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IFIP's mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of information technology for the benefit of all people.

IFIP is a non-profitmaking organization, run almost solely by 2500 volunteers. It operates through a number of technical committees, which organize events and publications. IFIP's events range from an international congress to local seminars, but the most important are:

- The IFIP World Computer Congress, held every second year;
- Open conferences;
- Working conferences.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is small and by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is also rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

Any national society whose primary activity is about information processing may apply to become a full member of IFIP, although full membership is restricted to one society per country. Full members are entitled to vote at the annual General Assembly, National societies preferring a less committed involvement may apply for associate or corresponding membership. Associate members enjoy the same benefits as full members, but without voting rights. Corresponding members are not represented in IFIP bodies. Affiliated membership is open to non-national societies, and individual and honorary membership schemes are also offered.

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Daoliang Li · Yingyi Chen (Eds.)

Computer and Computing Technologies in Agriculture VIII

8th IFIP WG 5.14 International Conference, CCTA 2014
Beijing, China, September 16–19, 2014
Revised Selected Papers

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Preface

The 8th International Conference on Computer and Computing Technologies in Agriculture (CCTA 2014) was held in Beijing, China, during September 16-19, 2014.

This conference was hosted by the China Agricultural University; Chinese Academy of Agricultural Mechanization Sciences; Chinese Academy of Agricultural Engineering; Beijing Academy of Agriculture and Forestry Science; and East China Jiaotong University. It was sponsored by the International Commission of Agricultural and Biosystems Engineering, Session VII; Chinese Society for Agricultural Machinery (CSAM); Chinese Society of Agricultural Engineering (CSAE); WG 5.14, International Federation for Information Processing; National Natural Science Foundation of China; Da Bei Nong Agricultural Education Fund; and the Wang Kuancheng Education Foundation.

In recent years, modern information technology and intelligent equipment techniques have spread into all the pre-/inter-/post-production processes in agriculture and are becoming an important means of transforming traditional agriculture and developing modern agriculture. This international academic exchange plays an important role in improving the innovation and development of intelligent agricultural information technology and in promoting the wide application of the Internet of Things and computing technology. CCTA aims to provide an academic platform for the integration of information on agricultural modernization, to share new research theories, methods, and achievements of sci-tech innovation and industrial technology progress, and to promote the understanding and cooperation among international communities and scientists. Eight International Conferences on Computer and Computing Technologies in Agriculture have been held since 2007.

The topics of CCTA 2014 cover the interesting theory and applications of all kinds of technology in agriculture, including intelligent sensing, monitoring, and automatic control technology models; the key technology and model of the Internet of Things; agricultural intelligent equipment technology; computer vision; computer graphics and virtual reality; computer simulation, optimization, and modeling; cloud computing and agricultural applications; agricultural, big data; decision support systems and expert system; technology and precision agriculture; the quality and safety of agricultural products; detection and tracing technology; and agricultural electronic commerce technology.

We selected the 81 best papers among the 216 papers submitted to CCTA 2014 for these proceedings. All papers underwent two reviews from the Special Interest Group on Advanced Information Processing in Agriculture (AIPA), IFIP. In these proceedings, creative thoughts and inspirations can be discovered, discussed, and disseminated. It is always exciting to have experts,

professionals, and scholars with creative contributions getting together to share inspiring ideas and accomplish great developments in the field.

I would like to express my sincere thanks to all authors who submitted research papers to the conference. Finally, I would also like to express my sincere thanks to all speakers, session chairs, and attendees, both national and international, for their active participation and support of this conference.

April 2015

Daoliang Li

Organization

The 8th International Conference on Computer & Computing Technologies in Agriculture (CCTA 2014) was held during September 16-19, 2014, in Beijing, China.

Symposium Topics

Agricultural Information Sensing and Intelligent Control
Precision Agriculture Technology and Equipment
Agricultural Remote Sensing and Agricultural Aviation Application
Agricultural Intelligent Decision-making and Information Service Technology
Agricultural Product Safety Control and Traceability

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