

HIPEAC workshop

20 January 2020, Bologna

Title of the workshop: Heterogeneity Alliance. Working for the future generation of heterogeneous computing

Organizers: Clara Pezuela (Atos) on behalf of Alliance members. See all members at <http://heterogeneityalliance.eu/alliance-members>

Expected duration: full day on

Format: keynote, panel and open discussion

Main topics: The workshop objective is to present the vision and activities of the Heterogeneity Alliance promoted by several EU projects and organizations. The Alliance is aiming at joining forces around heterogeneity challenges. The workshop aims at attracting new members for the Alliance and to validate with HIPEAC community the initiative and the produced results so far. The workshop will go also deeply into the different and complementary approaches and assets to address the identified challenges. The Alliance will present its Manifesto about how envisages the future of heterogeneous computing and will present its book about challenges and vision of heterogeneous computing architectures.

Addressed topics: The Alliance covers most of the topics at the event, but we have selected those ones closer:

- High performance computer architecture: processor architecture, multi-/many-core system design, reconfigurable architectures.
- Software development for high performance parallel systems: development patterns/automatic techniques for parallel and reconfigurable architectures.
- Tools for compilation, evaluation, optimization as well as synthesis of high performance parallel systems: compiler support, tracing, and debugging for parallel and reconfigurable architectures, high-level synthesis.
- Embedded (parallel) computer architectures: embedded homogeneous and heterogeneous multicore architectures, embedded reconfigurable architectures, embedded real-time systems, mixed criticality system support, dependable systems.
- Software support for embedded architectures: tracing and real-time analysis of embedded applications, runtime software.
- (Real-Time) Operating and runtime systems for embedded parallel computer architectures.

Expected agenda:

- 09:45 Welcoming and networking
- 10:00 **Invited Keynote** (45') (15' for questions) (Michael O'Boyle, University of Edinburgh)
- 11:00 **The heterogeneity alliance** (15' for questions)
 - **Goal and objectives, why to join, how** (15') (Clara Pezuela, ATOS)
 - **Alliance manifesto** (15') (Karim Djemame, University of Leeds)
 - **Alliance book** (15') (Alberto Scionti, ISMB)

- 12:00 **Panel discussion: the future of heterogeneous computing** (60')
 - o Yannis Papaefstathiou, Synelixis, Greece
 - o Michel Steuwer, University of Glasgow, UK
 - o Didem Unat, Istanbul University, Turkey (TBC)
- 13:00 **Lunch break**
- 14:00 Working groups: scope, projects and future challenges (intro + discussion)
 - o WG1 IDE/SDK (Jorge Ejarque, BSC)
 - o WG2 Middleware (Karim Djemame, University of Leeds)
- 15:00 **Coffee break and networking**
- 15:30 Working groups: scope, projects and future challenges (intro + discussion)
 - o WG3 Runtime and systems (Lutz Schubert, ULM)
 - o WG4 Heterogeneous hardware (Juan Fumero, Univ. Manchester)
- 16:30 **Summary session** (all WGs coordinators)
- 17:00 **Closing** (Clara Pezuela, ATOS, 10')

Expected attendance: 50 people

Invited talks only; this workshop was organized also last year at first time

Web site: <http://heterogeneityalliance.eu/>

