 st , 2017

PROGRAM COMMITTEE

Bartosz Balis, AGH University of Science and Technology, Poland
Christopher Brown, University of St Andrews, Scotland, UK
Juan Carlos Burguillo Rial, University of Vigo, Spain
Jost Berthold, Commonwealth Bank of Australia, Sydney, Australia
Laura Castro, University of Coruna, Spain
Alexey Cheptsov, HLRS, Stuttgart, Germany
Carlos Cotta, University of Malaga, Malaga, Spain
Pawel Czarnul, Gdansk University of Technology, Poland
Kei Davis, Los Alamos National Laboratory, USA
Roman Debski, AGH University of Science and Technology, Poland
Frederic Gava, Universite ParisEst, France
Jose Gracia, HLRS, Stuttgart, Germany
Olivier Hoenen, Max Planck Institute for Plasma Physics, Germany
Daniel Holmes, EPCC, UK
Janusz Kacprzyk, Institute of System Research, Warsaw, Poland
Jacek Kitowski, AGH University of Science and Technology, Poland
Joanna Kolodziej, Cracow University of Technology, Poland

Tamas Kozsik, Eotvos Lorand University, Budapest, Hungary
Dieter Kranzlmüller, Ludwig Maximilians University, Munich, Germany
Krzysztof Krawiec, Poznan University of Technology, Poland
Daniel Krzywicki, Zengularity, France
Tom Lenaerts, Universite Libre de Bruxelles, Belgium
Maciej Malawski, AGH University of Science and Technology, Poland
Simon Marlow, Facebook, UK
Greg Michaelson, HeriotWatt University, Scotland, UK
Mikolaj Morzy, Poznan University of Technology, Poland
NgocThanh Nguyen, Wroclaw University of Technology, Poland
Robert Virding, Erlang Solutions, Sweden
Aleksy Schubert, Warsaw University, Poland
HongLinh Truong, TU Wien, Austria
Wojciech Turek, AGH University of Science and Technology, Poland
Janusz Wojtusiak, George Mason University, Fairfax VA, USA
Marek Zaionc, Jagiellonian University, Poland

SPECIAL SECTION CHAIRS

Chairs: Aleksander Byrski, AGH University of Science and Technology, Krakow, Poland
Katarzyna Rycerz, AGH University of Science and Technology, Krakow, Poland
John Hughes, Chalmers University of Technology, Gothenburg, Sweden
Kevin Hammond, University of St. Andrews, St. Andrews, Scotland, UK
Contact email: olekb@agh.edu.pl

