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Daoliang Li, Yingying Chen

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IFIP was founded in 1960 under the auspices of UNESCO, following the First World Computer Congress held in Paris the previous year. An umbrella organization for societies working in information processing, IFIP's aim is two-fold: to support information processing within its member countries and to encourage technology transfer to developing nations. As its mission statement clearly states,

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.

Daoliang Li Yingyi Chen (Eds.)

Computer and Computing Technologies in Agriculture VII

7th IFIP WG 5.14 International Conference, CCTA 2013
Beijing, China, September 18-20, 2013
Revised Selected Papers, Part I



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Volume Editors

Daoliang Li
Yingyi Chen
China Agricultural University
China-EU Center for Information
and Communication Technologies in Agriculture (CICTA)
17 Tsinghua East Road, Beijing 100083, P.R. China
E-mail: {dliang, chenyingyi}@cau.edu.cn

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Preface

First of all, I must express my sincere thanks to all authors who submitted research papers to support the 7th International Conference on Computer and Computing Technologies in Agriculture (CCTA2013) held in Beijing, China, during September 18–20, 2013.

The conference was hosted by the China Agricultural University; the IFIP TC5 Work Group (WG) on Advanced Information Processing for Agriculture (AIPA); the Agricultural Engineering Information Committee, Chinese Society of Agricultural Engineering. It was organized by the China-EU Centre for Information & Communication Technologies (CICTA).

Proper scale management is not only a necessary approach for agro-modernization and agro-industrialization but it is also required for the development of agricultural productivity. Thus, the application of different technologies in agriculture has become especially important and “informatized agriculture” and the “Internet of Things” have been sought out by many countries recently in order to scientifically manage agriculture so as to achieve low costs and high income. CICTA aims at boosting research on advanced and practical technologies applied in agriculture and promoting international communication and cooperation, and has successfully held seven international conferences since 2007.

The topics of CCTA2013 cover a wide range of interesting theory and applications of all kinds of technology in agriculture, including: the Internet of things and cloud computing; simulation models and decision-support systems for agricultural production; smart sensor, monitoring, and control technology; traceability and e-commerce technology; computer vision, computer graphics, and virtual reality; the application of information and communication technology in agriculture; and universal information service technology and service system development in rural areas.

We selected the 115 best papers among all those submitted to CCTA2013 for these proceedings, and all the papers are divided into two thematic sections. In this volume, creative thoughts and inspirations could be discovered, discussed and disseminated. It is always exciting to have experts, professionals, and scholars getting together with creative contributions to share inspiring ideas and hopefully accomplish great developments in these technologies of high demand.

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

January 2014

Daoliang Li
Chair of CCTA2013

Conference Organization

Sponsors

- China Agricultural University
- The IFIP TC5 Work Group (WG) on Advanced Information Processing for Agriculture (AIPA)
- Agricultural Engineering Information Committee, Chinese Society of Agricultural Engineering

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