



Self-CPS: Self-aware Cyber Physical Systems (ICAC '14: SCPS)

June 18–20, 2014, Philadelphia, PA

Important Dates

Paper submissions due: **March 28, 2014, 11:59 p.m. PDT**

Notification to authors: **April 9, 2014**

Final paper files due: **May 20, 2014**

Self-CPS Track Organizers

Program Vice-Chairs

Ron Ambrosio, *IBM Thomas J. Watson Research Center*
Sokwoo Rhee, *NIST*

Program Committee

TBA

Overview

The increased connectedness of real-time embedded systems and sensors has led to the emergence of Cyber-Physical Systems (CPS), systems of collaborative computational elements controlling a physical process. Areas such as avionics, smart grids, medical devices, traffic control, automotive are examples of domains where CPS is growing at an exponential pace. Autonomic computing promises to help manage the complexity of these systems in order to meet high-level objectives and policies specified by humans. However, there is still a lack of research on new techniques adapted to the CPS context or on how to adapt and tailor existing research on autonomic computing to the specific characteristics of CPS, such as high dynamicity and distribution, real-time requirements, resource constraints, systems-of-systems, and integration of heterogeneous technologies.

Following the recent success of the special track on the Internet-of-Things at ICAC '13, ICAC '14 will host this special track on Self-aware Cyber-Physical Systems that aims at drawing the attention of both CPS and autonomic computing communities to the emerging needs and challenges for self-aware CPS. The main goal is to gather different scientific communities from academy and industry under one common objective: realizing plug-n-play, context-aware and autonomous CPS that will be self-configured, self-organized, self-optimized and self-healed without (or with minimum) human intervention. The Self-CPS track welcomes original research papers related to self-management in CPS. Besides theoretical aspects, Self-CPS is also interested in practical results of self-management in CPS applications. The non-exclusive list of topics of interest is as follows:

- Software engineering methods for self-adaptive heterogeneous CPS, including tools, model-driven methodologies, methodologies for lifecycle management
- Modeling environmental context and user behavior, context-awareness
- Convergence of CPS and cloud computing, autonomic provisioning of CPS services in the cloud

- Control theory methods for CPS, distributed control loops, cooperation and negotiation, multi-agent approaches for autonomic CPS, Event-Condition-Action rules, utility functions
- Tools for performance monitoring, diagnostics and self-healing in CPS
- Autonomic security and privacy, dependability, trust in CPS
- Self-organizing network protocols, ad-hoc routing mechanisms, cognitive networks adapted to resource constrained devices and lossy environments
- Experience in applying autonomic methodologies for CPS in avionics, smart grids, medical devices, traffic control, automotive and all CPS domains

Submissions

Submissions to the Self-CPS track follow the same guidelines as described in the main ICAC '14 Call for Papers; in addition, submissions should be a maximum of 6 pages in length. In order to submit your work to the Self-CPS track, please do so via the Web submission form for this special track on the Call for Papers Web site, www.usenix.org/icac14/self-cps, as opposed to the submission form for the general ICAC '14 track.

Past Events

This track is a continuation of the Self-IoT: Self-aware Internet of Things Track held at ICAC '13.

