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Collana	Programming and Software Engineering ; ; 8998
Disciplina	005.1
Soggetti	Software engineering Computer logic Programming languages (Electronic computers) Computer programming Mathematical logic Artificial intelligence Software Engineering Logics and Meanings of Programs Programming Languages, Compilers, Interpreters Programming Techniques Mathematical Logic and Formal Languages Artificial Intelligence
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
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Nota di contenuto	The SCEL Language: Design, Implementation, Verification -- Reconfigurable and Software-Defined Networks of Connectors and Components -- Correctness of Service Components and Service Component Ensembles -- Reconciling White-Box and Black-Box Perspectives on Behavioral Self-adaptation -- From Local to Global Knowledge and Back -- Knowledge Representation for Adaptive and Self-aware Systems -- Reasoning and Learning for Awareness and Adaptation -- Supporting Performance Awareness in Autonomous Ensembles -- The Ensemble Development Life Cycle and Best Practices

for Collective Autonomic Systems -- Methodological Guidelines for Engineering Self-organization and Emergence -- Engineering Requirements for Autonomy Features -- The Invariant Refinement Method -- The ASCENS Case Studies: Results and Common Aspects -- Adaptation and Awareness in Robot Ensembles: Scenarios and Algorithms -- The Autonomic Cloud -- The E-mobility Case Study.

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## Sommario/riassunto

A collective autonomic system consists of collaborating autonomic entities which are able to adapt at runtime, adjusting to the state of the environment and incorporating new knowledge into their behavior. These highly dynamic systems are also known as ensembles. To ensure correct behavior of ensembles it is necessary to support their development through appropriate methods and tools which can guarantee that an autonomic system lives up to its intended purpose; this includes respecting important constraints of the environment. This State-of-the-Art Survey addresses the engineering of such systems by presenting the methods, tools and theories developed within the ASCENS project. ASCENS was an integrated project funded in the period 2010-2015 by the 7th Framework Programme (FP7) of the European Commission as part of the Future Emerging Technologies Proactive Initiative (FET Proactive). The 17 contributions included in this book are organized in four parts corresponding to the research areas of the project and their concrete applications: (I) language and verification for self-awareness and self-expression, (II) modeling and theory of self-aware and adaptive systems, (III) engineering techniques for collective autonomic systems, and last but not least, (IV) challenges and feedback provided by the case studies of the project in the areas of swarm robotics, cloud computing and e-mobility.

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