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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 less 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 in information 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 V

5th IFIP TC 5/SIG 5.1 Conference, CCTA 2011  
Beijing, China, October 29-31, 2011  
Proceedings, Part III

Volume Editors

Daoliang Li

Yingyi Chen

China Agricultural University

China-EU Center for Information & Communication Technologies (CICTA)

17 Tsinghua East Road, P.O. Box 121, Beijing, 100083, P.R. China

E-mail: {dliangl, chenyingyi}@cau.edu.cn

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# Preface

I would like to express my sincere thanks to all authors who submitted research papers to support the 5th International Conference on Computer and Computing Technologies in Agriculture (CCTA 2011) held in Beijing, China, during October 29–31, 2011.

This conference was hosted by China Agricultural University; the IFIP TC5 Special Interest Group (SIG) on Advanced Information Processing for Agriculture (AIPA); National Natural Science Foundation of China; and China-EU Centre for Information and Communication Technologies (CICTA).

Proper scale management is not only a necessary approach in agromodernization and agro-industrialization but also required for the development of agricultural productivity. Therefore, the application of different technologies in agriculture has become especially important. ‘Informatized agriculture’ and the ‘Internet of Things’ are hot research topics in many countries aiming to scientifically manage agriculture to yield high incomes with low costs. CICTA covers the research and development of advanced and practical technologies applied to agriculture and promotes international communication and cooperation; it has successfully held five International Conferences on Computer and Computing Technologies in Agriculture since 2007.

The topics of CCTA 2011 covered a wide range of the interesting theory and applications of all kinds of technology in agriculture, including the Internet of Things; simulation models and decision-support systems for agricultural production; agricultural product quality testing; traceability and e-commerce technology; the application of information and communication technology in agriculture; and universal information service technology and service system development in rural areas.

We selected the 189 best papers among all those submitted to CCTA 2011 for these proceedings. The papers are divided into three themes. It is always exciting to have experts, professionals and scholars with creative contributions getting together and sharing some inspiring ideas and hopefully accomplishing great developments in high-demand technologies.

Finally, I would like also to express my sincere thanks to all authors, speakers, Session Chairs and attendees, from home and abroad, for their active participation and support of this conference.

# Conference Organization

## Sponsors

China Agricultural University  
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## Table of Contents – Part III

### Simulation, Optimization, Monitoring and Control Technology

Discrimination and Prediction of Pork Freshness by E-nose . . . . .	1
<i>Xuezen Hong and Jun Wang</i>	
Nonlinear Optimization of GM(1,1) Model Based on Multi-parameter Background Value . . . . .	15
<i>Tangsen Zhan and Hongyan Xu</i>	
Plant Leaf Water Detection Instrument Based on Near Infrared Spectroscopy . . . . .	20
<i>Jiannan Jia and Haiyan Ji</i>	
Optimization Strategy on Cash Transportation Routing of Banks . . . . .	28
<i>Longjia Xiao and Xin Wang</i>	
Drought Monitoring Based on the Vegetation Temperature Condition Index by IDL Language Processing Method . . . . .	43
<i>WenHao Ou, Wei Su, Chen Wu, ZhongZheng Zhu, YanMin Li, and Shi Shen</i>	
A Kind of Rice Nitrogen Status Rapid Diagnostic Tool . . . . .	50
<i>Jin-heng Zhang, Xin Yu, Yongliang Lv, Zhenxuan Yao, Dapeng Li, and Chao Han</i>	
Applying Axiomatic Design Theory to the Multi-objective Optimization of Disk Brake . . . . .	62
<i>Zhiqiang Wu, Xianfu Cheng, and Junping Yuan</i>	
Energetic and Exergetic Performances Simulating of GSHP Greenhouse Cooling System in Northern China . . . . .	74
<i>Lilong Chai, Chengwei Ma, Gangyi Xu, Mingchi Liu, and Yong Xu</i>	
Vague Weighted Decision-Making Method and Its Application in Sugarcane Breeding . . . . .	85
<i>Hongxu Wang, FuJin Zhang, and Yunsheng Xu</i>	
Driver Safe Speed Model Based on BP Neural Network for Rural Curved Roads . . . . .	92
<i>Xiaolei Chen, Ruijuan Chi, Jianqiang Wang, Changle Pang, and Qing Xiao</i>	

Solving Motion Law by Numerical Simulation on Bowl Seeding Transplanting Robot .....	103
<i>Chunhui Qi, Jianping Hu, Jun Ma, and Jianbing Zhang</i>	
Development of an Automatic Control System for Pot-Grown Rice Inspection Based on Programmable Logic Controller .....	112
<i>Wanneng Yang, Chenglong Huang, and Qian Liu</i>	
Bee Products Quality Control and Emergency Management Mechanism Research Based on Multi-Agent .....	119
<i>E. Yue, Yongsheng Cao, and Yeping Zhu</i>	
Evaluating Simulation Model Based on Generated Weather Data .....	129
<i>Shijuan Li and Yeping Zhu</i>	
On Integral Sum Numbers of Cycles .....	136
<i>Ergen Liu, Qing Zhou, and Wei Yu</i>	
Soil-Cutting Simulation and Test of Oblique Rotary Tiller .....	140
<i>Jianmin Gao and Yongchao Jin</i>	
Image Recognition of Grape Downy Mildew and Grape Powdery Mildew Based on Support Vector Machine .....	151
<i>Guanlin Li, Zhanhong Ma, and Haiguang Wang</i>	
Monitoring Wheat Stripe Rust Using Remote Sensing Technologies in China .....	163
<i>Haiguang Wang, Jiebin Guo, and Zhanhong Ma</i>	
Research on Automatic Inspection Methods of Flight Quality of Digital Aerial Photography Results .....	176
<i>Yanwei Zeng, Yong Liang, Wencong Jiang, and Xiaojun Wang</i>	
Application of Machine Vision Technology in the Diagnosis of Maize Disease .....	188
<i>Liyong Cao, Xiaohui San, Yueling Zhao, and Guifen Chen</i>	
Analysis of the Rigidity of Arc Flexible Hinge with Different Geometrical Parameters .....	195
<i>Hongjiang Chen</i>	
A Study of Image Processing on Identifying Cucumber Disease .....	201
<i>Yong Wei, Ruokui Chang, Yuanhong Wang, Hua Liu, Yanhong Du, Jianfeng Xu, and Ling Yang</i>	
Dynamic Compensation for Impact-Based Grain Flow Sensor .....	210
<i>Junwan Hu, Changlai Gong, and Zhigang Zhang</i>	
Research on the Simulation Model of Above-Ground Organs Morphogenesis of Flue-Cured Tobacco .....	217
<i>Shuping Xiong, Lei Xi, Jucai Wang, Guanghui Xu, and Xinming Ma</i>	

Simulation on Magnetic Field Characteristics of Permanent-Magnet Seed-Metering Device . . . . .	230
<i>Jing Wang, Jianping Hu, Qirui Wang, and Xun Wang</i>	
Maximum Entropy Niche-Based Modeling (Maxent) of Potential Geographical Distributions of <i>Lobesia Botrana</i> (Lepidoptera: Tortricidae) in China . . . . .	239
<i>Wencheng Lv, Zhihong Li, Xingxia Wu, Wenlong Ni, and Weiwei Qu</i>	
A Design of Greenhouse Remote Monitoring System Based on WSN and WEB . . . . .	247
<i>Jun Wang and Gang Liu</i>	
Research on the Monitor and Control System of Granary Temperature and Humidity Based on ARM . . . . .	257
<i>Liu Yang, Xinrong Cheng, Zhijie Jiang, and Zhijun Ren</i>	
The Research of Support Vector Machine in Agricultural Data Classification . . . . .	265
<i>Lei Shi, Qiguo Duan, Xinming Ma, and Mei Weng</i>	
Study of Micro-vision Calibration Technique Based on SIFT Feature Matching . . . . .	270
<i>Tao Hu, Hui-lan Wu, and Guodong Liu</i>	
Design of Fuzzy Control Algorithm for Precious Irrigation System in Greenhouse . . . . .	278
<i>Ronghua Ji, Lijun Qi, and Zicheng Huo</i>	
Winter Wheat Yield Estimation Coupling Weight Optimization Combination Method with Remote Sensing Data from Landsat5 TM . . .	284
<i>Xingang Xu, Jihua Wang, Wenjiang Huang, Cunjun Li, Xiaoyu Song, Xiaodong Yang, and Hao Yang</i>	
Application of Data Fusion Technology in Greenhouse Environment Monitoring and Control System . . . . .	293
<i>Xiangfei Meng and Changming Wang</i>	
Improvement of the Capacitive Grain Moisture Sensor . . . . .	300
<i>Liu Yang, Yongjun Zheng, Zhijie Jiang, and Zhijun Ren</i>	
Study on the Automatic Composition of Document Service Based on Semantic and Multi-agent Method . . . . .	308
<i>Haiyan Hu, Xianxue Meng, and Xiaolu Su</i>	
Utilizing Model to Optimize Crop Plant Density: A Case Study on Tomato . . . . .	315
<i>LiLi Yang, QiaoXue Dong, and Daoliang Li</i>	

Research on Automatic Inspection Methods of Image Quality of Digital Aerial Photography Results .....	320
<i>Yong Liang, Yanwei Zeng, Wencong Jiang, and Xiaojun Wang</i>	
Simulated Analysis of a Wheeled Tractor on Soft Soil Based on RecurDyn .....	332
<i>Wenqian Huang, Feijun Xu, Jishuai Ge, and Chi Zhang</i>	
Identifying Apple Surface Defects Based on Gabor Features and SVM Using Machine Vision .....	343
<i>Wenqian Huang, Chi Zhang, and Baihai Zhang</i>	
Walking Goal Line Detection Based on DM6437 on Harvesting Robot .....	351
<i>Gang Wu, Yu Tan, Yongjun Zheng, and Shumao Wang</i>	
Winter Wheat Seedtime Monitoring through Satellite Remote Sensing Data .....	362
<i>Xiaoyu Song, Wenjiang Huang, Bei Cui, and Jihong Zhou</i>	
Guaranteed Cost Control for Uncertain Distributed Delay System with Neutral Type .....	372
<i>Yuyan Zhang, Dan Zhao, Yan Zhao, and Na Zhang</i>	
Sustainability Assessment of Regional Water Resources Use Based on PSO-PPE .....	383
<i>Qiang Fu, Qiuxiang Jiang, and Zilong Wang</i>	
Comprehensive Evaluation of Regional Agricultural Water and Land Resources Carrying Capacity Based on DPSIR Concept Framework and PP Model .....	391
<i>Qiang Fu, Qiuxiang Jiang, and Zilong Wang</i>	
Investigating Image Enhancement in Pseudo-Foreign Fiber Detection ...	399
<i>Xin Wang, Daoliang Li, and Wenzhu Yang</i>	
Assimilating MODIS-LAI into Crop Growth Model with EnKF to Predict Regional Crop Yield .....	410
<i>Sijie Wu, Jianxi Huang, Xingquan Liu, Jinlong Fan, Guannan Ma, and Jinqiu Zou</i>	
The Reputation Analysis Based on the Signal Game Theory Model of the Aquatic Products of Logistics Company .....	419
<i>Jiansheng Zhang, Jinglai Zhang, Shangwu Liu, and Jianning Mu</i>	
Principal Component Analysis of Anhui Agricultural Industrialization .....	430
<i>Li Chen</i>	

Research on Change Monitoring Method of Cultivated Lands Level Based on Volatile Indicators . . . . .	436
<i>Yanqing Chen, Jianyu Yang, Chao Zhang, Zhouting Sun, and Dongping Ming</i>	
Feature Selection for Cotton Foreign Fiber Objects Based on PSO Algorithm . . . . .	446
<i>Hengbin Li, Jinxing Wang, Wenzhu Yang, Shuangxi Liu, Zhenbo Li, and Daoliang Li</i>	
Optimization Model to Estimate Mount Tai Forest Biomass Based on Remote Sensing . . . . .	453
<i>Yanfang Diao, Chengming Zhang, Jiping Liu, Yong Liang, Xuelian Hou, and Xiaomin Gong</i>	
Important Parameters Optimization for Opening Cotton Device . . . . .	460
<i>Gaili Gao, Hefei Zhao, Jun Liu, and Daoliang Li</i>	
Fast Segmentation of Foreign Fiber Image . . . . .	469
<i>Yutao Wu, Wenzhu Yang, Zhenbo Li, and Daoliang Li</i>	
A Portable Measurement Instrument for the Measurement of Water Body Chlorophyll-a in the Support of Fluorescence Detection . . . . .	484
<i>Cong Wang, Daoliang Li, Lingxian Zhang, Qisheng Ding, and Zetian Fu</i>	
The Key Information Technology of Soybean Disease Diagnosis . . . . .	495
<i>Baoshi Jin, Xiaodan Ma, Zhongwen Huang, and Yuhu Zuo</i>	
The Application of Wireless Sensor in Aquaculture Water Quality Monitoring . . . . .	502
<i>Wen Ding and Yinchu Ma</i>	
Prediction of Dissolved Oxygen Content in Aquaculture of <i>Hyriopsis Cumingii</i> Using Elman Neural Network . . . . .	508
<i>Shuangyin Liu, Mingxia Yan, Haijiang Tai, Longqin Xu, and Daoliang Li</i>	
Finite Element Analysis and Design Improvement of Film Picking Forks Roller Tooth in Field Cleaning Machine . . . . .	519
<i>Xufeng Wang, Yonghua Sun, Shaohui Ma, Wei Wang, Jungang Wang, and Xuejun Zhang</i>	
A Kind of Proxy Caching Program Based on Doubly Linked List in VOD System . . . . .	527
<i>Jianzhong Hou and Qiaolin Chai</i>	
<b>Author Index . . . . .</b>	<b>533</b>