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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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Contents

High-Throughput Estimation of Yield for Individual Rice Plant Using Multi-angle RGB Imaging	1
<i>Lingfeng Duan, Chenglong Huang, Guoxing Chen, Lizhong Xiong, Qian Liu, and Wanneng Yang</i>	
A Method to Determine the Maximum Side Perspective of Satellite with the Constraints of Mapping Accuracy	13
<i>Jihong Yang, Haiwei Li, Yin Zhan, Liangshu Shi, Jinqiang Wang, and Zhengchao Chen</i>	
Using Hyperspectral Remote Sensing Identification of Wheat Take-All Based on SVM	23
<i>Hongbo Qiao, Hongtao Jiao, Yue Shi, Lei Shi, Wei Guo, and Xinming Ma</i>	
Evaluation Research of the Influence of Small Hydropower Station for Fuel Project on Social Development Impact—taking Majiang of Guizhou Province as an example	31
<i>Zhengqi He, Dechun Huang, Changzheng Zhang, Bo Wang, and Zhijie Ma</i>	
Study on Survey Methods for Crop Area Change Reasons at National Scale	40
<i>Quan Wu, Hualang Hu, Yanxia Liu, Dangiong Wang, Xinyu Duan, Lijuan Jia, and Yajuan He</i>	
Path Analysis on Effects of Main Economic Traits on the Yield of YU6, A Japonica x Indica Hybrid Rice Line	48
<i>Weiming Liu</i>	
Nitrogen Revising of Rapeseed (<i>Brassica napus</i> L.) Phenology and Leaf Number Models	54
<i>Hongxin Cao, Yan Liu, Wenyu Zhang, Yeping Zhu, Daokuo Ge, Yanbin Yue, Yongxia Liu, Jinying Sun, Zhiyou Zhang, Yuli Chen, Weixin Zhang, Kunya Fu, Na Liu, Chunhuan Feng, and Taiming Yang</i>	
Research on the Principles of User Behavior in Building Information Resource Sharing System	67
<i>Qi Wang and Wenyong Chen</i>	
Research on Three Dimensional Reconstruction of the Ancient Building Based on Images	73
<i>Yingfeng Hu</i>	

Development and Current Situation of Agricultural Scientific Data Sharing in China	80
<i>Hua Zhao and Jian Wang</i>	
Research on Building Technology of Aquaculture Water Quality Real-Time Monitoring Software Platform	87
<i>Yinchi Ma, Wen Ding, and Wentong Li</i>	
Mathematical Modeling of Broccoli Cultivation and Growth Period and Yield of Flower Heads	94
<i>Weiming Liu and Wang En-guo</i>	
Research on the Allocation in the Complex Adaptive System of Agricultural Land and Water Resources of the Sanjiang Plain	99
<i>Qiang Fu, Tienan Li, and Tianxiao Li</i>	
The Effect of Precision Nitrogen Topdressing Decision on Winter Wheat	107
<i>Guo Jianhua, Meng Zhijun, Chen Liping, Ma Wei, An Xiaofei, and Yao Hong</i>	
Design and Implementation of WeChat Public Service Platform for the China Research Center for Agricultural Mechanization Development, CAU	117
<i>Qing Dong and Min-li Yang</i>	
Research on Data Sharing Model Based on Cluster	130
<i>Xiaobin Qiu, Hongqian Chen, and Nan Zhou</i>	
Agriculture Big Data: Research Status, Challenges and Countermeasures	137
<i>Haoran Zhang, Xuyang Wei, Tengfei Zou, Zhongliang Li, and Guocai Yang</i>	
Improved Method for Modeling in Capacitive Grain Moisture Sensor ...	144
<i>Yang Liu, Cheng Xinrong, Mu Haomiao, and Song Yuyao</i>	
Effects of Reclaimed Water and C and N on Breakthrough Curves in Sandy Soil and Loam	151
<i>Fangze Shang, Shumei Ren, Lei Yan, Chong Zhang, Ganlin Wu, Guoya Wang, and Chunhuan Zhu</i>	
The Design and Implementation of Email Archiving System Based on J2EE	160
<i>Hu Hongwei, Yu Ping, and Zhou Nan</i>	

Stimulating Effect of Low-Temperature Plasma on Seed Germination Characteristics of <i>Trifolium repens</i>	167
<i>Nandintsetseg Munkhuu, Changyong Shao, Decheng Wang, Liangdong Liu, Imtiaz Muhammad, Changbin He, Shanzhu Qian, Ru Jia, and Jinkui Feng</i>	
Research and Implementation of Modeling Grid DEM Based on Discrete Data	175
<i>Jing Wang, Kai Xia, and Xuegong Chen</i>	
Effect of Different Nitrogen Fertilizers with Reclaimed Water Irrigation on Soil Greenhouse Gas Emissions	185
<i>Ning Ma, Shumei Ren, Peiling Yang, Yanbing Chi, and Dawei Gao</i>	
Research on Spatial Variability Characteristics of Black Soil Unfrozen Water in Songnen Plain during Freezing-Thawing Period	193
<i>Zilong Wang, Qiang Fu, Jun Meng, Qiuxiang Jiang, and Xianghao Wang</i>	
Comprehensive Evaluation of Land Resources Carrying Capacity under Different Scales Based on RAGA-PPC	200
<i>Qiuxiang Jiang, Qiang Fu, Jun Meng, Zilong Wang, and Ke Zhao</i>	
Software Design of Distribution Map Generation for Soil Parameters Based on VC++	210
<i>Xiaofei An, Zhijun Meng, Guangwei Wu, and Jianhua Guo</i>	
RBF Neural Network Based on K-means Algorithm with Density Parameter and Its Application to the Rainfall Forecasting	218
<i>Zhenxiang Xing, Hao Guo, Shuhua Dong, Qiang Fu, and Jing Li</i>	
Design of Transplanting Mechanism with B-Spline Curve Gear for Rice Pot Seedling Based on UG	226
<i>Yanjun Zuo, Huixuan Zhu, and Peng Cao</i>	
The Catchment Water-Based System Health Evaluation Based on the TOPSIS Model	233
<i>Zhenxiang Xing, Jing Li, Meixin Liu, Qiang Fu, and Hao Guo</i>	
Efficiency Evaluation of Agricultural Informatization Based on CCR and Super-Efficiency DEA Model	240
<i>Xu Han, Li Wang, Hui Wang, and Shuqin Wang</i>	
A Portable Impedance Detector of Interdigitated Array Microelectrode for Rapid Detection of Avian Influenza Virus	247
<i>Xiaohong Wang, Zhuo Zhao, Yuhe Wang, and Jianhan Lin</i>	
Application of Information Technology on Traceability System for Agro-Food Quality and Safety	257
<i>Xue Xia, Yun Qiu, Lin Hu, and Guomin Zhou</i>	

Computer Computing and Simulation—In View of the Leaves’ Categories, Shapes and Mass	270
<i>Jiahong Li, Heng Li, and Qiang Fu</i>	
Numerical Simulation of Regulating Performance of Direct-Operated Pressure Regulator for a Microirrigation Lateral	285
<i>Chen Zhang and Guangyong Li</i>	
Analysis and Research of K-means Algorithm in Soil Fertility Based on Hadoop Platform	304
<i>Guifen Chen, Yubin Yang, Hongliang Guo, Xionghui Sun, Hang Chen, and Lixia Cai</i>	
Application and Prospect of New Media in Forecast of Plant Pests	313
<i>Zhiwei Zhao, Feng Qin, and Haiguang Wang</i>	
Modeling the Drivers of Agricultural Land Conversion Response to China’s Rapidly Rural Urbanization: Integrating Remote Sensing with Socio-Economic Data	324
<i>Yiqiang Guo, Jieyong Wang, and Chunxian Du</i>	
Study on the Detection and Warning System of Rice Disease Based on the GIS and IOT in Jilin Province	337
<i>Guogang Zhao, Haiye Yu, Guowei Wang, Yuanyuan Sui, and Lei Zhang</i>	
Study of Plant Animation Synthesis by Unity3D	344
<i>Yanna Jiang, Boxiang Xiao, Baozhu Yang, and Xinyu Guo</i>	
A New Algorithm of Bayesian Model Averaging Based on SCE - UA Collection Averaging	351
<i>Liu Jun-Hua, Zhang Hong-Qin, Zhang Cheng-Ming, Zhao Tianyu, and Ma Jing</i>	
Research on Social Risk Evolution and Control of the Large Hydraulic Project Construction Based on Society Burning Theory	359
<i>Bo Wang, Dechun Huang, Haiyan Li, Chang Zheng Zhang, and Zheng Qi He</i>	
Exploring the Influential Factors of e-Banking Satisfaction in Rural Areas in China	371
<i>Mengyu Ren, Yan Li, Yu Wang, and Zihao Zhao</i>	
Study on Key Technology for the Discrimination of Xihu Longjing Tea Grade by Electronic Tongue	379
<i>Bolin Shi, Houyin Wang, Lei Zhao, Ruicong Zhi, Zhi Li, Lulu Zhang, and Nan Xie</i>	

Research on Pattern Recognition Method for Honey Nectar Detection by Electronic Nose	393
<i>Ningjing Liu, Bolin Shi, Lei Zhao, Zhaoshen Qing, Baopin Ji, and Feng Zhou</i>	
Study on Cloud Service Mode of Digital Libraries Based on Sharing Alliance	404
<i>Xiaorong Yang, Dan Wang, Lihua Jiang, Jian Ma, and Hui Xie</i>	
Research on Detection Moisture of Intact Meat Based on Discrete LED Wavelengths.....	411
<i>Li-Feng Fan, Jian-Xu Wang, Peng-Fei Zhao, Hao Li, Zhong-Yi Wang, and Lan Huang</i>	
The Issues and Challenges in Copyright Protection for Agriculture Digital Publishing.....	419
<i>Yuan-Yuan Tu</i>	
Development of Glass Microelectrodes Pipette Puller Based on Monitoring and Controlling Heating Strength.....	426
<i>Yuan Wang, Li-Feng Fan, Jian-Xu Wang, Yang Chen, Lan Huang, and Zhong-Yi Wang</i>	
Effect of Low-Temperature Plasma on Forage Maize (<i>Zea mays</i> Linn.) Seeds Germination and Characters of the Seedlings.....	437
<i>Changyong Shao, Decheng Wang, Xianfa Fang, Xin Tang, Lijing Zhao, Lili Zhang, Liangdong Liu, and Guanghui Wang</i>	
Comparison of Methods for Forecasting Yellow Rust in Winter Wheat at Regional Scale	444
<i>Chenwei Nie, Lin Yuan, Xiaodong Yang, Liguang Wei, Guijun Yang, and Jingcheng Zhang</i>	
The Standard of Data Quality Control Technology Based on the Share of Rural Science and Technology Data	452
<i>Dan Wang, Xiaorong Yang, Jian Ma, and Yang Sun</i>	
The Impact of Climate Change on the Potential Suitable Distribution of Major Crops in Zambia and the Countermeasures.....	460
<i>Yanqin Wang, Zhen Tan, and Guojun Sun</i>	
A Model for Personalized Information Services of Agricultural Library Based on Multi-agent.....	473
<i>Xie Meiling</i>	
Interpolation Method of Soil Moisture Data Based on BMA	480
<i>Wan Shu-jing, Zhang Cheng-ming, Liu Ji-ping, Yu Ting, and Ma Jing</i>	

Analysis of Soil Water Wetting and Dynamics in Trace Quantity Irrigation	489
<i>Haobo Cui, Shumei Ren, Peiling Yang, Huang Lingmiao, Zixuan Ma, Xiaorui Zhang, Weishu Wang, and Zelin Li</i>	
A Particle Swarm Optimization Algorithm for Neural Networks in Recognition of Maize Leaf Diseases	495
<i>Jia Tao</i>	
Applied Research of IOT and RFID Technology in Agricultural Product Traceability System	506
<i>Guogang Zhao, Haiye Yu, Guowei Wang, Yuanyuan Sui, and Lei Zhang</i>	
A Survey on Quality of Service Monitoring and Analysis of Network of Agricultural Science and Technology Resources	515
<i>Ma Jian</i>	
An Automatic Counting Method of Maize Ear Grain Based on Image Processing	521
<i>Mingming Zhao, Jian Qin, Shaoming Li, Zhe Liu, Jin Cao, Xiaochuang Yao, Sijing Ye, and Lin Li</i>	
Research of SF6 Pressure Gauge Automatic Reading Methods Based on Machine Vision	534
<i>Song Yao, Liu Chunhong, Deng Qiao, and Wang Yixuan</i>	
Linking and Consuming Agricultural Big Data with Linked Data and KOS	546
<i>Guojian Xian, Ruixue Zhao, Xianxue Meng, Yuantao Kou, and Liang Zhu</i>	
Research on Construction of Cloud Service Platform of Sci-tech Information for Agricultural Research System	556
<i>Ruixue Zhao, Yuantao Kou, Ruopeng Du, Liangliang Gu, and Honglei Yang</i>	
Research on Construction of Agricultural Domain Knowledge Service Platform Based on Ontology	565
<i>Yuantao Kou, Ruixue Zhao, and Guojian Xian</i>	
Analysis on Snow Distribution on Sunlight Greenhouse and Its Distribution Coefficient	575
<i>Chunhui Dai, Xiugen Jiang, Min Ding, Dongxin Lv, Guilin Jia, and Peng Zhang</i>	
Agricultural Library Information Retrieval Based on Improved Semantic Algorithm	589
<i>Xie Meiling</i>	

Assessment of Agricultural Information Service Based on Improved BP Network	595
<i>Xie Meiling</i>	
Measurement System of Reducing Temperature Fluctuation of Thermostat Bath for Calibrating Thermocouple.....	603
<i>Min Zhang, Feixia Liang, Yue Xie, Ruguo Huang, Haitao Yuan, and Jiahua Lu</i>	
Design and Implementation of Monitoring and Early Warning System for Urban Roads Waterlogging	610
<i>Yang Liu, Mingyi Du, Changfeng Jing, and Guoyin Cai</i>	
Development of Early-Warning Model for Intensive Pig Breeding	616
<i>Nanxin Chen, Qingling Duan, Jianqin Wang, and Ruizhi Sun</i>	
An On-Line Monitoring System of Crop Growth in Greenhouse	627
<i>Wu Lixuan, Sun Hong, Li Minzan, Zhang Meng, and Zhao Yi</i>	
Evaluation Model of Winter Wheat Yield Based on Soil Properties	638
<i>Wei Yang, Minzan Li, Lihua Zheng, and Hong Sun</i>	
Design of a Measurement and Control System for Delinting Machine....	646
<i>Liming Zhou, Yanwei Yuan, Junning Zhang, and Xin Dong</i>	
Automatic Navigation System Research for PZ60 Rice Planter	653
<i>Liguo Wei, Xiaochao Zhang, Quan Jia, and Yangchun Liu</i>	
Plant Image Analysis Machine Vision System in Greenhouse.....	662
<i>Jianlun Wang, Xiaoying Cui, Dongbo Xu, Shuangshaung Zhao, Hao Liu, Shuting Wang, and Jianshu Chen</i>	
A Review on Spectrometer of Pb(II) in Water	691
<i>D. Zhang, M. Sun, and L. Zou</i>	
System Design of Online Monitoring and Controlling System Based on Zigbee in Greenhouse.....	702
<i>Fengmei Li, Yaoguang Wei, Yingyi Chen, and Xu Zhang</i>	
Study on the Temporal and Spatial Variability of Maize Yield in Precision Operation Area	714
<i>Yueling Zhao, Haiyan Han, Liying Cao, Li Ma, and Guifen Chen</i>	
Soil Water Sensor Based on Standing Wave Ratio Method of Design and Development	720
<i>Yinli Xu, Weizhong Yang, and Zhenbo Li</i>	
A New Method for Rapid Detection of the Volume and Quality of Watermelon Based on Processing of X-Ray Images	731
<i>Ling Zou, Sun Ming, and Di Zhang</i>	

An Improved Method for Image Retrieval Based on Color and Texture Features	739
<i>Jun Yue, Chen Li, and Zhenbo Li</i>	
Author Index	753