

# First International Workshop on Multi-Objective Many-Core Design (MOMAC)

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in conjunction with **International Conference on Architecture of Computing Systems (ARCS 2014)**

Luebeck, Germany, February 25-28, 2014

## Call for Papers

Semiconductor industry is hitting the utilization wall, resulting in parallel and heterogeneous many-core architectures. Applications have to exploit the available parallelism and heterogeneity to meet their functional and non-functional requirements and to gain performance improvements.

A main challenge originates from many-cores promoting highly dynamic usage scenarios as already observable in today's "smart devices", where multiple and varying numbers of applications are running at different points in time. As a consequence, providing mapping of applications to processor cores which is optimal and predictable with respect to performance, timing, energy consumption, safety, security, etc. may not be guaranteed by static design-time optimization alone. At the same time, pure run-time optimization may result in unpredictable and non-optimal system states. This workshop investigates this field of tension of run-time, design-time, and hybrid design methodologies for the mapping of applications on many-core systems, particularly addressing the aspect of multiple conflicting objectives that drive the design.

This field of research includes numerous intermeshed aspects:

- **Languages, Models, and Compilers:** How to specify, analyze, parallelize, and compile programs which support dynamic usage scenarios in many-cores?
- **Formal methods, Test, and Verification:** How to analyze and verify predictable execution of applications despite unforeseeable run-time events?
- **Optimization Techniques:** Which design-time and run-time techniques as well as combinations of them provide optimized and predictable application mapping for many-cores?

## Topics of Interest:

Topics of interest include, but are not limited to:

### Specification

- Programming
- Modeling
- Parallelization

### Design-time Optimization

- Multi-Objective Optimization
- Design Space Exploration
- Verification
- Profiling

### Run-time Optimization

- Resource Management
- Temperature and Power Management
- Decentralized vs Centralized Management
- Reconfigurable Computing
- Operating System
- Online Verification
- Auto-tuning
- Machine Learning

### Multiple Objectives & Predictability

- Performance
- Hard & Soft Real-time
- Energy Efficiency
- Fault Tolerance & Reliability
- Safety
- Security
- Scalability
- Flexibility

## Submission

Paper can be submitted as regular papers or as position papers. Formats:

- **up to 12 pages (regular paper)** LNI style

- **4 pages (position paper)** LNI style. Preliminary and exploratory work are welcome in this category, including wild & crazy ideas. Authors submitting papers in this category must prepend "Position Paper:" to the title of the submitted paper.

Papers are required to be in English using the LNI style (see <http://www.gi.de/service/publikationen/lni.html>). Paper submission until November 15, 2013 via EasyChair (<https://www.easychair.org/conferences/?conf=momac2014>). All papers undergo a blind review process. Authors will be notified until December 9, 2013. Final version is due to December 15, 2013.

All accepted papers will be published in the ARCS Workshop Proceedings and online under IEEE Xplore.

## Location

MOMAC will be held conjunction with the 27th International Conference on Architecture of Computing Systems (ARCS 2014), **February 25-28, 2014**.

## Organizers

**Stefan Wildermann** (FAU, Germany, [stefan.wildermann@fau.de](mailto:stefan.wildermann@fau.de))

**Michael Glaß** (FAU, Germany, [michael.glass@fau.de](mailto:michael.glass@fau.de))

## Technical Program Committee

To be announced.

For further information please see:

<http://www12.cs.fau.de/momac/>

## Important Dates

Paper submission deadline: **November 15, 2013**

Notification of acceptance: **December 9, 2013**

Final version: December 15, 2013