Lecture Notes in Computer Science 6407

Commenced Publication in 1973
Founding and Former Series Editors:
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Autonomic and Trusted Computing

7th International Conference, ATC 2010
Xi'an, China, October 26-29, 2010
Proceedings

Springer

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Preface

Computing systems including hardware, software, communication, and networks are becoming increasingly large and heterogeneous. In short, they have become increasingly complex. Such complexity is getting even more critical with the ubiquitous permeation of embedded devices and other pervasive systems. To cope with the growing and ubiquitous complexity, autonomic computing (AC) focuses on self-manageable computing and communication systems that exhibit self-awareness, self-configuration, self-optimization, self-healing, self-protection and other self-* properties to the maximum extent possible without human intervention or guidance. Organic computing (OC) additionally addresses adaptability, robustness, and controlled emergence as well as nature-inspired concepts for self-organization.

Any autonomic or organic system must be trustworthy to avoid the risk of losing control and retain confidence that the system will not fail. Trust and/or distrust relationships in the Internet and in pervasive infrastructures are key factors to enable dynamic interaction and cooperation of various users, systems, and services. Trusted/trustworthy computing (TC) aims at making computing and communication systems—as well as services—available, predictable, traceable, controllable, assessable, sustainable, dependable, persistent, security/privacy protectable, etc.

A series of grand challenges exists to achieve practical autonomic or organic systems with truly trustworthy services. Started in 2005, ATC conferences have been held at Nagasaki (Japan), Vienna (Austria), Three Gorges (China), Hong Kong (China), Oslo (Norway) and Brisbane (Australia). The 2010 proceedings contain the papers presented at the 7th International Conference on Autonomic and Trusted Computing (ATC 2010), held in Xi'an, China, October 26–29, 2010.

This year, we received 68 submissions representing 20 countries and regions, from Asia, Europe, North America and the Pacific. All submissions were reviewed by at least three members of the Technical Program Committee. We accepted 20 submissions, corresponding to an acceptance rate of 29%. Besides the 20 regular and thoroughly reviewed papers, the proceedings includes three invited papers and two keynote abstracts. The first keynote was by Liu Zhen (Nokia Research Center, China) entitled "What Would Come After Location-Based Services?"; and the second keynote was by Huaimin Wang (National University of Defense Technology, China) entitled "Evaluation and Evolution of Trustworthy Software Based on Evidence of Software Lifecycle: A Practice Supported by Trustie in China."

We would like to thank all the researchers and practitioners who submitted their work to ATC 2010, organized a workshop, or helped in any other way to make the conference a success. Special thanks go to the 46 PC members for all their work evaluating the papers, which was highly appreciated and absolutely vital to ensure the high quality of the conference. We offer our sincere thanks to the Steering Committee, the Workshops Chairs and the Publicity Chairs for their strong support and active

work. We also thank the Local Chairs Yuying Wang and Haipeng Wang from Northwestern Polytechnical University of China for all the miscellaneous work.

The conference is technically co-sponsored by Nokia and the Aviation Industry Corporation of China (AVIC). Last but not least, we would like to thank the Northwestern Polytechnical University for hosting the conference.

October 2010

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Keynotes

What Would Come After Location-Based Services?

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Location-based services have become the most popular mobile services in recent years. A variety of mobile applications were developed and used which take advantage of users' location information. Compared to online services, location-based services have the advantage of allowing users to obtain information or services that are specific to their whereabouts.

In this talk, we discuss what would be the next wave of popular mobile services. We look at different possible directions of where mobile services will go, and provide arguments why some services which are for now still in their infancy will become the next most popular mobile services.

Evaluation and Evolution of Trustworthy Software Based on Evidence of Software Lifecycle: A Practice Supported by Trustie in China

Huaimin Wang

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The Internet era brings new challenges as well as opportunities to software technologies and again makes trustworthy software a hot topic. This talk probes into the concept of software trustworthiness by focusing on its objectivity and subjectivity, and clarifies two points: (1) trustworthy software is usually derived from the evolution processes in collaboration environments with a social-network foundation; (2) evidence of software lifecycle is fundamental for increasing the trustworthiness of software as well as for the evaluation of such trustworthiness.

This talk will thus introduce a conceptual architecture of an evidence-based software trustworthy evolution environment, together with its design challenges and principles. A practice in China toward such a promising environment called Trustie will be presented. Trustie is an online practical service environment for the large-scale collaborative production of trustworthy software on the Internet, which is composed of various key technologies and software production elements including a software collaboration platform, software resource repository, a software trustworthiness classification model and evidence framework, a software production line framework, and multiple spectrums of software tools and production lines.

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