

Foreword

The overall goal of Autonomic Computing and Networking (ACN) is to provide a possible solution for modern computing and networking systems, which can manage themselves without direct human interventions. Tackling this huge challenge demands a rigorous interdisciplinary approach. The paradigm of ACN has widely attracted attention from researchers in the field of autonomies'. Unfortunately, there is no book specifically focused on formal specification and verification aspects of ACN.

Formal and Practical Aspects of Autonomic Computing and Networking: Specification, Development and Verification is one of the salient documents for disseminating research results related to formal specification and verification of ACN. It contains original, peer-reviewed chapters reporting on new developments of interest to both the autonomies and formal methods communities in all remarkable topics of ACN. The major technical contents of the book include the following: rigorous interdisciplinary approaches to software architectures for ACN, resource sharing in ACN, autonomic middleware, swarm intelligence in ACN, self-* in ACN, architectures and topologies for ACN, ACN and autonomic communications, bio-inspired ACN, ACN for cognitive networks, ACN for P2P, Grid, ad hoc and sensor networks, and ACN for multi-agent systems; calculi for reasoning about behavior in ACN; methods and tools for ACN design and ACN component design; applications of formal methods in ACN development; formalizing languages that enable ACN; validation and verification techniques for ACN.

Although the emphasis of this work is on formal specification, development and verification of autonomic computing and networking, it contains very much content that will be of interest to those outside this field. More precisely, the book includes a fine collection of chapters emphasizing the multi-disciplinary character of investigations from the point of view of not only the autonomies field involved but also the formal methods.

This book will usefully serve as a technical guide and reference material for computer science and computer engineering researchers and scientists as well as designers and developers in computing and networking systems by providing them with state-of-the-art research results and future opportunities and trends. To the best of my knowledge, this is the first book that presents achievements and findings of ACN research covering the full spectrum of formalizing ACN. These make the book unique and, in more than one respect, a truly valuable source of information that may be considered a landmark in the progress of ACN. Congratulations to the authors who have contributed to the highest technical quality of the book!

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