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IFIP – The International Federation for Information Processing

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

> *IFIP is the global non-profit federation of societies of ICT professionals that aims at achieving a worldwide professional and socially responsible development and application of information and communication technologies.*

IFIP is a non-profit-making organization, run almost solely by 2500 volunteers. It operates through a number of technical committees and working groups, which organize events and publications. IFIP's events range from large international open conferences to working conferences and local seminars.

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 generally smaller and occasionally 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.

IFIP distinguishes three types of institutional membership: Country Representative Members, Members at Large, and Associate Members. The type of organization that can apply for membership is a wide variety and includes national or international societies of individual computer scientists/ICT professionals, associations or federations of such societies, government institutions/government related organizations, national or international research institutes or consortia, universities, academies of sciences, companies, national or international associations or federations of companies.

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Daoliang Li · Zhenbo Li (Eds.)

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Preface

The 9th International Conference on Computer and Computing Technologies in Agriculture (CCTA 2015) was held in Beijing, China, during September 27–30, 2015.

The conference was hosted by the China Agricultural University (CAU), Agricultural Information Institute of Chinese Academy of Agricultural Sciences (AIICAAS), China National Engineering Research Center for Information Technology in Agriculture (NERCITA), China National Engineering Research Center of Intelligent Equipment for Agriculture (NERCIEA), International Federation for Information Processing (IFIP), Chinese Society of Agricultural Engineering (CSAE), Chinese Society for Agricultural Machinery (CSAM), Chinese Association for Artificial Intelligence (CAAI), Information Technology Association of China Agro-technological Extension Association, Beijing Technology Innovation Strategic Alliance for Intelligence Internet of Things, Industry in Agriculture, Beijing Society for Information Technology in Agriculture, China (BSITA), Group of Agri-Informatics, Ministry of Agriculture, China, Sino-US Agricultural Aviation Cooperative Technology Center, and the Club of Ossiach. It was sponsored by the National Natural Science Foundation of China (NSFC), Ministry of Agriculture, China (MOA), Ministry of Science and Technology, China (MOST), Ministry of Industry and Information Technology, China (MIIT), State Administration of Foreign Experts Affairs, China (SAFEA), Beijing Administration of Foreign Experts Affairs, China, Beijing Municipal Science and Technology Commission (BMSTC), Beijing Natural Science Foundation, China (BNSF), Beijing Association for Science and Technology, China (BAST), Beijing Academy of Agriculture and Forestry Sciences, China (BAAFS), Dabeinong Education Foundation, China, and the Global Forum on Agricultural Research (GFAR).

In order to promote exchange and cooperation among scientists and professionals from different fields and strengthen international academic exchange, the Joint International Conference on Intelligent Agriculture (ICIA) included the 8th International Symposium on Intelligent Information Technology in Agriculture (8th ISIITA), the 9th IFIP International Conference on Computer and Computing Technologies in Agriculture (9th CCTA), and the AgriFuture Days 2015 International Conference (AgriFuture Days 2015). These events provided a platform, for experts and scholars from all over the world to exchange techniques, ideas, and views on intelligent agricultural innovation. Nine International Conferences on Computer and Computing Technologies in Agriculture have been held since 2007.

The topics of CCTA 2015 covered the 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; 3s technology and precision agriculture; the quality and safety of agricultural

products; detection and tracing technology; and agricultural electronic commerce technology.

We selected the 122 best papers among the 237 papers submitted to CCTA 2015 for these proceedings. All papers underwent two reviews by two Program Committee members, who are 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 gratitude to all speakers, session chairs, and attendees, both national and international, for their active participation and support of this conference.

September 2016 Daoliang Li

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China Agricultural University
China National Engineering Research Center for Information Technology in Agriculture (NERCITA)
Agricultural Information Institute of Chinese Academy of Agricultural Sciences (AIICAAS)
China National Engineering Research Center of Intelligent Equipment for Agriculture (NERCIEA)
International Federation for Information Processing (IFIP)
Chinese Society of Agricultural Engineering (CSAE)
Chinese Society for Agricultural Machinery (CSAM)
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