合肥工业大学
HEFEI UNIVERSITY OF TECHNOLOGY

International Conference on Data-driven Smart/Green Manufacturing

数据驱动的智能/绿色制造国际会议

July 25-27 2017

School of Management, Hefei University of Technology

Hefei, China

2017年7月25日-27日

合肥·合肥工业大学·管理学院

http://som.hfut.edu.cn/

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Conference Chairs

大会主席

Shanlin Yang is a member of the Chinese Academy of Engineering, and an engineering specialist of management science and information system. He is a Professor and Doctoral Supervisor at School of Management, Hefei University of Technology. He is the director of academic board of Hefei University of Technology, and the director of National-Local Joint Engineering Research Center of "Intelligent Decision and Information System". He has won 2 second class prizes for State Scientific and Technological Progress Award, 6 first class prizes for provincial and ministerial level science and technology award, and 1 first class prize for Science and Technology Award of Chinese Ministry of Education. He has published 5 academic works and more than 400 papers in important journals and international conferences worldwide. He also has obtained 3 second class prizes of National Teaching Achievement Award, the National Higher Education Teacher Award in 2008, the National Labor Medal in 2014, and the Outstanding Contribution Award of Fudan Management in 2015. His main academic positions are as follows: Editor-in-Chief of the Management Science and Engineering Volume of *Encyclopaedia of Chian* (3rd edition), Convenor of management science and engineering disciplinary evaluation group of the Academic Degrees Committee of the State Council, Deputy Director of the Strategic Consulting Committee and Executive Deputy Director of Management Division in Ministry of Education, Vice President of China Quality Association, Joint President of the Chinese Research Council of Management Modernization, Commissioner of Industrial Engineering Committee for Chinese Mechanical Engineering Society, Vice President of the Chinese Society of Optimization, Overall Planning and Economic Mathematics, Editor-in-Chief of the journal of *Forecasting*, and so on.

杨善林，中国工程院院士，我国管理科学与信息系统工程专家。合肥工业大学管理学院教授、博士生导师。现任合肥工业大学学术委员会主任、"智能决策与信息系统"国家地方联合工程研究中心主任。

杨善林院士先后获国家科技进步二等奖 2 项，省部级科学技术一等奖 6 项，教育部自然科学一等奖 1 项，撰写出版学术著作 5 部，在国内外重要期刊和国际学术会议上发表学术论文 400 余篇。获国家级教学成果二等奖 3 项，2008 年获评国家级高等学校教学名师奖，2014 年被授予全国五一劳动奖章，2015 年获复旦管理学杰出贡献奖。

杨善林院士的主要学术兼职有：《中国大百科全书（第三版）》管理科学与工程卷主编，国务院学位委员会管理科学与工程学科评议组召集人，教育部科技委战略咨询委员会副主任及管理学部常务副主任，中国质量协会副会长，中国管理现代化研究会轮值理事长，中国机械工程学会工业工程分会主任委员，中国优选法统筹法与经济数学研究会副理事长，《预测》杂志主编等。

Panos M. Pardalos serves as Distinguished Professor of Industrial and Systems Engineering at the University of Florida. Additionally, he is the Paul and Heidi Brown Preeminent Professor in Industrial & Systems Engineering. He is also an affiliated faculty member of the Computer and Information Science Department, the Hellenic Studies Center, and the Biomedical Engineering Program. He is also the Director of the Center for Applied Optimization. Dr. Pardalos is a world leading expert in global and combinatorial optimization. His recent research interests include network design problems, optimization in telecommunications, e-commerce, data mining, biomedical applications, and massive computing. Professor Pardalos has received numerous awards and honors, which include Constantin Carathéodory Prize; 2013 EURO Gold Medal (EGM); Honorary Doctor of Science Degree, Wilfrid Laurier University; 2007 Senior Fulbright Specialist Award; Honorary Member of the Mongolian Academy of Sciences; Degree of Honorary Doctor, N.I. Lobachevski State University of Nizhni Novgorod, Russia; Fellow of AAAS (American Association for the Advancement of Science); Fellow of the American Institute for Medical and Biological Engineering (AIMBE); Foreign Member of the National Academy of Sciences of Ukraine; Foreign Member "Petrovskaya Academy of Sciences and Arts", Russia; and Foreign Member "Lithuanian Academy of Sciences". He was the Founding Editor and Editor-in-Chief of the Journal of Global Optimization and Optimization Letters. Currently he is the Editor-in-Chief of the Journal of "Energy Systems", and the Journal of "Computational Management Science". He also serves as a member of the Editorial Board of numerous internally highly reputable scholarly journals.

Panos M. Pardalos，美国佛罗里达大学工业与系统工程系杰出教授、Paul and Heidi Brown 卓越教授，计算机与信息科学系、希腊研究中心、生物医学工程教员，以及应用优化中心的主任。Pardalos 教授是国际公认的全局优化和组合优化领域的先驱者。他近期的研究领域包括：网络设计、通讯优化、电子商务、数据挖掘、生物医学应用和大规模计算。

Pardalos教授得到的奖项和荣誉包括：Constantin Carathéodory奖、2013年EURO Gold Medal、Wilfrid Laurier University理学学位荣誉博士、2007年Senior Fulbright Specialist Award、蒙古科学院院士、俄罗斯N.I. Lobachevski State University of Nizhni Novgorod荣誉博士、美国科学促进会会士、美国医学和生物学工程学会会士、乌克兰国家科学院院士、俄罗斯彼得罗夫斯卡亚科学与艺术院院士、立陶宛科学院院士。

Pardalos 教授曾是 Journal of Global Optimization 和 Optimization Letters 的创刊人和主编。现任 Energy Systems 和 Computational Management Science 的主编。Pardalos 教授同时也担任众多知名学术期刊的编委会成员。

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Zhiyong Guo	Hefei University of Technology	China

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Xiaonong Lu	xnlu@hfut.edu.cn

Program of International Conference on Data-driven Smart/Green Manufacturing

July 25th, 2017		
Time	**Event**	**Location**
2:00-10:00 pm	Conference Registration	First Floor of Gui Yuan Hefei Daoxianglou Hotel
18:00-20:00 pm	Buffet Dinner	Yulan Ting in Gui Yuan

July 26th, 2017			
Time	**Event**	**Location**	
7:40-8:00 am	Conference Registration	First Floor of Gui Yuan Hefei Daoxianglou Hotel	
Time	**Event**	**Topic & Speaker**	**Location**
8:00-8:30 am	Opening Ceremony	**Speakers：** 1.Xiaoping Liu, Vice President, Hefei University of Technology 2. Panos M. Pardalos, Conference Chair **Host:** Yezheng Liu, Dean, School of Management, Hefei University of Technology	C Area Meeting Hall
8:30-8:40 am	All attendees Taking photo		
8:40-9:30 am	Keynote Speech I	**Title：** Project Management: Incentive Design and Work Package Planning **Speaker：** Nicholas G Hall, The Ohio State University **Host：** Panos M. Pardalos, University of Florida	
9:30-9:50am	Coffee break		
9:50-10:40 am	Keynote Speech II	**Title：** Marketplace, Reseller, or Hybrid: A Strategic Analysis **Speaker：** Asoo J. Vakharia, University of Florida **Host：** Panos M. Pardalos, University of Florida	
10:40-11:30 am	Keynote Speech III	**Title：** Manufacturing Execution Optimization **Speaker：** Leyuan Shi, Peking University **Host：** Panos M. Pardalos, University of Florida	
11:30-13:00 pm	Buffet Lunch		Yulan Ting in Gui Yuan

14:00-17:20 pm	Topic Session I	**Topic：** Intelligent Algorithms **Session chair：** Nenad Mladenovic, Serbian Academy of Sciences and Arts **Invited talk:** Nenad Mladenovic, Serbian Academy of Sciences and Arts **Panelists：** 1. Li Jiang, Hefei University of Technology 2. Zhiwei Yang, National University of Defense Technology 3. Shuwan Zhu, Hefei University of Technology 4. Hui Lu, Huazhong University of Science and Technology 5. Shaojun Lu, Hefei University of Technology 6. Siwen Liu, Hefei University of Technology	Conference Room 1 in Gui Yuan
	Topic Session II	**Topic：** Optimization Models and Techniques **Session chair：** Sergiy Butenko, Texas A & M University **Invited talk:** Sergiy Butenko, Texas A & M University **Panelists：** 1. Jie Song, Peking University 2. Bayi Cheng, Hefei University of Technology 3. Bingfeng Ge, National University of Defense Technology 4. Xiaonong Lu, Hefei University of Technology 5. Xu Cheng, Shenyang Agricultural University 6. Jingnan Liu, Hefei University of Technology	Conference Room 2 in Gui Yuan
	Topic Session III	**Topic：** Green Manufacturing and Operations Management **Session chair：** Hongwei Wang, Huazhong University of Science and Technology **Invited talk:** Neng Fan, University of Arizona **Panelists：** 1. Jianling Jiao, Hefei University of Technology 2. Xiaoyun Xu, Peking University 3. Zhanglin Peng, Hefei University of Technology 4. Defeng Sun, Northeastern University 5. Yao Liu, Hefei University of Technology 6. Xianzi Yang, Hefei University of Technology	Chaohu Ting in Hui Yuan
19:00-21:00 pm	Welcome Banquet		Yulan Ting in Gui Yuan

July 27th, 2017			
Time	**Event**	**Topic & Speaker**	**Location**
8:30-9:20 am	Keynote Speech IV	**Title：** Smart /Green Manufacturing: Data Enabled Decision Making and Optimization Applications **Speaker：** Panos M. Pardalos, University of Florida **Host：** Yezheng Liu, Hefei University of Technology	C Area Meeting Hall
9:20-9:50 am	Coffee break		
9:50-10:40 am	Keynote Speech V	**Title：** Manufacturing Process Optimization and Life-Cycle Quality Management in the environment of Internet of Things **Speaker：** Xinbao Liu, Hefei University of Technology **Host：** Yezheng Liu, Hefei University of Technology	
10:40-11:30 am	Keynote Speech VI	**Title：** Industrial-Big-Data-Driven Adaptive Scheduling of Smart Manufacturing **Speaker：** Fei Qiao, Tongji University **Host：** Yezheng Liu, Hefei University of Technology	
11:30-13:00 pm	Buffet Lunch		Yulan Ting in Gui Yuan
14:00-17:20 pm	Topic Session IV	**Topic：** Service-oriented Manufacturing and Supply Chain Management **Session chair：** Zhibin Jiang, Shanghai Jiao Tong University **Invited talk:** Zhibin Jiang, Shanghai Jiao Tong University **Panelists：** 1. Chao Fu, Hefei University of Technology 2. Jianfeng Lu, Tongji University 3. Ju Zhao, Hefei University of Technology 4. Shiyao Xiao, National University of Defense Technology 5. Haifeng Ling, Hefei University of Technology 6. Xiaoxi Zhu, Hefei University of Technology	Conference Room 1 in Gui Yuan
	Topic Session V	**Topic：** Network Model and Optimization **Session chair：** Minglun Ren, Hefei University of Technology **Invited talk:** Minglun Ren, Hefei University of Technology **Panelists：** 1. Bingfeng Ge, National University of Defense Technology 2. Ying Yang, Hefei University of Technology 3. Penghui Lyu, Hefei University of Technology 4. Gaowei Xu, Tongji University 5. Siwen Liu, Hefei University of Technology 6. Yu Cao，Liaoning Shihua University 7. Maoxin Han, Hefei University of Technology	Conference Room 2 in Gui Yuan

		8. Xiaozheng Li, Hefei University of Technology	
	Topic Session VI	**Topic：** Big Data in Smart Manufacturing **Session chair：** Xin Lu, National University of Defense Technology **Invited talk:** Xin Lu, National University of Defense Technology **Panelists：** 1. Qiang Zhang, Hefei University of Technology 2. Lijie Wen, Tsinghua University 3. Hao Wang, Hefei University of Technology 4. Jin Cheng, Tongji University 5. Zijie Yue, Hefei University of Technology 6. Yuren Wang, National University of Defense Technology 7. Qian Zheng, Hefei University of Technology	Chaohu Ting in Hui Yuan
18:00-20:00 pm	Buffet Dinner		Yulan Ting in Gui Yuan

会议议程

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<tr><th>时间</th><th colspan="2">事件</th><th>地点</th></tr>
<tr><td>2:00-10:00 pm</td><td colspan="2">会议注册</td><td>合肥稻香楼宾馆桂苑一楼大厅</td></tr>
<tr><td>18:00-20:00 pm</td><td colspan="2">自助晚餐</td><td>桂苑玉兰厅</td></tr>
<tr><th colspan="4">2017 年 7 月 26 日</th></tr>
<tr><th>时间</th><th colspan="2">事件</th><th>地点</th></tr>
<tr><td>7:40-8:00 am</td><td colspan="2">会议注册</td><td>合肥稻香楼宾馆桂苑一楼大厅</td></tr>
<tr><th>时间</th><th>事件</th><th>主题和主讲嘉宾</th><th>地点</th></tr>
<tr><td>8:00-8:30 am</td><td>开幕式</td><td>致辞人：
1.刘晓平，合肥工业大学副校长
2. Panos M. Pardalos，大会主席
主持人：刘业政，合肥工业大学管理学院院长</td><td rowspan="6">合肥稻香楼宾馆
桂苑 C 区会议室</td></tr>
<tr><td>8:30-8:40 am</td><td colspan="2">所有参会代表集体合影</td></tr>
<tr><td>8:40-9:30 am</td><td>特邀主旨报告一</td><td>报告题目：Project Management: Incentive Design and Work Package Planning
报告人：Nicholas G Hall，俄亥俄州立大学
主持人：Panos M. Pardalos，佛罗里达大学</td></tr>
<tr><td>9:30-9:50 am</td><td colspan="2">茶歇</td></tr>
<tr><td>9:50-10:40am</td><td>特邀主旨报告二</td><td>报告题目：Marketplace, Reseller, or Hybrid: A Strategic Analysis
报告人：Asoo J. Vakharia，佛罗里达大学
主持人：Panos M. Pardalos，佛罗里达大学</td></tr>
<tr><td>10:40-11:30 am</td><td>特邀主旨报告三</td><td>报告题目： Manufacturing Execution Optimization
报告人：侍乐媛，北京大学
主持人：Panos M. Pardalos，佛罗里达大学</td></tr>
<tr><td>11:30-13:00 pm</td><td colspan="2">自助午餐</td><td>桂苑玉兰厅</td></tr>
</table>

14:00-17:20pm	主题交流分会场一	**主题：**Intelligent Algorithms **分组主席：**Nenad Mladenovic，塞尔维亚科学与艺术研究院 **特邀报告：**Nenad Mladenovic，塞尔维亚科学与艺术研究院 **小组成员：** 1. Li Jiang，合肥工业大学 2. Zhiwei Yang，国防科技大学 3. Shuwan Zhu，合肥工业大学 4. Hui Lu，华中科技大学 5. Shaojun Lu，合肥工业大学 6. Siwen Liu，合肥工业大学	桂苑第一会议厅
	主题交流分会场二	**主题：**Optimization Models and Techniques **分组主席：**Sergiy Butenko，德州农工大学 **特邀报告：**Sergiy Butenko，德州农工大学 **小组成员：** 1. Jie Song，北京大学 2. Bayi Cheng，合肥工业大学 3. Bingfeng Ge，华中科技大学 4. Xiaonong Lu，合肥工业大学 5. Xu Cheng, S 沈阳农业大学 6. Jingnan Liu，合肥工业大学	桂苑第二会议厅
	主题交流分会场三	**主 题 ：** Green Manufacturing and Operations Management **分组主席：**Hongwei Wang，华中科技大学 **特邀报告：**Neng Fan，亚利桑那大学 **小组成员：** 1. Jianling Jiao，合肥工业大学 2. Xiaoyun Xu，北京大学 3. Zhanglin Peng，合肥工业大学 4. Defeng Sun，东北大学 5. Yao Liu，合肥工业大学 6. Xianzi Yang，合肥工业大学	徽苑巢湖会议厅
19:00-21:00 pm	欢迎晚宴		桂苑玉兰厅

2017 年 7 月 27 日			
时间	**事件**	**主题和主讲嘉宾**	**地点**
8:30-9:20 am	特邀主旨报告四	**报 告 题 目：** Smart /Green Manufacturing: Data Enabled Decision Making and Optimization Applications **报告人：**Panos M. Pardalos，佛罗里达大学 **主持人：**刘业政，合肥工业大学	合肥稻香楼宾馆 桂苑 C 区会议室
9:20-9:50 am	茶歇		
9:50-10:40 am	特邀主旨报告五	**报告题目：**Manufacturing Process Optimization and Life-Cycle Quality Management in the environment of Internet of Things **报告人：**刘心报，合肥工业大学 **主持人：**刘业政，合肥工业大学	
10:40-11:30 am	特邀主旨报告六	**报 告 题 目：** Industrial-Big-Data-Driven Adaptive Scheduling of Smart Manufacturing **报告人：**乔非，同济大学 **主持人：**刘业政，合肥工业大学	
11:30-13:00 am	自助午餐		桂苑玉兰厅
14:00-17:20 pm	主题交流分会场四	**主题：**Service-oriented Manufacturing and Supply Chain Management **分组主席：**Zhibin Jiang，上海交通大学 **特邀报告：**Zhibin Jiang，上海交通大学 **小组成员：** 1. Chao Fu, 合肥工业大学 2. Jianfeng Lu, 同济大学 3. Ju Zhao, 合肥工业大学 4. Shiyao Xiao, 国防科技大学 5. Haifeng Ling, 合肥工业大学 6. Xiaoxi Zhu, 合肥工业大学	桂苑第一会议厅

	主题交流分会场五	**主题:** Network Model and Optimization **分组主席：** Minglun Ren, 合肥工业大学 **特邀报告：** Minglun Ren, 合肥工业大学 **小组成员：** 1. Bingfeng Ge, 国防科技大学 2. Ying Yang, 合肥工业大学 3. Penghui Lyu, 合肥工业大学 4. Gaowei Xu, 同济大学 5. Siwen Liu, 合肥工业大学 6. Yu Cao, 辽宁石油化工大学 7. Maoxin Han, 合肥工业大学 8. Xiaozheng Li, 合肥工业大学	桂苑第二会议厅
	主题交流分会场六	**主题:** Big Data in Smart Manufacturing **分组主席：** Xin Lu，国防科技大学 **特邀报告：** Xin Lu，国防科技大学 **小组成员：** 1. Qiang Zhang, 合肥工业大学 2. Lijie Wen, 清华大学 3. Hao Wang, 合肥工业大学 4. Jin Cheng, 同济大学 5. Zijie Yue, 合肥工业大学 6. Yuren Wang, 国防科技大学 7. Qian Zheng, 合肥工业大学	徽苑巢湖会议厅
18:00-20:00 pm	自助晚餐		桂苑玉兰厅

Keynote Speeches

特邀主旨演讲

1. Nicholas G Hall, The Ohio State University

Title: Project Management: Incentive Design and Work Package Planning

Abstract: We address two problems that arise generically in project management.

The first problem involves mitigating the widely observed behavioral issue of Parkinson's Law, which wastes the benefit of early task completion, thus leading to poor project performance. We describe an incentive-compatible mechanism to resolve Parkinson's Law for critical path method (CPM) planning. This scheme also resolves Student Syndrome, and is group-strategy-proof. We also describe a mechanism to resolve Parkinson's Law under critical chain project management (CCPM). Finally, we develop a mechanism for repeated projects, where commitments to early completion continue for subsequent projects. This work provides an alternative to CPM planning, which is vulnerable to Parkinson's Law, and to CCPM planning, which lacks formal control of project progress.

The second problem involves understanding how design decisions at the planning stage of a project affect its cost of execution. Defining smaller work packages increases project complexity and workload, and reduces economies of scale. Whereas, defining larger work packages results in reduced concurrent processing, and less precise monitoring and estimation. We develop a heuristic method which delivers near-optimal work package solutions. This method greatly outperforms the work package sizing rules that are typically used in practice. Extensions of our model to consider task incompatibility, resource sharing and crashing, and uncertain task durations are also discussed. This work enables more precise project planning, and provides insights that guide resource allocation decisions.

Nicholas G. Hall is a Professor in the Department of Management Sciences at the Fisher College of Business, and has a courtesy appointment in the Department of Integrated Systems Engineering, at The Ohio State University. He holds a Ph.D. in Management Science from the University of California, Berkeley (1986), as well as B.A., M.A. degrees from the University of Cambridge, and a professional qualification in accounting. His research interests are in project management, incentives, scheduling, and pricing, and applications of operations research. He has published over 80 articles in the journals *Operations Research*, *Management Science*, *Mathematics of Operations Research*, *Mathematical Programming*, *Games and Economic Behavior*, *Interfaces*, and several other journals. His main teaching interest is in project management. He has served for a total of over 40 years on the editorial boards of *Operations Research* and *Management Science*. He has given over 350 academic presentations, including 112 invited presentations in 24 countries, 11 conference keynote

presentations, and nine INFORMS national conference tutorials. A 2008 citation study ranked him 13th among 1,376 scholars in the operations management field. He won the Fisher College Pacesetters' Faculty Research Award in 1998 and 2005. He has served as President of Manufacturing and Service Operations Management society (1999-2000), and as Treasurer of INFORMS (2011-2014). He has served on the State of Ohio Steel Industry Advisory Council (1997–2002). He has been a visiting professor at the Wharton School (University of Pennsylvania) and Kellogg School (Northwestern University). He is the owner of a consulting business, CDOR, which provides business solutions to the Ohio business and government communities, and advice on intellectual property issues to New York City law firms. In 2018, he will be the 24th President of INFORMS.

2. Asoo J. Vakharia, University of Florida

Title: Marketplace, Reseller, or Hybrid: A Strategic Analysis

Abstract: Traditionally, online retailers have primarily been resellers who purchase products from manufacturers and resell them to consumers. Recently, online retailers are also chosen to operate as a platform to connect manufacturers/suppliers and buyers directly. Conventional wisdom suggests that this new format will mitigate the double-marginalization effect and benefit both the intermediary and suppliers due to the revenue sharing scheme. However, we find that the upstream competition between suppliers will alter this result. Essentially, in the reseller mode, the intermediary can function as the moderator to alleviate price competition in the online marketplace. Further, we also identify that the order-fulfillment cost will interplay with the intensity of the upstream competition governing the mode choice. Specifically, when the order-fulfillment cost is relatively small and the product differentiation is high, the pure platform mode will become the equilibrium mode; when the order-fulfillment cost is relatively high or the degree of product differentiation is low, then the pure reseller mode will arise as the equilibrium mode. Further, when the order-fulfillment cost and degree of product differentiation are both at moderate levels, the hybrid mode will evolve as the equilibrium mode. The intuition hinges on the trade-off between transfer of the pricing rights and the responsibility for order fulfillment accompanied by the mode change. Our findings not only complement the emerging online marketplace literature but also provide testable empirical questions on the relationship and magnitude of different factors steering the mode choice.

Asoo J. Vakharia is the McClatchy Professor and Director of the Center for Supply Chain Management in the Warrington College of Business Administration at the University of Florida. Dr. Vakharia has taught in Warrington's Department of Information Systems and Operations Management since 1994, and has a Ph.D. from the School of Business at the University of Wisconsin-Madison. Vakharia is a POMS and DSI Fellow and serves as Department Editor (POM-IS Interface

Track) for the Production and Operations Management Journal. Having published extensively in the leading journals in the field, Vakharia's current research examines issues in SCM with an emphasis on Green/Sustainable Product Development, Waste Management, and Reverse Supply Chains. His consulting work includes projects with AT&T Solutions Customer Care, Golden Eagle Distributors, Garrett Air Research, Motorola, Sweetheart Cups, Inc., and the University of Arizona Medical Center. Asoo's teaching interests are in Operations Management, Manufacturing Planning and Control, Design of Manufacturing Systems, Management of Service Operations, Operations Strategy, Management Science, International Logistics, Transportation and Logistics Systems, and MPC/ERP Systems Integration. He has also been involved in extensive Executive Teaching and has taught industry specific executive development courses for Tucson Electric Power Company, Citibank Universal Card Services, and AT&T Solutions Customer Care.

3. Leyuan Shi, Peking University

Title: Manufacturing Execution Optimization

Abstract: Many manufacturing firms use aggregated data to provide scheduling/decision solutions for handling their daily operations. Given the nature of shop floor operating in real-time, these average-based scheduling systems cannot be fully executed since unexpected events will almost always occur such as rush orders, design changes, machine breakdowns, defective parts, and delivery delays etc. Currently, shop-floor responds to unexpected events via manually scheduling or by Excel, which leads to poor predictability and visibility of performance, slow response to uncertainties and market changes, and low efficiency of their production and supply chain systems.

In this talk, Manufacturing Execution Optimization (MEO) technologies developed by Dr. Shi and her team will be presented. MEO aims to bridge the gap between the top-level management data typically from ERP systems and the shop-floor operations. By establishing top floor to shop floor communication, manufacturing firms will be able to significantly improve their production and supply chain efficiency while achieving a faster response to changes and disturbances in the most time-optimal manner. MEO is developed based on Nested Partitions (NP) optimization framework. The coordination nature of the NP framework provides an efficient and effective platform for information sharing and exchange in real time. In this talk, several simulation optimization methods based on NP framework will also be discussed and a case study will be presented.

Leyuan Shi is the Professor in the Department of Industrial and Systems Engineering at University of Wisconsin-Madison, also the founding chair of the Department of Industrial Engineering and Management at Peking University of China. She received her Ph.D. in Applied Mathematics from Harvard University in 1992. Her research interests include simulation modeling and large-scale optimization with applications to operational planning and scheduling and digital supply chain management. She has developed a novel optimization framework, the Nested Partitions Method that has been applied to

many large-scale and complex systems optimization problems. Her research work has been funded by NSF, NSFC, NIH, AFSOR, ONR,MSOT, State of Wisconsin, and many private industrial companies. Her research work has been published on journals such as *Operations Research, Management Science, JDEDS, IIE Trans*. and *IEEE Trans*. She is currently serving as Editor for *IEEE Trans on Automation Science and Engineering.* She served on the editorial board for *Manufacturing & Service Operations Management* and *INFORMS Journal on Computing.* She was General Chair, co-Chair, and program committee for many national and international conferences. She is also one of the inventors for a set of digital management systems including Manufacturing Execution Optimization (MEO), Maintenance Repair & Overhaul Optimization (MRO2), and Dynamic Manufacturing Critical-Path Time (DMCT). She is the recipient of the Vilas Associate Award and IEEE fellow.

4. Panos M. Pardalos, University of Florida

Title: Smart /Green Manufacturing: Data Enabled Decision Making and Optimization Applications

Abstract: Smart manufacturing (Industry 4.0) is the fourth industrial revolution. With advances in information and telecommunication technologies and data enabled decision making, smart manufacturing can be an essential component of sustainable development. We are going to discuss some successes and focus on data enabled decision making and optimization applications. In addition, we will discuss future research directions and new challenges to society.

Panos M. Pardalos serves as Distinguished Professor of Industrial and Systems Engineering at the University of Florida. Additionally, he is the Paul and Heidi Brown Preeminent Professor in Industrial & Systems Engineering. He is also an affiliated faculty member of the Computer and Information Science Department, the Hellenic Studies Center, and the Biomedical Engineering Program. He is also the Director of the Center for Applied Optimization. Dr. Pardalos is a world leading expert in global and combinatorial optimization. His recent research interests include network design problems, optimization in telecommunications, e-commerce, data mining, biomedical applications, and massive computing. Professor Pardalos has received numerous awards and honors, which include Constantin Carathéodory Prize; 2013 EURO Gold Medal (EGM); Honorary Doctor of Science Degree, Wilfrid Laurier University; 2007 Senior Fulbright Specialist Award; Honorary Member of the Mongolian Academy of Sciences; Degree of Honorary Doctor, N.I. Lobachevski State University of Nizhni Novgorod, Russia; Fellow of AAAS (American Association for the Advancement of Science); Fellow of the American Institute for Medical and Biological Engineering (AIMBE); Foreign Member of the National Academy of Sciences of Ukraine; Foreign Member "Petrovskaya Academy of Sciences and Arts", Russia; and Foreign Member "Lithuanian Academy of Sciences". He was the Founding Editor and Editor-in-Chief of the Journal of Global

Optimization and Optimization Letters. Currently he is the Editor-in-Chief of the Journal of "Energy Systems", and the Journal of "Computational Management Science". He also serves as a member of the Editorial Board of numerous internally highly reputable scholarly journals.

5. Xinbao Liu, Hefei University of Technology

Title: Manufacturing Process Optimization and Life-Cycle Quality Management

Abstract: Magang Wheel Company is a large enterprise in China who provides the monobloc rolled steel wheel and tires of wheel of trains. The company manufactures and sells six series of products such as train wheel, tires of wheel, ring parts, wheel casting, discal parts, forging parts and so on. They have more than 2000 kinds of products, which are used in railway locomotive, machinery, shipbuilding, metallurgy, mining, aerospace, Petroleum, chemical, textile and other industries. Especially in recent years, the rapid development of railway transport is boosting demand for tires of wheel and put forward higher requests to the company's manufacturing capacity. We investigated the key scientific and technical problems from the production line of Magang Wheel Company, e.g., optimal cutting-stock technology, tire production scheduling problem, and wheel production scheduling problem. The research results were integrated into the manufacturing plan and implementation process, based on which an Intelligent Manufacturing Execution System was developed and greatly improved the production efficiency. However, the bigger challenge for the company seems to be improving the life-cycle quality in the environment of Internet of Things (IoT) and big data. With the IoT, companies can monitor real-time product operating information after selling products, and provide customers with personalized service based on this information. Customer satisfaction with this kind of service has been gradually integrated into the product quality, but it is based on the customer's willingness to establish a long-term relationship with the business. In addition, quality is not just a matter of concern between the enterprise and customer. The sustainability of the product is also a part of its quality. The acquisition and analysis of the full life cycle quality data will drive the further development of the re-manufacturing industry, which is of great importance to a product's life-cycle quality improvement. Faced with these opportunities and challenges, we redefined the concepts of quality and quality management and proposed some new methods for quality management based on new information technology so as to promote the healthy and sustainable development of enterprises and society.

Xinbao Liu is professor and doctoral supervisor at School of Management, Hefei University of Technology. He is the director of Institute of decision science and technology. His research interests include logistics and system control, decision-making science and technology, information management and decision support system, complex product manufacturing process optimization and decision-making. He has successively presided over more than 20 projects, including the national 863 project, the National Natural Science Foundation of innovation research group project and so on. He published more than 140

papers. Over the past five years, 27 papers have been published in the international journals of SCI, including European Journal of Operational Research, Journal of Operations Research Society, Annals of Operations Research, etc. He has received many awards including two second prize of National Scientific and Technological Progress Award, one first prize of the Natural Science Award of Education Ministry, one first prize of China Machinery Industry Science and Technology Progress Award, one first prize of Science and Technology Progress Award of Anhui Province, and one second prize of Natural Science Award of Anhui Province and one second prize of National Teaching Achievement Award. His main academic positions are as follows: member of mathematics and management department of Hefei University of Technology Academic Committee, secretary-General of Evaluation Committee, director of the China Society of International Information Systems, executive director of Chinese Systems Engineering Society, vice chairman of Chinese Systems Engineering Society Decision Science Committee, member of Chinese Automation Society Process Control Professional Committee, member of International Operations Research and Management Science Society, editorial board member of Prediction and some other journals, the member of "World Congress on Global Optimization", the member of "Sixth International Symposium on Behavioral Operations Research, the member of Behavior Management".

6. Fei Qiao, Tongji University

Title: Industrial-Big-Data-Driven Adaptive Scheduling of Smart Manufacturing

Abstract: In the era of internet and big data, smart manufacturing with high integration of physical system and cyber system is a hot topic in both industry and academia. One of the notable characteristics of smart manufacturing is the adaptability of dynamic manufacturing environment. This paper addresses the issue of production scheduling mechanism that meets the requirements of smart manufacturing. It is an adaptive scheduling solution driven by industrial big data and based on Cyber-Physical System (CPS). First, with framework of Cyber-Physical Production System (CPPS) for smart manufacturing, a four-stage closed-loop scheduling mechanism, is suggested and analyzed. Its implementation includes perception, analysis, decision and execution. Second, to deal with adaptive scheduling, we propose and design two dynamic scheduling methods, one based on scheduling strategy selection and the other based on scheduling parameter selection. Both of them are based on historical production data, and they generate dynamic scheduling algorithm patterns through machine learning. Next, this paper discusses the application of the proposed scheduling methods. Based on production states collection and dynamic disturbance detection, the schedule execution is monitored. Once the system determines that the schedule needs to be adjusted, an appropriate scheduling method is applied to generate new schedules that satisfy the execution requirements of the manufacturing environment. At last, the proposed adaptive scheduling solution and two scheduling methods are tested and compared with a semiconductor experiment production line.

Fei Qiao is a full professor at CIMS Research Center, the College of

Electronics & Information Engineering, Tongji University. She is a Humbolt scholar and winner of the new century excellent talent program of the ministry of education, China. She received her MS in Automation (1993) and PhD in Management Engineering (1997) from Tongji University. Since 1993 she joined the CIMS (Computer Integrated Manufacturing System) Research Center, Tongji University. With interdisciplinary background of control-, management- and mechanical- engineering, she has worked extensively in the System Engineering and Industrial Engineering, including the following research areas: Big data based smart manufacturing, Intelligent Production System, Complex Manufacturing Planning & Scheduling, Energy Management and Optimization, etc. She has also served as deputy secretary-general of Chinese Association of Automation (CAA), vice president of Shanghai Systems Engineering Society (SSES), vice president of Shanghai Microcomputer Application Society (SMAS), vice director of Expert Consultative Committee (ECC) of CAA.

Session Chairs

分会场主席

Session I

Nenad Mladenovic is a research professor and a team leader in Mathematical institute, Serbian Academy of Sciences and Arts, Belgrade, Serbia. He used to work in Serbia, Canada, UK and France as a professor. As a researcher, he got many visiting positions at more than dozen universities. He is a Member of Academia Europea and has published more than 200 papers. He serves as an editor-in-chief of one OR journal and being the editorial board member of more than dozen international journals. His international reputation can be seen by more than dozen plenary and invited talks just in last 5 years. He was the leader of many industrial projects such as Human nutrition in Yugoslav Army, Avis rent a car - Information system, Pooling in ULTRAMAR oil company, Hydro Quebec and Unit commitment, Pipeline design in South Gabon oil fields, Maintenance of railway infrastructure in France. He has been leading a research team in Serbia with more than 20 researchers in the past 15 years.

Session II

Sergiy Butenko is the Professor of Industrial and Systems Engineering in Texas A & M University, and he is Donna and Jim Furber' 64 Faculty Fellow in Industrial and Systems Engineering, the Editor-in-Chief of Journal of Global Optimization, the Editorial Board Member of Journal of Combinatorial Optimization, Optimization Letters, Computational Management Science, Energy Systems, and Computational Social Networks. His research interests include discrete and global optimization, methods for network-based analysis of big data, graph theory, applications in biological, social, and financial networks, wireless ad hoc and sensor networks, transportation, materials, energy, and sports analytics. Prof. Sergiy Butenko has published more than 80 academic papers in Operations Research, Mathematical Programming, INFORMS Journal on Computing and other international journals.

Session III

Hongwei Wang is now the professor and doctoral tutor of school of management, Huazhong University of Science and Technology, the Changjiang distinguished professor and ministry of education innovation team leader. He is also a member of the state council academic degrees committee of control science and engineering discipline review group, vice president of the China system engineering committee, the director of Hubei provincial system engineering committee. In 2011, he was awarded the National Science Fund for Distinguished Young Scholars. In 2010, he was awarded the first prize of high school natural science of Ministry of Education (First complete person). He has been engaged in the scientific research of the systems engineering, the main research directions were logistics and supply chain management, public safety and emergency management, project management.

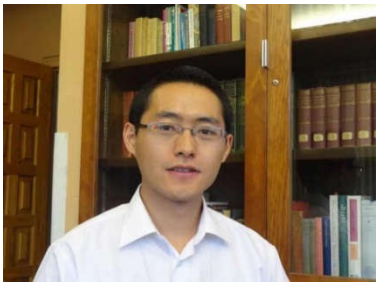
Session IV

Zhibin Jiang is the Distinguished Professor and Head of the Department of Industrial Engineering & Management, and the Director of Research Center for Service Science & Enterprise Innovation，Shanghai Jiao Tong University. He obtained his Ph. D. degree in Manufacturing Engineering & Engineering Management from City University of Hong Kong in 1999. He is Changjiang Scholar Program Chair Professor of MOE, and Fellow of Institute of Industrial and System Engineers (IISE). He acts as vice president of Chinese Industrial Engineering Society and vice president of the Advisory Committee of IE Undergraduate Programs of MOE. He is associate editors or editorial board members of International Journal of Production Research and other 5 internationals journals. His research interests cover operational management of complex production and service systems. He has published more than 290 papers and authored 5 books. He has finished or is undertaking 2 NSFC funded key projects, 8 NSFC funded projects, and over 20 other national projects.

Session V

Minglun Ren is a professor at School of Management in Hefei University of Technology. He is the director of institute of enterprise modeling and optimization. His research interests are innovative applications of information technology to support efficiency, effectiveness manufacturing and service management. His special interests are in the area of manufacturing model innovation, realtime data analysis in the environment of IoT, manufacturing servicing and intelligent manufacturing system.

Session VI



Xin Lu is an associate professor at the Department of Information Systems & Management at the National University of Defense Technology. He is the co-founder and chief analyst of Flowminder Foundation, which is devoted to improve public health and welfare in low- and middle-income countries with big data analytics. His research includes analytics for big data, social networks, and statistical sampling techniques, and was published in Nature, Phy. Rep, PLOS MED, PNAS, GEC, et al. Applications of his research include relief response in the Haiti earthquake in 2010, the Japanese earthquake and tsunami in 2011, the Bangladesh cyclone Mahasen in 2013, the Nepal earthquake and flooding in 2015 and 2016, etc. His research received a lot of media attention and were reported by BBC (2011, 2014, 2016), New York Times (2012), Science (2012), Santa Fe Institute (2015), MIT (2013, 2014), etc. In 2013, Dr. Lu's study was listed by MIT Technology Review "Ten breakthrough technologies 2013", and win the "2016 GLOMO Award" in the World Mobile Congress in Barcelona.

Session Details

分会场报告细节

Session I: Intelligent Algorithms

Invited talk

Speaker: Nenad Mladenovic, Serbian Academy of Sciences and Arts

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Title: Efficient and robust optimization methods for railway infrastructure logistics and maintenance

Abstract: Maintenance of railway infrastructure is very important and costly activity. It is an important part in railway traffic planning within a country. Maintenance should be performed periodically, on each part of the railway track, including so-called capillary networks. However, optimization problems that occur are very complex and hard. Therefore, heuristics are usually used in solving. In this talk I will present several such problems that are formulated as logistics and maintenance optimization problems. The robust techniques are mostly based on Variable neighborhood search (VNS) and Formulation space search (FSS), meta-heuristics that, together with my collaborators, I proposed in 1995 and 2005, respectively.

Session speakers

Speaker 1: Li Jiang, Hefei University of Technology

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Title: Disruption Management for Customer Time Window Changes in the Last Mile Delivery of E-commerce

Abstract: With the increasing interest in online shopping, the last mile delivery of e-commerce is considered to be an inefficient and polluting supply chain phase. To address this challenge, a disruption management problem for customer time window changes in the last mile delivery of e-commerce with simultaneous home delivery (HD) and customer's pickup (CP) is proposed. This problem aims to build a more effective and low-carbon last mile delivery system of e-commerce. To solve this specific problem, a two-phase hybrid algorithm is presented. In this approach, an improved ant colony algorithm is presented to optimize the distribution sequence under HD and an insert algorithm is presented to allocate the pickup under HD and CP. Finally, according to the standard example experiment, the three methods of the original distribution, HD and simultaneous HD and CP are compared and analyzed. The results show that the proposed method is superior to the other two methods.

Speaker 2: Zhiwei Yang, National University of Defense Technology

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Title: Optimization of High-end Equipment Development Task Process Influenced by Multiple Uncertainty Factors

Abstract: In order to shorten duration, save cost and reduce the failure rate of the high-end equipment development task, it is necessary to optimize the development task process. Firstly, a Monte Carlo simulation method is used to simulate the execution process of the task network. Based on the design structure matrix (DSM), the simulation model is established. Then, the DSM simulation process is embedded into the multi-objective optimization algorithm. The average duration, cost and failure rate of DSM simulation output are used as the evaluation indexes of individual fitness in the multi-objective algorithm. Based on NSGA-III, we construct an optimization algorithm for development task process. Furthermore, we consider the evaluation indexes such as the rework times, the total work hours required for completion, and so on, and select the most satisfactory development task process based on deeply analysis and evaluation. Finally, the data of the development task of an uninhabited combat aerial vehicle is studied. The data of the development task process in this paper is compared with the data in the related literature.

Speaker 3: Shuwan Zhu, Hefei University of Technology

Email: zhushuwan@mail.hfut.edu.cn

Title: A novel heuristic algorithm for surgical case scheduling under an open scheduling strategy

Abstract: Given an operating theatre comprising operations of different specialties that share a fixed number of operating rooms and post-surgery beds, an efficient schedule requires all the involved material and human resources be ready at the right time and right place, and thus a good arrangement of the resources allocation and connection is needed. We study the operating room planning and scheduling problem under an open scheduling strategy. In this paper, the optimization problem lies in how to make an efficient schedule so as to maximize the utilization of operating rooms and minimize the total completion time of all surgeries. Elective cases can be planned ahead and have a patient-related cost depending on the surgery date. Under the non-block scheduling strategy, the surgeons can choose to operate a case on any workday in any available operating room, and no surgeons have the priority to reserve any block time in advance. Normally, there are two phases of scheduling processes for elective surgical cases under the open scheduling strategy, planning stage and scheduling stage. In the first stage, regarded as the planning stage, each operation is allocated to specific operation day. The next one, known as the scheduling stage, determines the sequence or the starting time of each surgical case allocated to specific day. Considering two types of interval time between two successive surgical cases in the same operating room, the setup time for the operating room and the rest time, we propose a novel surgical case scheduling problem with sequence-dependent setup time and a meta-heuristic algorithm to solve

this problem. Numerical results show that important gains can be realized by using a mixed-integer programming model.

Speaker 4: Hui Lu, Huazhong University of Science and Technology

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Title: Study on construction material allocation policies: a simulation optimization method

Abstract: According to statistics, the cost of materials can constitute 50% to 60% of the total cost of the project, and efficient management is essential to achieve the specified schedule and cost goals. In some projects, such as the Three Gorges Project in China, centralized material management mode is implemented to address the issues of materials. Specifically, under this mode, the owner needs to take charge of all the issues of material planning, purchase, transportation, storage, and allocation. Although the centralized material management mode helps greatly in engineering practices, the material shortage is difficult to completely avoid due to the uncertainty in both demand and supply. To reduce the effect on the schedule and cost performance of construction project, the manager should make two important decisions: 1) how much inventory to keep, and 2) how to allocate the available material to on-going activities in case of shortage.

Motivated by the above observations in construction practice, this paper investigates to integrate the off-site supply chain and on-site project management issues, and develops a framework to model the inventory replenishment and allocation decisions jointly. Based on the activity feature information (e.g. cost, demand, and length of the path where it locates), we propose five allocation policies to support the joint inventory management process, which are schedule-based, cost-based, demand-based, schedule-cost-based, and schedule-demand-based policies. Meanwhile, a genetic algorithm (GA)-based simulation optimization method is utilized to solve the integrated inventory model and find the optimal inventory level under a given allocation policy. Based on a large set of fictitious project networks with different path difference (PD), a computational analysis is conducted to make detailed inter-policy comparisons. It is showed that, for a project network with a small (or large) PD value, the schedule-based (or schedule-cost-based) policy is the most appropriate choice.

Speaker 5: Shaojun Lu, Hefei University of Technology

Email: lushaojun@mail.hfut.edu.cn

Title: A hybrid ABC-TS algorithm for unrelated parallel machines scheduling with deteriorating maintenance activity, parallel-batching processing, and deteriorating jobs

Abstract: This paper considers an unrelated parallel machines scheduling problem with deteriorating maintenance activities, parallel-batching processing, and deteriorating jobs. The objective is to make the joint decisions on jobs assignments, the maintenance arrangements, jobs batching, and batches sequencing on each machine to minimize the makespan. We formulate a mixed integer programming model for the problem and provide polynomial time optimal

algorithms for the case that all jobs have been assigned to machines. Furthermore, since the studied problem is NP-hard, we develop a hybrid ABC-TS algorithm combining artificial bee colony (ABC) and Tabu Search (TS) to solve the problem in a reasonable time. Extensive computational experiments are conducted and the results validate the effectiveness and robustness of our proposed algorithm.

Speaker 6: Siwen Liu, Hefei University of Technology

Email: liusiwen67@126.com

Title: A hybrid CS-DE algorithm to solve parallel-batching scheduling problems with truncated time-dependent learning effect

Abstract: This paper investigates the parallel-batching scheduling problem with time-dependent learning effect. The job processing time is a decreasing function of its starting time and both the single machine and parallel-machine circumstances are considered. The objective is to minimize the makespan. For the single machine scheduling problem, some structural properties as well as a heuristic algorithm are developed to solve it. For the parallel-batching machines scheduling problem, first a mixed integer programming is constructed, then a hybrid CS-DE algorithm combining improved CS (cuckoo search algorithm) and DE (differential evolution) is proposed to assign the jobs to machines. In addition, the computational results of the hybrid CS-DE algorithm are illustrated and compared with standard CS, DE. The computational experiments present that the proposed hybrid algorithm performs better in effectiveness and quickness, especially for the small-scale instances.

Session II: Optimization Models and Techniques

Invited talk

Speaker: Sergiy Butenko, Texas A & M University

Email: butenko@tamu.edu

Title: Network-based Optimization Techniques for Wind Farm Location Decisions

Abstract: This talk deals with the problem of finding appropriate locations for wind farms that maximize the overall energy output, while controlling the effects of wind speed variability. High wind speeds are required to get the maximum possible power output in a wind farm. On the other hand, one needs to balance the wind energy supplies over time by selecting diverse locations. These issues are addressed using network-based models. Real-life wind speed data are utilized to demonstrate the advantages of the proposed approach.

Session speakers

Speaker 1: Jie Song, Peking University

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Title: The Convergence Analysis of an Efficient Multi-fidelity Optimization Method

Abstract: Simulation optimization works directly with objective function value estimates obtained by running simulations. It provides a generally applicable optimization method for complex systems that are intractable to traditional optimization methods. However, simulation optimization faces great computational challenges when simulations are very time-consuming. In this paper, we study a recently proposed framework that utilizes information from multi-fidelity models to improve the computational efficiency of simulation optimization. We propose an optimal sampling policy that minimizes the expected optimality gap and thus optimally uses a limited computation budget. We also derive an upper bound for the new optimal sampling policy and compare it with other sampling policies to demonstrate the efficiency improvement obtained by the new optimal sampling policy. Numerical experiments both confirm the computational efficiency improvement of the multi-fidelity optimization method and validate the convergence results derived in this paper.

Speaker 2: Bayi Cheng, Hefei University of Technology

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Title: Minimizing service span with batch-position-based learning effects

Abstract: We consider the learning effects in the coordination of production and outbound distribution for manufacturers. The objective is to minimize service span, which lasts from the beginning of production to the completion of delivery of products. In production, a batch-processing facility is used to process jobs which have different sizes. Batch-position-based learning effects are considered since workers become skillful gradually after processing batches one by one. In distribution, a vehicle with a fixed capacity is used to deliver products the customer and the transportation time from the manufacturer to the customer is a constant. We show the coordinated scheduling problem is NP-hard in the strong sense. We propose properties of optimal solutions and we provide an approximation algorithm for the problem. The absolute performance guarantee of the algorithm is 1.667 and the asymptotic performance guarantee is 1.223. Then we consider the problem where there are infinite vehicles and the performance guarantees are respectively 1.5 and 1.223. Finally we analyze the performance of the algorithm by the change of the problem scale, the learning index and operational factors. We propose managerial suggestions for decision makers of manufacturers according to our results.

Speaker 3: Bingfeng Ge, National University of Defense Technology

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Title: A Game Theoretic Model for Resource Allocation with Deception and Defense Efforts

Abstract: A strategic two-player, sequential game between a defender and attacker is studied in this paper. The defender first needs to allocate deception and defense efforts among different targets, to deceive the attacker and strengthen the target, respectively. The attacker then launches proper

combinations of attacks on targets to cause possible damage. This paper proposes a game theoretic model for determining optimal resource allocation with respect to minimizing loss for the defender and maximizing utility for the attacker. The key features of this model include the following: (1) the attacker's learning and the defender's counter-learning (deception) efforts are taken into account in this game; (2) multiple combinations of attacks and targets are allowed in this model; (3) tradeoff between deception and defense efforts among different targets for the defender is investigated; (4) resource constraints exist for both players. A case study is presented to demonstrate the procedure of this game theoretic model and show its effectiveness. The results can provide additional insights for the defense and deception strategies.

Speaker 4: Xiaonong Lu, Hefei University of Technology

Email: xnlu@hfut.edu.cn

Title: An event-based optimization approach for solving probabilistic constrained problem in DEDS——with application of order control decision in manufacturing system

Abstract: The event-based optimization is a new type of stochastic decision method for DEDS, which can be applied to solve many practical decision problems in the systems with complex structure. In this paper, the idea of event-based optimization is taken to solve the decision problem with the probabilistic constant, and the policy optimization algorithms are proposed to solve to optimal event-based policy online. Two types of constraint in decision problems, the general constraint and the probabilistic constraint, are introduced first. The definition of event is given, and the methodology of event-based decision is proposed. Then, according to the characteristics of the decision problems with probabilistic constraint, by applying the event-based idea, the concept of risk state, risk event and risk index are presented. By using the method of performance sensitivity analysis, the gradient formula of the performance is obtained, and the algorithms of estimating the performance gradient and online policy iterating are developed. Based on the Lagrangian method, the decision problem with constraint can be transformed to the standard form and then solved. We apply the presented method in the order control decision of a manufacturing system at last, and the experimental results shows the high efficiency and fast convergence of the proposed approach

Speaker 5: Xu Cheng, Shenyang Agricultural University

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Title: An Exact Algorithm for Batch Picking Problem in the Warehouse of Perishable Food with Blocking Consideration

Abstract: Perishable food waste and its safety hazards mainly stemmed from inappropriate and excessive logistics operations during warehousing and transportation procedures. This research aims to reduce unnecessary logistics operations so as to extend food shelf life and improve food quality. In practice, most perishable food is harvested and saved in batches, and conveyed to a List-In-First-Out warehouse waiting for sale. Batch picking problem is to choose the most

convenient food batches to substitute who have been planned to delivery, aiming at the minimum number of shuffling movements. The problem is formulated as an ILP model and a branch-and-price algorithm is proposed to get optimal solutions for it. Computational experiment results verify the effectiveness and efficiency of the proposed algorithm.

Speaker 6: Jingnan Liu, Hefei University of Technology

Email: 2275283046@qq.com

Title: A case study on the adoption intention towards Artificial Intelligence-based medical aided diagnosis systems

Abstract: Compared to the booming industry of AIMADS, the usage of AIMADS among healthcare professionals is relatively low in the hospital. Thus, a research on the acceptance and adoption intention of AIMADS by health professionals is imperative. In this study, an integration of UTAUT and trust theory is proposed for exploring the adoption of AIMADS. Besides, two groups of additional factors, related to AIMADS (task complexity, technology characteristics, and perceived substitution crisis) and health professionals' characteristics (propensity to trust and personal innovativeness in IT) are considered in the integrated model. The data set of proposed research model is collected through paper survey and Internet survey in China. The empirical examination demonstrates a high predictive power of this proposed model in explaining AIMADS adoption. Finally, the theoretical contribution and practical implications of this research are discussed.

Session III: Green Manufacturing and Operations Management

Invited talk

Speaker: Neng Fan, University of Arizona

Email: nfan@email.arizona.edu

Title: Intermittency Issues of Renewable Energy for Green Manufacturing

Abstract: Recently a growing number of companies are tapping into onsite renewable energy sources to lower carbon footprint of their energy-intensive facilities. For instance, Honda installed two wind turbines at its auto transmission plant in Russells Point, Ohio. Both turbines can contribute up to 10% of the plant's total electricity usage. Anheuser-Busch installed a 1.5 MW WT and 1.2 MW solar photovoltaics (PV) arrays nearby the factory in Fairfield, CA, providing 24% of green electricity to the brewery facility. Apple built the nation's largest onsite generation system, consisting of 40 MW PV arrays and 10 MW biogas fuel cell systems, to power its data center in Maiden, NC. These firms along with others see integration of onsite renewable energy as a competitive edge by offering green quality products to their customers. In addition to the environmental benefits, integrating renewable energy in industrial and public facilities could be seen as part of the smart grid

initiatives, accelerating the adoption of distributed generation systems.

However, there is a lack of methodological studies on operating large manufacturing facilities with intermittent power. This study presents data-driven optimization models and algorithms for production planning of a manufacturing system with onsite and grid renewable energy. Our goal is to analyze the cost benefits under different levels of green energy penetration levels. Other techniques to deal with the intermittency issues, including demand response, islanding operations and energy storage systems, will be also discussed for green manufacturing.

Session speakers

Speaker 1: Jianling Jiao, Hefei University of Technology

Email: jianljiao@126.com

Title: Ethanol as vehicle fuel in China: A review

Abstract: China's rapid and robust economic development has brought a serious energy and environmental crisis. Along with the quick improvement of urbanization level, low per capita car ownership and a large population base will bring tremendous growth potential in China's motor vehicle market, this will gradually increase the pressure of energy and environment on China. As an alternative vehicle fuel, ethanol can reduce dependence on oil import, mitigate greenhouse gas emission and environmental pollution, it has made great progress in China. In this paper, the ethanol fuel for vehicles is reviewed from triple-perspective (Raw material resource -Vehicle-Infrastructure). The review indicates that (1) Constrained by technology and cost, China should focus on the development of 1.5 generation bioethanol currently. (2) Antiknock and oxygenated additive are important properties of ethanol, on this point government should strengthen public awareness. (3) Flexible fuel vehicles can be used for any proportion of ethanol gasoline, China can pilot a higher proportion of ethanol gasoline in full regions. (4) Establishing strategic bioethanol land plan of infrastructure deployment. Government should rationally plan the usage of marginal land and wasteland for the good development of non-grain ethanol. (5) In order to promote the development of bioethanol industry, prolonging and integrating the biofuel industrial chain is necessary.

Speaker 2: Xiaoyun Xu, Peking University

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Title: Maximizing the Long-run Average Expected Profit of a Periodic-Review Assemble-to-Order System

Abstract: This study considers an assemble-to-order system with periodic-reviews and a general bill of materials. The objective is to maximize the long-run average expected profit through policies including product price and component replenishment and allocation. An upper bound on the objective for all feasible policies is established through a two-stage stochastic program (SP) which inspires the construction of a myopic policy. Particularly, the first-stage SP solution specifies the

price and replenishment decisions, while the allocation decision resembles the second-stage SP recourse solution. A lower bound on the optimal policy is also provided. Numerical experiment results demonstrate that both the upper bound and the proposed policy are effective. This study brings new perspectives to supply chain management of assemble-to-order systems and suggests ways to improve profitability.

Speaker 3: Zhanglin Peng, Hefei University of Technology

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Title: Identifying and determining customer service strategies for new product development on crowdsourcing platform: an empirical study on ZBJ

Abstract: Since crowdsourcing has been generated as a new open innovation model, more and more organizations have posted the particular tasks of new product development on crowdsourcing platforms, such as IdeaStorm.com, Tasckn.com and ZBJ.com. These organizations expect that innovative ideas and intelligence will be collected from the exclusive domain of marketers, engineers, designers and users to solve the product development tasks on crowdsourcing website. Identifying and classifying the quality attributes are both very crucial to increase customer satisfaction by improving service strategies of crowdsourcing platforms, and then play an important role on determining which service strategies should be reserved or promoted for crowdsourcing platform. In our study, we present a decision support framework to identify and determine customer service strategies for new product development on crowdsourcing platform using Fuzzy Kano model and IPA method. To further explain and validate the proposed model, we conduct an empirical study on ZBJ, the second largest Chinese crowdsourcing site.

Speaker 4: Defeng Sun, Northeastern University

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Title: A Benders Decomposition-based Framework for Solving Quay Crane Scheduling Problems

Abstract: In this paper, we study the Quay Crane Scheduling Problem (QCSP) in container terminals. We describe a new mathematical formulation; by addressing the structure of workload assignments we were able to further develop an easier way to handle non-crossing constraint in QCSP. The proposed mathematical formulation is used in an exact solution framework, similar to a Benders decomposition framework, to optimally solve large-scale QCSPs. The proposed approach decomposes the primal problem into a workload-assignment master problem and operation-sequence slave sub-problems. Logic-based cuts are proposed to ensure the convergence of the approach. Computational results show the effectiveness of the proposed solution approach.

Speaker 5: Yao Liu, Hefei University of Technology

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Title: A Potential Customer Identification Method Based on User-Generated Content

Abstract: In recent years, the social media platforms such as online forums, the micro-blog facilitate people to communicate with each other, and then create massive user-generated content which implies user's purchase intention to a certain extent and provides an alternative channel for enterprises to obtain their potential customers. However, the massive and unstructured user-generated content and the sparse distribution of potential customers make it difficult to analyze and identify potential customers from social media. Focusing on this problem, in this paper we first analyze and extract the features set of potential customers from user-generated content; and then, we develop the Stacking classification algorithm specifically for imbalanced datasets, and constructed the identification model of potential customer. The experiment results indicate that the proposed method can effectively address the imbalance problem of datasets, significantly improve the classification performance, and thus accurately identify the potential customers from the social media.

Speaker 6: Xianzi Yang, Hefei University of Technology

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Title: China's carbon price forecasting based on heterogeneous tail-distribution description

Abstract: Carbon emission rights, as a product of carbon emission trading market, has become the key area of the world sustainable development. Carbon emission trading markets mainly focus on human economic and social development and environmental and ecological protection. As a financial innovation to achieve the target of carbon emissions reduction, China's regional carbon markets has been developing since 2013. Carbon emission trading pricing is the core problem of constructing carbon financial market. The scientific nature and rationality of carbon asset pricing directly determine the effectiveness of market regulation. The particularity of the carbon market determines the complexity of the carbon financial asset price mechanism, making the return of carbon price skewness, fat tail and other characteristics. Existing study have only considered the influence factors and fat-tail in carbon pricing, but ignored the asymmetric effect. In this way, research on the influence factors and heterogeneous tail distribution of the carbon price is particularly important. We apply the APT-ssAEPD model to analysis China's regional carbon emission trading price character, and use genetic algorithm innovatively to solve linear programming. We analysis the characteristics of carbon price, especially the heterogeneous tail-distribution, and then use APT-ssAEPD to predict carbon price. Empirical results show that: (1) APT-ssAEPD can capture the skewness, fat-tailed, asymmetric effects of China's regional carbon emission trading price, and APT-ssAEPD has better out-sample fit. (2) Genetic algorithm can get the global optimum to some extent. (3) Carbon price can be influenced by economic development and other carbon price in same or different areas of China. Research on the carbon price forecasting will promote the effectiveness of China's carbon market, thereby enhancing emission reduction, to achieve the sustainable development of low-carbon environment.

Session IV: Service-oriented Manufacturing and Supply Chain Management

Invited talk

Speaker: Zhibin Jiang, Shanghai Jiao Tong University

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Title: Optimal Control Strategy for Production and Service Hybrid System of Service-oriented Manufacturing Systems under Background of Big Data

Abstract: Service-oriented manufacturing (SOM) is a new business model of manufacturing combined with service and the important aspect of the initiatives Made in China 2025, aiming at enhancing manufacturing through service and promoting service industry by manufacturing. Due to introduction of service into manufacturing, traditional production methodologies based inventory management cannot be well suitable any longer, and thus new theories on operational management should be developed. This speech first introduce basic concepts and features and then presents the scientific problems and research framework of operational management of SOM under Background of Big Data.

Session speakers

Speaker 1: Chao Fu, Hefei University of Technology

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Title: Sustainable supplier selection of high-end equipment manufacturing with the consideration of attribute reliability and risk attitude

Abstract: As an important part of carrying out “Made in China 2025” strategy, high-end equipment manufacturing has attracted much attention from theoretical and practical perspectives. Under the conditions, with the aim to promote the sustainable development of high-end equipment manufacturing by taking social, economic, and environmental factors into account comprehensively, sustainable supplier selection (SS) has become an important issue. The relevant characteristics of high-end equipment manufacturing make the issue more difficult to solve. Firstly, due to the complexity of high-end equipment and the limited recognition capabilities of designers and producers, sustainable SS is within uncertain environment. Secondly, assessments for suppliers on different criteria (attributes) generally may not be guaranteed to be fully reliable. Thirdly, how to handle uncertainty in the evaluation of suppliers depends on the risk attitude of a decision maker.

To address the sustainable SS issue with the consideration of the above three perspectives, we develop a new evidential reasoning (ER) approach, which is a multiple attribute utility function method for multiple attribute decision analysis (MADA). Uncertainty in assessment is represented by the global ignorance in the proposed approach. Reliability of the individual assessment on an attribute is regarded as attribute reliability, which is combined with attribute weight to give a complete picture about what roles the attribute plays in MADA. The risk attitude of a decision maker is associated with attribute reliability in the proposed approach to strengthen the influence of

the best (or nearly best) assessments or the worst (or nearly worst) assessments on the overall assessment of each supplier and further the decisions made.

Finally, a sustainable SS issue for high-speed train manufacturing is analyzed by the proposed approach to demonstrate the process of selecting sustainable suppliers for high-end equipment manufacturing.

Speaker 2: Jianfeng Lu, Tongji University

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Title: A simulation method to evaluate cloud manufacturing service composition

Abstract: Evaluation of service composition is a key issue for the implementation of cloud manufacturing services, a simulation method is introduced to evaluate cloud manufacturing service composition in this paper. Firstly, the research status of cloud manufacturing and cloud service evaluation are analyzed. Then, the mapping relationship between upper cloud service model and the underlying manufacturing system simulation model is discussed. After that, Quality of Services (QoS) and enterprise operation indicators are compared based on the viewpoint of simulation. By injecting simulation model information into OWL-S norm, the description method of cloud manufacturing services is extended, and can expediently build a simulation model according to the service composition. After the simulation, different indicators are provided to service providers and service customers respectively for their own decision-making. Lastly, an implementation case is given to verify the feasibility of the method.

Speaker 3: Ju Zhao, Hefei University of Technology

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Title: Research on decision model of green supply chain with government supervision

Abstract: Consider a green supply chain system consisting of a manufacturer and a retailer, we first investigates the impact government have when they set a threshold value of green degree. Comparative analysis is conducted to determine the optimal wholesale price and threshold value of green degree which can be sustained by the manufacturer within four different structures, i.e. vertical integration, manufacturer-Stackelberg, retailer-Stackelberg and Nash equilibrium. A numerical example is used to illustrate the related issues. It shows that the threshold value of green degree which can be sustained by the manufacturer is the highest on centralized decision, and is the lowest on manufacturer-Stackelberg with a lower wholesale price. In other cases, the threshold value of green degree which can be sustained by the manufacturer is related to the optiaml wholesale price.

Speaker 4: Shiyao Xiao, National University of Defense Technology

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Title: Online Product Comments as a Corpus for Opinion Mining and Requirement Acquirement

Abstract: Shopping online today has become a very popular approach to purchase among Internet users. Millions of users share opinions on different aspects of product they purchase. Thus, online product comments are rich sources of data for opinion mining and requirement acquirement. In this paper, we propose a new approach, which is based on Latent Dirichlet allocation (LDA) topic model, to analyze product comments and dig customers' requirements. Experimental evaluations show that compared with LDA topic model, our proposed approach has improved the interpretability of the latent topics. This makes the result of latent topics are more semantically meaningful and can be understood easier and more accurately by researchers. In our research, we worked with Chinese comments, however, the proposed approach can be used with any other language as well.

Speaker 5: Haifeng Ling, Hefei University of Technology

Email: hfling@126.com

Title: Competitor Analysis from User Favorites

Abstract: This paper is concerned with the problem of mining competitors and measuring competitiveness degree from user favorites, which reflects consumers' top-of-mind purchase association among some products. In this paper, we propose a novel nonparametric topic model for mining competitors and a random walk on bipartite graph algorithm for measuring competitiveness degree. For a market of interest (e.g. auto market), we aim at automatically spotting the latent groups that are competitively shared by multiple brands (e.g. BMW, Audi and Benz), multiple products(e.g.BMW_3, Audi_A4L, Benz_C), and ranking competitors of a given product based on our detected groups. Through experiment involving 832,897 users,93 unique brands and 3,423 unique products, we find that our methods are helpful for analyzing competitive market structure and competitive asymmetry existed among products from consumers' perceptions. For evaluating the performance, we construct automobiles' sales forecasting model. The experimental results show that the proposed approach for ranking competitive products is benefit to forecast future market sales.

Speaker 6: Xiaoxi Zhu, Hefei University of Technology

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Title: Promoting remanufactured product consumption—the effect of implementing government subsidy on CLSC with trade-ins

Abstract: This research is inspired by a government program intended to promote remanufacturing consumption through trade-ins. To investigate the effect of government subsidy, we established profit maximizing models according to the self-selection of consumers with different types (primary and replacement consumers) for new and remanufactured products. It has been found that the government subsidy program will do damage to the consumption of remanufactured products on the primary market although it has been proved to be effective in promoting remanufacturing

consumption on the replacement segment. Results show that whether the manufacturer's profit is positively influenced by the program depends on the production cost of remanufactured products, and the manufacturer's profit will always increase with government subsidy when the remanufacturing cost is low enough. Besides, when the price of the remanufactured product is not high, the market size of primary consumers plays a positive role in promoting the consumption of remanufactured products through trade-ins. Results also suggest that, to make more profit on the selling side, the manufacturer does not always benefit directly from used product collection. We also investigate how the manufacturer makes his strategic selection on pricing strategy with key parameters.

Session V: Network Model and Optimization

Invited talk

Speaker: Minglun Ren, Hefei University of Technology

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Title: Service Composition Model Based on Improved GSA Algorithm: A Social Network Relationship Analysis Approach

Abstract: Internet of Services is an umbrella term used to describe several interacting phenomena that are shaping the future of how services are provided using the Internet. Services are characterized by intelligence, socialization, and personalization. They inter-relate, interact and cooperate with each other to realize certain goals. Social relationship plays an important role when services collaborate with each other, a role which has not been adequately investigated in previous research. The existing service composition methods consider functional qualifications and Quality of Service (QoS) as major consideration in service selection. It is difficult to adopt them to situations where interactive collaboration is required and social relationships between service providers play an important role in ensuring effective resources, information and knowledge hand-off in the process. In this paper, a service composition method based on weighted synergy network is proposed. Based on service interaction data, we construct the service social network which represent five kinds of relationships, namely Interactive transaction, Co-community, Physical distance, Resource-related and Social similarity. Based on these relationships the service synergy is derived. A service selection model that maximizes the overall synergy effect based on collaboration requirement is presented. An improved GSA algorithm that uses two-way learning, population update and group interaction based speed update mechanism is developed to solve the model. The model and improved GSA algorithm performs better and is validated through simulation experiment of intelligent automobile cloud manufacturing. The optimal service scheme (composition) in line with the actual manufacturing operation situation is obtained.

Session speakers

Speaker 1: Bingfeng Ge, National University of Defense Technology

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Title: High-end Equipment Portfolio Selection based on Heterogeneous Task Network Model

Abstract: The selection and development of high-end equipment is a strategic issue for nation. High-end Equipment Portfolio Selection (HEPS) is directly and tightly correlated with national technology and industrial manufacturing development. This paper presents a portfolio selection model of the high-end equipment based on the heterogeneous task network. Firstly, we describe the portfolio selection problem of high-end equipment based on the heterogeneous task network, introducing the concept of meta-task loop. Then, the task network of the high-end equipment systems is modelled, and a new measure called Execution Capability Evaluation Index (ECEI) is put forward to evaluate the task execution capability of a portfolio of high-end equipment systems. Next, a portfolio selection model based on task network is established to maximize the cost-ECEI efficiency of the high-end equipment, with capability demand and the budget restriction as constraints. Finally, we take the missile defense system as a case to demonstrate the proposed method, and results show that our method can achieve a very good performance to solve high-end equipment portfolio selection problem.

Speaker 2: Ying Yang, Hefei University of Technology

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Title: Risk analysis for new product development project portfolios using a Bayesian network model

Abstract: Organizations tend to implement several new product development projects concurrently to maintain flexibility and efficiency. In a multiple-project environment, projects are interdependent and constitute a portfolio linked with the strategic goals of organizations. Due to the interdependencies among projects, new risks emerge additionally to single project risks. It is no longer sufficient to manage solely the risks of single projects in a NPD portfolio environment. Prior research suggests Bayesian causal networks (BNs) for single project risk analysis. However, few researchers have successfully described the complexity of risk structures in predicting possible project portfolio success. In the context of NPD portfolios, some complex causal relationships among risk factors cannot be identified only by experts. And the structure of BNs learned from data is based on association and do not differentiate between a causal and a spurious relationship. Moreover, the performance of BN structure learning is still to be improved.

Therefore, this research proposes a risk analysis method specifically for project portfolios using a improved Bayesian network (BN) model. The study aims to develop a Bayesian network model by integrating expert knowledge with observational data for NPD risk analysis from a portfolio perspective. Firstly, the risk factors in NPD portfolio management are identified from the organizational perspective, including top management involvement, project manager's competency, portfolio management formalization and project termination. The factors' corresponding

measurement indicators are designed and confirmed by sample data. Then, a BN model for NPD risk analysis is developed. The initial BN structure is developed based on the measurement indicators and then is optimized by the partial least squares algorithm. Lastly, the BN model is evaluated by conducting a comparative analysis with other advanced methods. Sample data was collected from 169 Chinese companies. Experimental results show that the proposed risk analysis method has high prediction accuracy.

Speaker 3: Penghui Lyu, Hefei University of Technology

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Title: Global Modern Manufacturing Innovation Trends Analysis Based on Patents Networks

Abstract: Big data era provides a great new development opportunity for modern manufacturing industry. Based on the patents citations and keywords networks, the patent literatures were organized as a patent network in this paper. The networks evolution and the growth dynamics are carefully studied, only after the patents knowledge networks formed based on the world patent database, Derwent Innovation Index. Through the evolution of patents networks, the global innovation trends of modern manufacturing were totally explored. From the visualization perspective of the patents data, the innovation and developing trends are then discussed, and the trends of modern manufacturing technologies innovation are also provided, for the purpose of formulating the future industrial policy to scientific community as well as national decision makers of China.

Speaker 4: Gaowei Xu, Tongji University

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Title: An Industrial IoT Framework Based on Blockchain

Abstract: To deal with the existing problems in the process of IIoT implementation and IIoT ecology building (i.e., the reliability and security of devices, and islands of connectivity), an industrial IoT framework based on Blockchain is presented in this paper. The proposed Blockchain Platform for Industrial Internet of Things (BPIIoT) allows integrating shop floor equipments in physical space into the cloud environment, and enables developing decentralized and peer-to-peer manufacturing applications. The basis of BPIIoT is a Blockchain network with smart contracts deployed, where smart contracts act as agreements between the service consumers and the manufacturing resources, providing on-demand manufacturing services. The architecture of BPIIoT is designed to be composed of the on-chain network and the off-chain network so as to reduce the load and latency of network. To be specific, the on-chain network solves all transactions, including access control-based digital signature, programing permissions; the off-chain network addresses the issues that Blockchain technology alone cannot handle, such as storage, complex data processing. Furthermore, the secure multi-party computation method is used in off-chain network to avoid a third-party involvement; data inquiry and computing is performed distributed, and data are stored distributed on different nodes that work together in computation without leaking the raw data.

Compared with Blockchain, BPIIoT is a decentralized platform that has better privacy and scalability.

Speaker 5: Siwen Liu, Hefei University of Technology

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Title: Effects of resource occupation and decentralization degree on performance of the IoT-based virtual enterprise

Abstract: Millions of enterprises in China are involved in collaborative but dynamic virtual enterprises (VEs) supported by emerging information technologies, such as the internet of things (IoT). Drawing upon resource-based view (RBV), this paper investigates the impact of peripheral enterprises' resource occupation on performance of the IoT-based VEs and how such effects are moderated by decentralization degree. We collect data through 141 manufacturing and service firms in China. The results suggest different effects of firm resources and capabilities (i.e., basic, information and operational resources) on business and market performances. While basic resources are not related to firm performance, information and operational resources are positively associated with both dimensions of firm performance. Besides, these relationships are differently moderated by decentralization degree of strategic and operational decision-making authorities. Strategic decision-making authority allocated to enterprises with superior information resource or operational resource enhances both dimensions of firm performance, whereas the decentralization of operational decision-making authority facilitates the positive effects of operational resource on the overall performance. We conclude with implications and suggestions for further research.

Speaker 6: Yu Cao, Liaoning Shihua University

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Title: The modeling and analyzing the propagation in complex networks with variable structures

Abstract: The phenomenon of propagating on complex networks can be seen everywhere in our life such as virus transmission through internet, urban transportation, risk communication on financial network and so on. It is of great significant to model and analyze the propagating dynamic behavior of complex networks that we want to describe, predict and control. In this paper, we have obtained an improved model based on Compartment Model, considering the variable structure and variable size caused by propagating. Then we have carried out the proving of stability using the principle of Lyapunov stability. Furthermore, we have received the propagation threshold which can determine the final state of the propagation additionally. Finally, we had an exploratory discussion about the influence of variable structure on transmission procedure.

Speaker 7: Maoxin Han, Hefei University of Technology

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Title: The Selection Method of Social Network Advertising Spokespersons Using DEA Model

Abstract: The development of social networks derives a new advertisement mode that enterprises select influential users as advertising spokespersons who help enterprises to disseminate the advertisement information. The key step of this new advertisement mode is how to select the suitable advertising spokespersons. In order to solve this problem, we consider the social network advertisement performance as the selection standard. Based on the features of social networks environment, the data envelopment analysis model (DEA) is developed to accurately measure the social network advertisement performance. An empirical analysis was then conducted using the data from 'AutoHome' websites. The results demonstrated that the proposed model is superior. This study also analyzes the results from the three perspectives such as preference structure, selection method and dynamic trend. The corresponding advertisement marketing suggestions will be given.

Speaker 8: Xiaozheng Li, Hefei University of Technology

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Title: Positioning logistics service order decoupling point based on fuzzy set theory under the mass customization mode

Abstract: With the intensifying competition in the logistics service industry, more and more logistics companies begin to implement the mass customization (MC) service model to improve their competitive advantage. An important issue in MC environment is the localization of customer order decoupling point (CODP), based on the previous researches, this paper established a new fuzzy programming model to localize CODP in logistic service supply chain. With the application of simplified fuzzy QFD method and the new function of service quality we constructed, this paper quantified the quality of logistics service when LSI selected different CODP. Then we established two fuzzy sets of premium services and satisfactory delivery time and put them as constraints into the model. The objective of the model is to find a suitable location of CODP that LSI could maximizes the profit and meet customer needs as much as possible at the same time. The methods solving the model were introduced respectively under the condition that the objective function and the constraint condition are equally important or not. In addition, the influence of some important parameters on the optimal CODP position was studied by sensitivity analysis on a specific numerical case.

Session VI: Big Data in Smart Manufacturing

Invited talk

Speaker: Xin Lu, National University of Defense Technology

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Title: Quantifying Traceability in Supply Chain Networks

Abstract: While recent work has focused on understanding the role of network structure on propagation dynamics, its impact on traceability, or the ability to identify the propagation source,

has received less attention. We propose a novel quantity, network traceability entropy (NTE), to measure the intrinsic ability of a network structure to support traceability. Using food supply chain networks and varying a range of topological properties, we demonstrate how NTE can be used to systematically compare the traceability of various network configurations and yield insights into the influential role of specific parameters. Results from stylized networks as well as data on the Chinese pork supply chain demonstrate that NTE effectively measures the accuracy of source identification in scenarios of outbreaks. The proposed measure opens possibilities to quantify the traceability of any network involving a diffusion process and is useful in network design or optimization applications where traceability is desirable.

Session speakers

Speaker 1: Qiang Zhang, Hefei University of Technology

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Title: Intelligent Discovery of Notable Product Features by Mining Large Scale Online Reviews

Abstract: The large, publicly accessible online product reviews have become a significant information resource for enterprise to discover preferences of the public and market trend. In this paper, we propose the text mining driven information gain model for identifying notable product features to enable enterprise understand what product features determine the customers' satisfaction about the given products. This paper collects a large scale online product reviews about the automobile to empirically evaluate the effectiveness of the proposed mathematical model.

Speaker 2: Lijie Wen, Tsinghua University

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Title: Detecting Process Concept Drifts from Event Logs

Abstract: Traditional process or service discovery algorithms assume the underlying processes to be in a steady state. However, process models tend to be dynamic due to various factors, which has brought challenges such as change point detection, change localization and change process discovery. Existing techniques to identify change points are sensitive to parameters and the accuracy is not satisfactory. This paper proposes a novel approach to deal with such concept drift phenomenon. Event logs can be characterized by the relationships between activities, which motivates us to transform a log into a relation matrix. By detecting the always and never windows in each row of the relation matrix, we obtain candidate change points for each relation. Finally, all the candidate change points are combined into a final result. The approach is also able to localize the changes between different phases. Experiments on synthetic logs show that our approach is accurate and performs significantly better than the state of the art.

Speaker 3: Hao Wang, Hefei University of Technology

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Title: Smart connected electronic gastroscope

Abstract: Gastric cancer is a kind of cancer with high incidence, particularly high mortality of disease in Asia. Early gastroscopy is the most important means to prolong survival time of patients, even achieve complete therapeutic effect, gastroscopy is the main way to detect early gastric cancer. Currently, the biggest challenge is that the lesions are always hard to be checked and diagnosed in time by doctors, while inexperienced doctors are more prone to miss-diagnose or misdiagnose. In this paper, we propose the SCEG system, an intelligent diagnosis and treatment service system that combines artificial intelligence and traditional electronic gastroscope. SCEG system collects and acquires the images of the stomach based on the hospital's existing electronic gastroscope. It can realize intelligent analysis of the acquired stomach images after pretreatment and then return the analysis results. Specially, the SCEG system analysis tools are placed in the clouds. It uses several convolution neural networks as analysis tools to classify the collected images. When finally judging the existence of the lesion feature, the integrated learning method is used to integrate the knowledge learned by each learning machine to get the final picture classification results. The experimental results show that using convolution neural network can classify the endoscopic images with low precision. The integrated learning method can effectively improve the accuracy of the total classifier, and it can assist the doctor to perform endoscopy when combined with the gastroscopic apparatus.

Speaker 4: Jin Cheng, Tongji University

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Title: Machine learning based method for knowledge discovery and dynamic quality prediction in manufacturing

Abstract: Product quality is a vital issue concerned by manufacturers. However, it is hard to be effectively controlled by mechanical automation as several factors with complex and dynamic changed have negative in influences on quality in manufacturing, specially to process industry. Adaptive strategies, such as changing production planning or facilities maintenance, are essential for quality control. Therefore, a novel machine learning based knowledge discovery and dynamic quality prediction is proposed to recognize manufacture problem and predict quality in real time in this paper. The relationship between quality and processes is analyzed based on manufacture data applied in a more complex production environment. Akaike’s Information Criterion is modeled as evaluation function to select process features based on condition where logistic regression is as the good-of-fit term. Then, dynamic quality prediction model is constructed by ensemble learning with time-varying built on features selected. The results show that the method can effectively identify the factors affecting quality in manufacturing and is more accurate in prediction than traditional.

Speaker 5: Zijie Yue, Hefei University of Technology

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Title: An intelligent clinical decision support system for cervical cancer screening

Abstract: In modern society, cervical cancer has become one of malignant tumors harm to women health for its high incidence and mortality. More than 40% of cancer patients suffer from the worsening condition or die for high omission diagnostic rate, and the situation is similar to cervical cancer. In recent years, researchers have spared no effort to seek effective solutions to reduce omission diagnostic rate. However, without lesion segmentation and feature extraction, the existing methods can only identify the benign and malignant of the cancer and fail to supply a more intuitive diagnostic basis to doctors. Therefore, this paper presents an intelligent clinical decision support system to assist cervical cancer screening and reduce the omission diagnostic rate. The system consists of three modules. Firstly, the disease preliminary screening module classifies the positive and negative hysteroscopic images by convolution neural network. Secondly, in the lesion extraction module, we apply YOLO model to find the lesion of positive sample and the characteristics of lesion. Thirdly, with the Naive Bayesian method, the disease diagnosis module diagonses cervical cancer precisely according to the characteristics of lesion. The experimental results show that our system meets the requirements of sensitivity, specificity, omission diagnostic rate and mistake diagnostic rate in clinical diagnosis. In other words, our system can effectively fill the vacancies of medical image analysis and intelligent processing in cervical cancer screening.

Speaker 6: Yuren Wang, National University of Defense Technology

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Title: Impact of product attributes on customer satisfaction: An Analysis of Washing Machine Online Reviews

Abstract: In order to make customers satisfied with the products designed, it is necessary for manufacturers to consider what attributes or functions affect customer satisfaction. We conduct a study of online reviews to measure how the product attributes impact customer satisfaction for washing machines. First, we infer whether a customer is satisfied with the product according to his review through sentiment analysis. Second, a logistic regression model is developed to estimate the impact. Our estimates indicate that the customer satisfaction is influenced by the drain type, opening method, frequency conversion, category, display screen, color and capacity of washing machine. We further investigate the reviews related to some specific attributes. Our results demonstrate that the price also has a significant impact on the satisfaction and customers who buy cheap and expensive products should be treated differently because the impacts are different. Moreover, we observe that although customers concern about noise, their feelings are not always consonant with the machine's noise value provided by retailers.

Speaker 7: Qian Zheng, Hefei University of Technology

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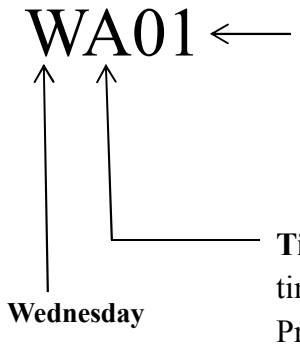
Title: Assessing the Determinants of Cloud Computing Adoption in Agriculture Sector: A Multiple Theory Perspective

Abstract: With the development of cloud computing, it is important to promote cloud computing adoption in agriculture sector to improve its production efficiency. This research extends the studies on determinants of organizational cloud computing adoption behaviors in the context of agriculture sector, and further considers the interactive relationships between these impact factors comprehensively. Based on multiple theories and a survey of 581 Chinese agricultural organizations, we find that technology, organization, and environment (TOE framework) are the main aspects which positively and significantly influence the adoption behavior of agricultural organizations. We also find the dynamic capability can positively influence its perceived technical experience, and government policy also can affect the organizational resources and its top management's support for cloud computing adoption.

主旨演讲与分会场报告详细时间表



Cluster/Room locations. Room locations and cluster are also indicated in the listing for each session /keynote speech

Time Block. Matches the time blocks shown in the Program Schedule

Time Blocks

A-8:30-9:30 am

B-9:50-10:40 am

C-10:40-11:30 am

D-14:00-17:20 pm

Cluster/Room Locations

Codes	Cluster	Keynote Speech /Session	Location
01	Keynote Speech I	WA01	C Area Meeting Hall in Gui Yuan
02	Keynote Speech II	WB01	C Area Meeting Hall in Gui Yuan
03	Keynote Speech III	WC01	C Area Meeting Hall in Gui Yuan
04	Topic Session I	WD02	Conference Room 1 in Gui Yuan
05	Topic Session II	WD03	Conference Room 2 in Gui Yuan
06	Topic Session III	WD04	Chaohu Conference Room in Hui Yuan
07	Keynote Speech IV	TA01	C Area Meeting Hall in Gui Yuan
08	Keynote Speech V	TB01	C Area Meeting Hall in Gui Yuan
09	Keynote Speech VI	TC01	C Area Meeting Hall in Gui Yuan
10	Topic Session IV	TD02	Conference Room 1 in Gui Yuan
11	Topic Session V	TD03	Conference Room 2 in Gui Yuan
12	Topic Session VI	TD04	Chaohu Ting in Hui Yuan

<table>
<tr><th colspan="3">Keynote Speech I (WA01)</th></tr>
<tr><td>8:40-9:30 am,
July 26th, 2017

C Area Meeting Hall in Gui Yuan</td><td colspan="2">Title：Project scheduling methods for product manufacturing process and its application
Speaker：Nicholas G Hall, The Ohio State University
Host：Panos M. Pardalos, University of Florida</td></tr>
<tr><th colspan="3">Keynote Speech II (WB01)</th></tr>
<tr><td>9:50-10:40am,
July 26th, 2017

C Area Meeting Hall in Gui Yuan</td><td colspan="2">Title：Marketplace, Reseller, or Hybrid: A Strategic Analysis
Speaker：Asoo J. Vakharia, University of Florida
Host：Panos M. Pardalos, University of Florida</td></tr>
<tr><th colspan="3">Keynote Speech III (WC01)</th></tr>
<tr><td>10:40-11:30am,
July 26th, 2017

C Area Meeting Hall in Gui Yuan</td><td colspan="2">Title： Manufacturing Execution Optimization
Speaker：Leyuan Shi, Peking University
Host：Panos M. Pardalos, University of Florida</td></tr>
<tr><th colspan="3">Topic Session I (WD02)</th></tr>
<tr><td rowspan="9">14:00-17:20pm,
July 26th, 2017

Conference Room 1 in Gui Yuan</td><td colspan="2">Topic：Intelligent Algorithms</td></tr>
<tr><td colspan="2">Session chair：Nenad Mladenovic, Serbian Academy of Sciences and Arts</td></tr>
<tr><td>14:00-14:30pm</td><td>Invited talk：Efficient and robust optimization methods for railway infrastructure logistics and maintenance
Nenad Mladenovic</td></tr>
<tr><td rowspan="3">14:30-15:45pm</td><td>1. Disruption Management for Customer Time Window Changes in the Last Mile Delivery of E-commerce
Li Jiang, Junfeng Dong, Changyong Liang, Wenxing Lu</td></tr>
<tr><td>2. Optimization of High-end Equipment Development Task Process Influenced by Multiple Uncertainty Factors
Xilin Zhang, Yuejin Tan, Zhiwei Yang</td></tr>
<tr><td>3. A novel heuristic algorithm for surgical case scheduling under an open scheduling strategy
Shuwan Zhu</td></tr>
<tr><td colspan="2">Coffee Break (20 min)</td></tr>
<tr><td rowspan="2">16:05-17:20pm</td><td>4. Study on construction material allocation policies: a simulation optimization method
Hui Lu</td></tr>
<tr><td>5. A hybrid ABC-TS algorithm for unrelated parallel machines scheduling with deteriorating maintenance activity, parallel-batching processing, and deteriorating jobs
Shaojun Lu</td></tr>
</table>

		6. A hybrid CS-DE algorithm to solve parallel-batching scheduling problems with truncated time-dependent learning effect *Siwen Liu*
Topic Session II (WD03)		
14:00-17:20pm, July 26th, 2017 Conference Room 2 in Gui Yuan	**Topic：** Optimization Models and Techniques	
	Session chair： Sergiy Butenko, Texas A & M University	
	14:00-14:30pm	**Invited talk：** Network-based Optimization Techniques for Wind Farm Location Decisions *Sergiy Butenko*
	14:30-15:45pm	1. The Convergence Analysis of an Efficient Multi-fidelity Optimization Method *Jie Song*
		2. Minimizing service span with batch-position-based learning effects *Bayi Cheng, Bohai Liu, Minglun Ren, Huijun Zhu*
		3. A Game Theoretic Model for Resource Allocation with Deception and Defense Efforts *Xiaoxiong Zhang, Keith W. Hipel, Bingfeng Ge, Yuejin Tan*
	Coffee Break (20 min)	
	16:05-17:10pm	4. An event-based optimization approach for solving probabilistic constrained problem in DEDS——with application of order control decision in manufacturing system *Xiaonong Lu*
		5. An Exact Algorithm for Batch Picking Problem in the Warehouse of Perishable Food with Blocking Consideration *Xu Cheng, Yu Cao, Panos M. Pardalos*
		6. A case study on the adoption intention towards Artificial Intelligence-based medical aided diagnosis systems *Jingnan Liu*
Topic Session III (WD04)		
14:00-17:20pm, July 26th, 2017 Chaohu Ting in Hui Yuan	**Topic：** Green Manufacturing and Operations Management	
	Session chair： Hongwei Wang, Huazhong University of Science and Technology	
	14:00-14:30pm	**Invited talk：** Intermittency Issues of Renewable Energy for Green Manufacturing *Neng Fan*
	14:30-15:45pm	1. Ethanol as vehicle fuel in China: A review *Jianling Jiao, Jingjing Li, Yu Bai*
		2. Maximizing the Long-run Average Expected Profit of a Periodic-Review Assemble-to-Order System *Xiaoyun Xu*
		3. Identifying and determining customer service strategies for new product development on crowdsourcing platform: an empirical study on

		ZBJ *Zhanglin Peng, Xu Zhang, Qiang Zhang, Jun Pei, Xiaonong Lu, Shanlin Yang*
	Coffee Break (20 min)	
	16:05-17:20pm	4. A Benders Decomposition-based Framework for Solving Quay Crane Scheduling Problems *Defeng Sun*
		5. A Potential Customer Identification Method Based on User-Generated Content *Cuiqing Jiang, Kailun Song, Yao Liu, Yong Ding*
		6. China's carbon price forecasting based on heterogeneous tail-distribution description *Xianzi Yang, Chen Zhang*
Keynote Speech IV (TA01)		
8:30-9:20 am, July 27th, 2017 C Area Meeting Hall in Gui Yuan	**Title：** Smart /Green Manufacturing: Data Enabled Decision Making and Optimization Applications **Speaker：** Panos M. Pardalos, University of Florida **Host：** Yezheng Liu, Hefei University of Technology	
Keynote Speech V (TB01)		
9:50-10:40am, July 27th, 2017 C Area Meeting Hall in Gui Yuan	**Title：** Manufacturing Process Optimization and Life-Cycle Quality Management in the environment of Internet of Things **Speaker：** Xinbao Liu, Hefei University of Technology **Host：** Yezheng Liu, Hefei University of Technology	
Keynote Speech VI (TC01)		
10:40-11:30am, July 27th, 2017 C Area Meeting Hall in Gui Yuan	**Title：** Industrial-Big-Data-Driven Adaptive Scheduling of Smart Manufacturing **Speaker：** Fei Qiao, Tongji University **Host：** Yezheng Liu, Hefei University of Technology	
Topic Session IV (TD02)		
14:00-17:20pm, July 27th, 2017 Conference Room 1 in Gui Yuan	**Topic：** Service-oriented Manufacturing and Supply Chain Management	
	Session chair： Zhibin Jiang, Shanghai Jiao Tong University	
	14:00-14:30pm	**Invited talk：** Optimal Control Strategy for Production and Service Hybrid System of Service-oriented Manufacturing Systems under Background of Big Data *Zhibin Jiang*
	14:30-15:45pm	1. Sustainable supplier selection of high-end equipment manufacturing with the consideration of attribute reliability and risk attitude *Chao Fu*

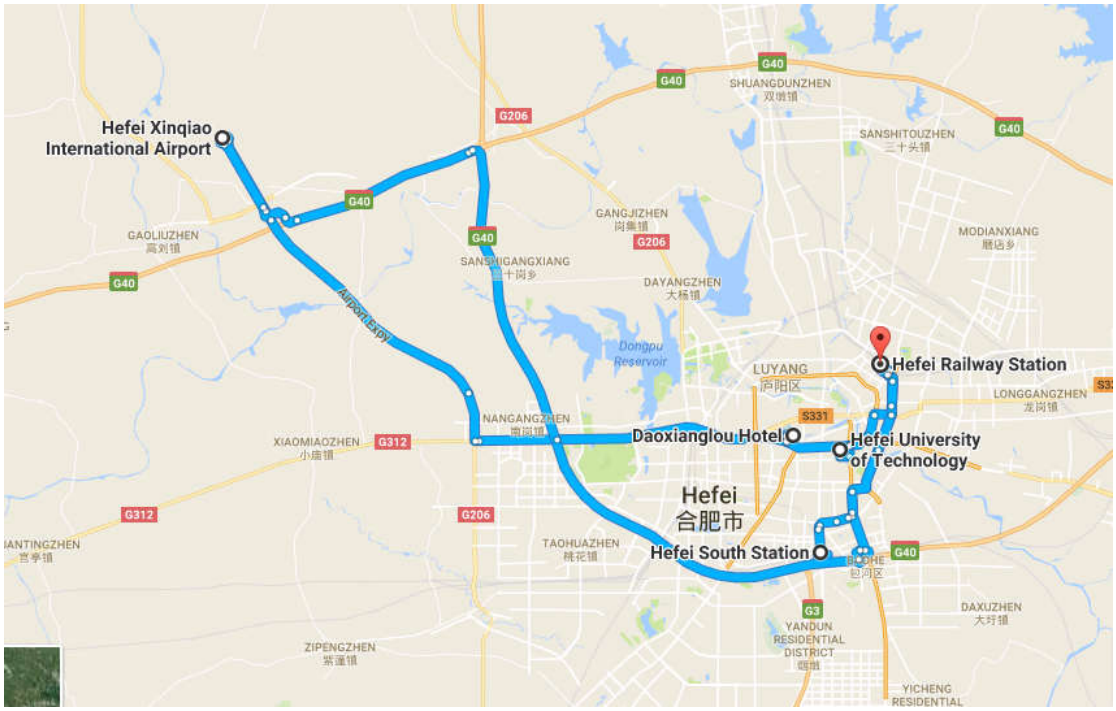
		2. A simulation method to evaluate cloud manufacturing service composition *Jianfeng Lu*
		3. Research on decision model of green supply chain with government supervision *Yanli Zhang, Xiaojian Hu, Ju Zhao, Haihong Yang*
	Coffee Break (20 min)	
	16:05-17:20pm	4. Online Product Comments as a Corpus for Opinion Mining and Requirement Acquirement *Shiyao Xiao, Xin Lu, Yuejin Tan*
		5. Competitor Analysis from User Favorites *Yezheng Liu, Yang Qian, Jiajia Wang, Yuanchun Jiang, Jianshan Sun*
		6. Promoting remanufactured product consumption—the effect of implementing government subsidy on CLSC with trade-ins *Xiaoxi Zhu*
Topic Session V (TD03)		
14:00-17:20pm, July 27th, 2017 Conference Room 2 in Gui Yuan	**Topic：** Network Model and Optimization	
	Session chair： Minglun Ren, Hefei University of Technology	
	14:00-14:30pm	**Invited talk：** Service Composition Model Based on Improved GSA Algorithm: A Social Network Relationship Analysis Approach *Minglun Ren*
	14:30-15:45pm	1. High-end Equipment Portfolio Selection based on Heterogeneous Task Network Model *Jichao Li, Bingfeng Ge, Kewei Yang, Yingwu Chen, Yuejin Tan*
		2. Risk analysis for new product development project portfolios using a Bayesian network model *Ying Yang, Gang Wang, Dong-Ling Xu*
		3. Global Modern Manufacturing Innovation Trends Analysis Based on Patents Networks *Penghui Lyu, Cheng Cheng, Eric W.T Ngai*
		4. An Industrial IoT Framework Based on Blockchain *Gaowei Xu*
	Coffee Break (20 min)	
	16:05-17:20pm	5. Effects of resource occupation and decentralization degree on performance of the IoT-based virtual enterprise *Xinbao Liu, Zhiping Zhou, Jun Pei, Panos M. Pardalos, Jinle Kang*
		6. The modeling and analyzing the propagation in complex networks with variable *Yu Cao, Xu Cheng, Panos M. Pardalos, Chengyin Ye*
		7. The Selection Method of Social Network Advertising Spokespersons Using DEA Model

<table>
<tr><td></td><td></td><td>Jianmin He, Maoxin Han, Mingguang Shi, Yezheng Liu</td></tr>
<tr><td></td><td></td><td>8. Positioning logistics service order decoupling point based on fuzzy set theory under the mass customization mode
Guanxiong Wang, Xiaojian Hu, Xiaozheng Li, Yanli Zhang, Peipei Li</td></tr>
<tr><td colspan="3">Topic Session VI (TD04)</td></tr>
<tr><td rowspan="10">14:00-17:20pm,
July 27th, 2017

Chaohu
Conference Room
in Hui Yuan</td><td colspan="2">Topic： Big Data in Smart Manufacturing</td></tr>
<tr><td colspan="2">Session chair： Xin Lu, National University of Defense Technology</td></tr>
<tr><td>14:00-
14:30pm</td><td>Invited talk： Quantifying Traceability in Supply Chain Networks
Xin Lu</td></tr>
<tr><td rowspan="3">14:30-
15:45pm</td><td>1. Intelligent Discovery of Notable Product Features by Mining Large Scale Online Reviews
Qiang Zhang</td></tr>
<tr><td>2. Detecting Process Concept Drifts from Event Logs
Lijie Wen</td></tr>
<tr><td>3. Smart connected electronic gastro cope
Hao Wang , Shuai Ding, Youtao Zhang, Shanlin Yang</td></tr>
<tr><td colspan="2">Coffee Break (20 min)</td></tr>
<tr><td rowspan="4">16:05-
17:20pm</td><td>4. Machine learning based method for knowledge discovery and dynamic quality prediction in manufacturing
Jin Cheng</td></tr>
<tr><td>5. An intelligent clinical decision support system for cervical cancer screening
Zijie Yue,Shuai Ding,Youtao Zhang</td></tr>
<tr><td>6. Impact of product attributes on customer satisfaction: An Analysis of Washing Machine Online Reviews
Yuren Wang, Xin Lu, Yuejin Tan</td></tr>
<tr><td>7. Assessing the Determinants of Cloud Computing Adoption in the Agriculture Sector: A Multiple Theory Perspective
Qian Zheng, Dongxiao Gu, Changyong Liang, Saif UI Haq</td></tr>
</table>

Maps and Traffic Routes

地图与交通线路



一、目的地：稻香楼宾馆（To：Daoxianglou Hotel）

1.出发地：合肥南站（From: Hefei South Railway Station）

（1）方案 1：打车（By Taxi）

约 23 分钟，全程约 7.9 公里，约 18 元。

The distance is around 7.9 km. It takes about 23 minutes with 18 yuan.

（2）方案 2：公交（By Bus）

约 59 分钟，108 路公交（合肥南站上，中国科技大学站下，9 站），换 133 路（安医附院站上，稻香楼站下，1 站），下车步行约 100 米。

It takes about 59 minutes. Take the NO.108 bus from the Hefei South Railway Station to the University of Science and Technology Station, and change for NO.133 bus from the Anyifuyuan Station to the Daoxianglou Hotel Station, and then walk for around 100 meters to the

destination.

（3）方案 3：地铁（By Subway）

约 51 分钟，地铁 1 号线（合肥南站上，明光路站下，8 站），换 1 路（胜明路口站上，稻香楼站下，1 站），下车步行约 100 米。

It takes about 51 minutes. Take the subway line 1 from the Hefei South Railway Station to the Mingguang Road Station, and change for NO.1 bus from the Shengming junction Station to the Daoxianglou Hotel Station, and then walk for around 100 meters to the destination.

2.出发地：合肥火车站（From: Hefei Railway Station）

（1）方案 1：打车（By Taxi）

约 23 分钟，全程约 6.7 公里，约 16 元。

The distance is around 6.7 km. It takes about 23 minutes with 16 yuan.

（2）方案 2：公交（By Bus）

约 38 分钟，1 路公交（合肥火车站上，稻香楼站下，8 站），下车步行约 100 米。

It takes about 38 minutes. Take the NO.1 bus from the Hefei Railway Station to the Daoxianglou Hotel Station, and then walk for around 100 meters to the destination.

（3）方案 3：地铁（By Subway）

约 35 分钟，地铁 1 号线（合肥火车站上，明光路站下，2 站），换 1 路（胜明路口站上，稻香楼站下，1 站），下车步行约 100 米。

It takes about 35 minutes. Take the subway line 1 from the Hefei Railway Station to the Mingguang Road Station, and change for NO.1 bus from the Shengming junction Station to the Daoxianglou Hotel Station, and then walk for around 100 meters to the destination.

3.出发地：合肥新桥国际机场（From: Hefei Xinqiao Airport）

（1）方案 1：打车（By Taxi）

约 52 分钟，全程约 38.2 公里，约 85 元。

The distance is around 38.2 km. It takes about 52 minutes with 85 yuan.

（2）方案 2：公交（By Bus）

约 1 小时 36 分钟，机场巴士 1 号线（新桥国际机场站上，大西门站下，1 站），下车步行约 215 米。

It takes about one hour and 36 minutes. Take the airport shuttle NO.1 from the Xinqiao Airport Station to the Great West Gate Station, and then walk for around 215 meters to the destination.

4.出发地：合肥工业大学（From: Hefei University of Technology）

（1）方案 1：打车（By Taxi）

约 14 分钟，全程约 4.0 公里，约 12 元。

The distance is around 4.0 km. It takes about 14 minutes with 12 yuan.

（2）方案 2：公交（By Bus）

约 28 分钟，122 路公交（宁国路站上，稻香楼站下，1 站），下车步行约 90 米。

It takes about 28 minutes. Take the NO.122 bus from the Ningguo Road Station to the Daoxianglou Hotel Station, and then walk for around 90 meters to the destination.

二、目的地：合肥工业大学（To：HeFei University of Technology）

1.出发地：合肥南站（From: Hefei South Railway Station）

（1）方案 1：打车（By Taxi）

约 12 分钟，全程约 5.8 公里，约 15 元。

The distance is around 5.8 km. It takes about 12 minutes with 15 yuan.

（2）方案 2：公交（By Bus）

约 42 分钟，11 路公交（庐川路口东站上，工大西门站下，8 站），下车步行约 50 米。

It takes about 42 minutes. Take the NO.11 bus from the East of Luchuan Road Station to the West Gate of HFUT Station, and then walk for around 50 meters to the destination.

（3）方案 3：地铁（By Subway）

约 38 分钟，地铁 1 号线（合肥南站上，合工大南区站下，5 站），下车步行约 1500 米。

It takes about 38 minutes. Take the subway line 1 from the Hefei South Railway Station to the South Campus of HFUT Station, and then walk for around 1,500 meters to the destination.

2.出发地：合肥火车站（From: Hefei Railway Station）

（1）方案 1：打车（By Taxi）

约 15 分钟，全程约 4.9 公里，约 13 元。

The distance is around 4.9 km. It takes about 15 minutes with 13 yuan.

（2）方案 2：公交（By Bus）

约 44 分钟，11 路公交（站前广场站上，工大西门站下，11 站），下车步行约 330 米。

It takes about 44 minutes. Take the NO.11 bus from the Station Square to the West Gate of HFUT Station, and then walk for around 330 meters to the destination.

（3）方案 3：地铁（By Subway）

约 32 分钟，地铁 1 号线（合肥火车站上，合工大南区站下，5 站），下车步行约 1500 米。

It takes about 32 minutes. Take the subway line 1 from the Hefei Railway Station to the South Campus of HFUT Station, and then walk for around 1,500 meters to the destination.

3.出发地：合肥新桥国际机场（From: Hefei Xinqiao Airport）

（1）方案 1：打车（By Taxi）

约 50 分钟，全程约 40.3 公里，约 90 元。

The distance is around 40.3 km. It takes about 50 minutes with 90 yuan.

（2）方案 2：公交（By Bus）

约 2 小时 12 分钟，机场巴士 4 号线（新桥国际机场站上，亚朵酒店站下，3 站），换 138 路（合家福购物广场站上，地调院站下，2 站），下车步行约 610 米。

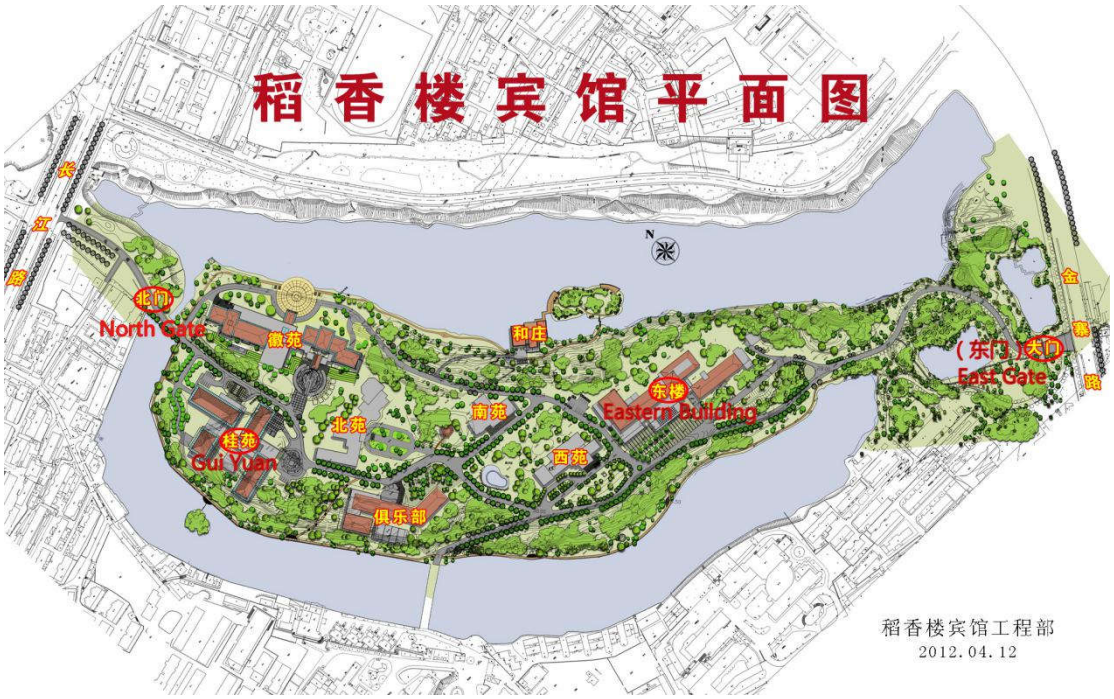
It takes about two hours and 12 minutes. Take the airport shuttle NO.4 from the Xinqiao Airport Station to the Azo Hotel Station, and change for NO.138 bus from the Hejiafu Shopping Square Station to the Didiaoyuan station, and then walk for around 610 meters to the destination.

（3）方案 3：地铁（By Subway）

约 2 小时 25 分钟，机场巴士 4 号线（新桥国际机场站上，亚朵酒店站下，3 站），换地铁 1 号线（朱岗站上，包公园站下，2 站），再换 11 路（孝肃桥站上，工大西门站下，3 站），下车步行约 330 米。

It takes about two hours and 25 minutes. Take the airport shuttle NO.4 from the Xinqiao Airport Station to the Azo Hotel Station, and change for subway line 1 from the Zhugang Station to the Baogong Park Station, and then change for NO.11 bus from the Xiaosuqiao Station to the West Gate of HFUT, and finally walk for around 330 meters to the destination.

稻香楼宾馆地图（Map of Daoxianglou Hotel）



Distance：

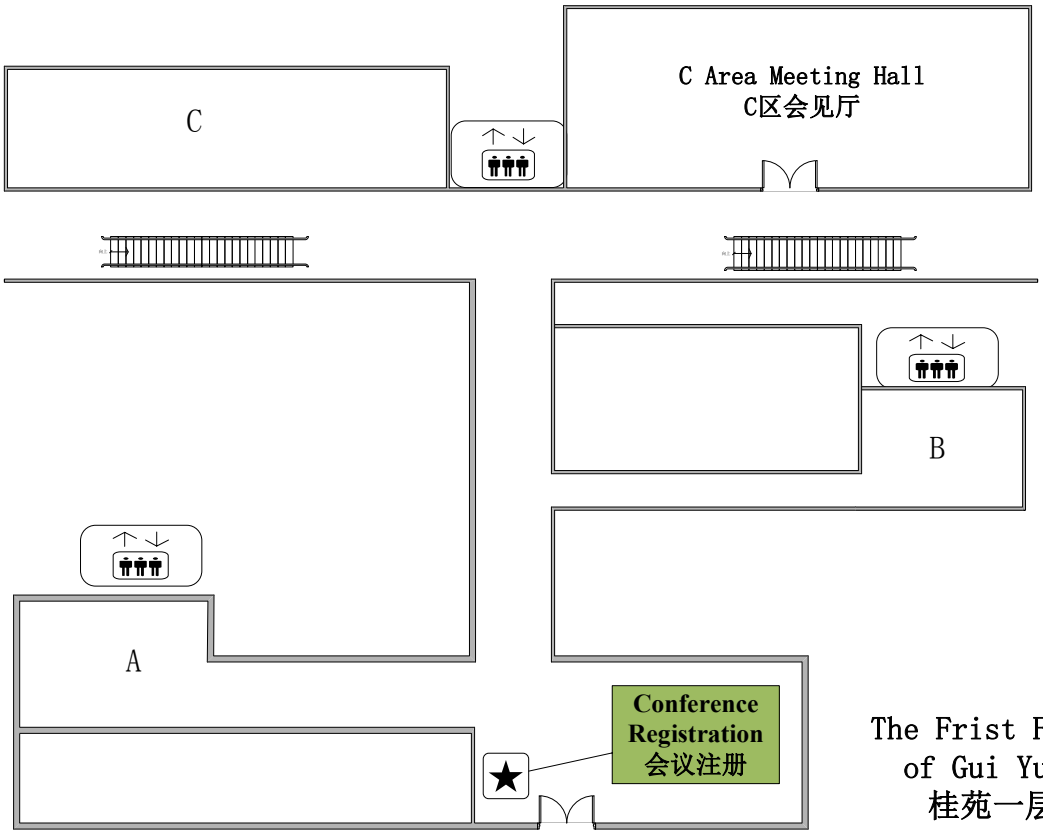
东门—桂苑，步行 18 分钟

The East Gate—Gui Yuan, a 18-minute walk

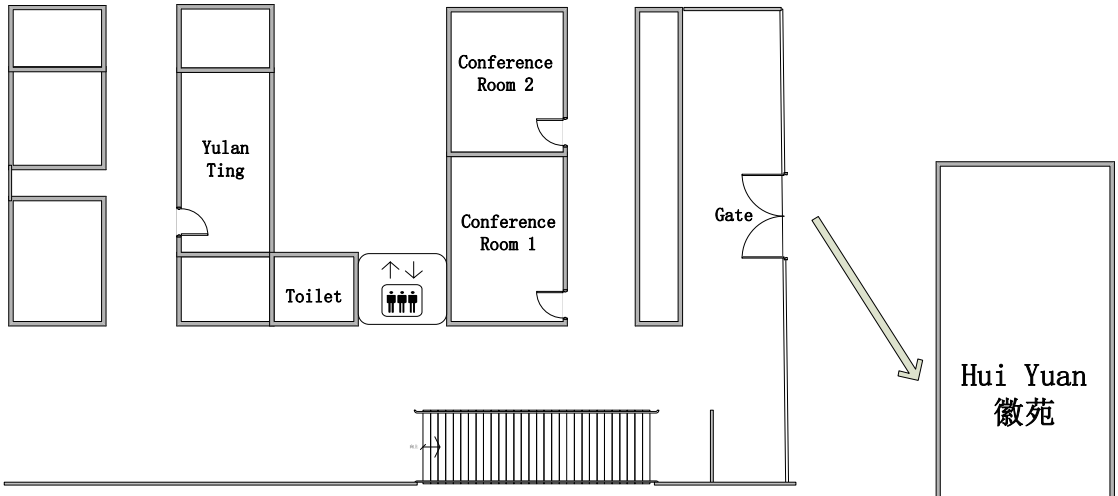
北门—桂苑，步行 3 分钟

The North Gate—Gui Yuan, a 3-minute walk

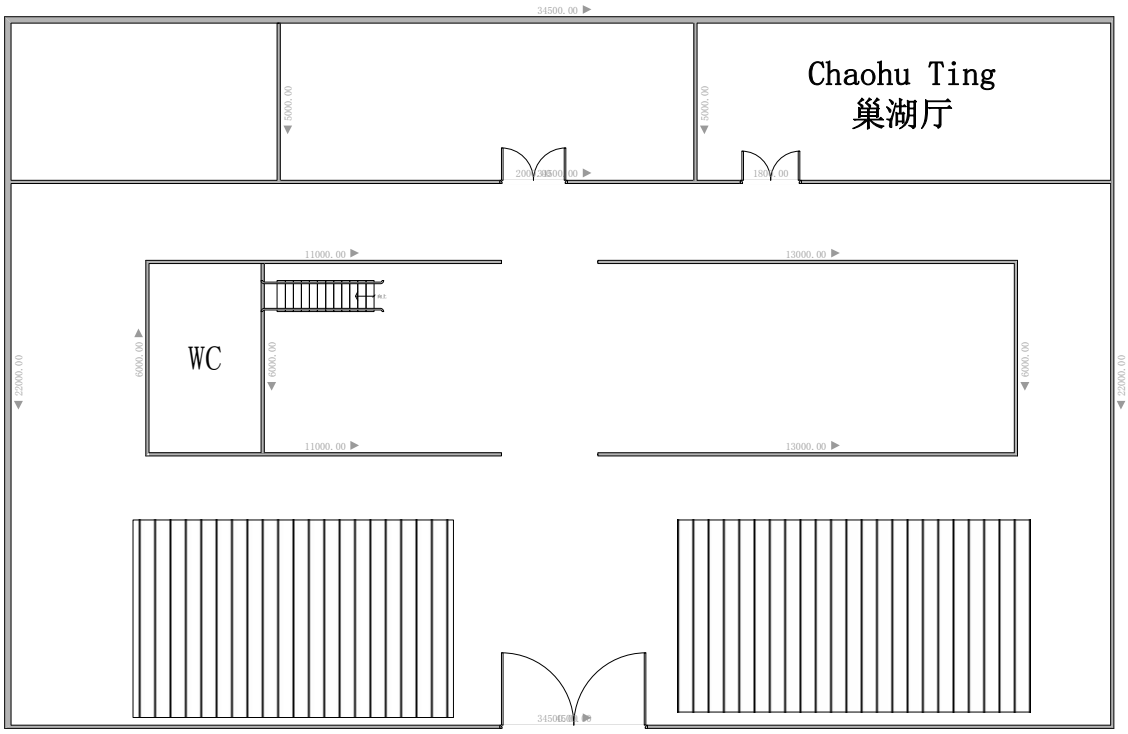
The layout of Conference at Gui Yuan and Hui Yuan



The Frist Floor
of Gui Yuan
桂苑一层



Basement 1 of
Gui Yuan
桂苑负一层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Hui Yuan
徽苑

合肥工业大学管理学院

School of Management, HFUT

我们拥有共同的事业

We have the same mission