Aims and Motivation

The aim SASO 2018 is to provide a forum for the presentation and discussion of research on the foundations of engineered systems that self-adapt and self-organize. The complexity of current and emerging networks, software, and services can be characterized by issues such as scale, heterogeneity, openness, and dynamics in the environment. This has led the software engineering, distributed systems, and management communities to look for inspiration in diverse fields (e.g., complex systems, control theory, artificial intelligence, chemistry, psychology, sociology, and biology) to find new ways of designing and managing such computing systems in a principled way. In this endeavor, self-organization and self-adaptation have emerged as two prominent interrelated approaches. They form the basis of many other so-called self-* properties, such as self-configuration, self-healing, or self-optimization. SASO aims to be an interdisciplinary meeting, where contributions from participants with different backgrounds lead to the fostering of a cross-pollination of ideas, and where innovative theories, frameworks, methodologies, tools, and applications can emerge.

Scope

We are looking for contributions that present new fundamental understanding of self-adaptive and self-organizing systems and how they can be engineered and used. The topics of interest include, but are not limited to:

- **Self-* Systems theory**: nature-inspired and socially-inspired paradigms and heuristics; inter-operation of self-* mechanisms; theoretical frameworks and models; control theory;
- **Self-* System properties**: robustness; resilience; stability; anti-fragility; diversity; self-reference and reflection; emergent behavior; computational awareness and self-awareness;
- **Self-* Systems engineering**: reusable mechanisms and algorithms; design patterns; architectures; methodologies; software and middleware development frameworks and methods; platforms and toolkits; multi-agent systems;
- **Theory and practice of self-organization**: self-governance, change management, electronic institutions, distributed consensus, commons, knowledge management, and the general use of rules, policies, etc.
- **Theory and practice of self-adaptation**: mechanisms for adaptation, including evolution, logic, learning; adaptability, plasticity, flexibility;
- **Socio-technical self-* systems**: human and social factors; visualization; crowdsourcing and collective awareness; humans-in-the-loop; ethics and humanities in self-* systems;
- **Data-driven approaches to self-* systems**: data mining; machine learning; data science and other statistical techniques to analyze, understand, and manage the behavior of complex systems;
- **Self-adaptive and self-organizing hardware**: self-* materials; self-construction; reconfigurable hardware;
- **Self-* Systems Education**: experience reports; curricula; innovative course concepts; methodological aspects of self-* systems education;
- **Applications and experiences with self-* systems**: smart grid, smart cities, smart homes, adaptive industrial plants, cyber-physical systems; autonomous vehicles and robotics; traffic management; self-adaptive cybersecurity; Internet of Things; fog/edge computing.