刘洪泉教授

新加坡管理大学

- 信息系统学院终身教授（2014-）
- 都市计算工程企业研究中心主任（2014-）

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教育背景

- 1987 年在美国明尼苏达大学计算机科学系获理学学士学位 (Summa Cum Laude)
- 1988 年在美国明尼苏达大学计算机科学系获理学硕士学位 (Summa Cum Laude)
- 1996 年在东京工业大学获工学博士学位

工作经历

• 副主任	2011-2015	新加坡管理大学生活全息数据研究中心
• 终身副教授	2008-2013	新加坡管理大学信息系统学院
• 副教授	2005-2007	新加坡管理大学信息系统学院
• 助理教授	2000-2005	新加坡国立大学计算机学院
• 研究员	1997-1999	新加坡肯特岗数码研究所
• 研究工程师	1991-1993	新加坡国家电脑局信息技术学院
• 国民服役	1989-1990	新加坡武装队

委员会

- 《Journal of Scheduling》期刊编委，2018-now
- 《IEEE Transactions on Automation Science and Engineering》期刊编委，2013-2017
- 《Web Intelligence: An International Journal》期刊编委，2015-now
- 《Journal of Heuristics》、《Web Intelligence and Agent Systems Journal》特刊编委
- 英国皇家物流与运输协会 Chartered Institute of Logistics and Transportation 注册会员，并担任新加坡支部的董事会成员
- 以下国际会议程序委员会委员：
  - IJCAI International Joint Conference on Artificial Intelligence (Senior Programme Committee 2016-2017)
  - AAAI Association of Advancement in Artificial Intelligence (Programme Committee, 2015-2017; Senior Programme Committee 2018)
  - AAMAS Autonomous Agents and Multiagent Systems (Senior Programme Committee 2013-2015)
  - GECCO Genetic and Evolutionary Computation Conference (Programme Committee, 2013-2016)

- ICAPS Intl Conf. on Automated Planning and Scheduling (Programme Committee 2006-2008)
- IEEE CASE Conf. on Automation Science and Engineering (Programme Committee 2005-2006)
- IEEE/WIC/ACM IAT Intelligent Agent Technology (Programme co-Chair, 2012, Programme Committee 2006-11)
- IEEE/WIC/ACM WIIAT Web Intelligence and Intelligent Agent Technology (Programme Vice Chair, 2015)
- IEEE ICTAI Int. Conf. Tools for Artificial Intelligence (Programme Committee 2006)
- ICEC International Conference on Electronic Commerce (Programme co-Chair 2012, Programme Committee 2006)
- ICCL International Conference on Computational Logistics (Programme Committee 2012 – 2014)
- LION Learning and Intelligent Optimization Conference (Programme Committee, 2014-2016)
- MIC Metaheuristics International Conference (General Chair and Program co-Chair 2013, Programme Committee 2006-11)
- MISTA Multi-disciplinary International Symp. Scheduling Theory and Applications (Programme Committee, 2007-2011)

奖项

- Japan-Singapore Promotion of Science (JSPS) Fellowship, 2000
- Spring Singapore National IQC Star Award, 2006
- Defense Technology Prize (individual category) Award nomination, 2007
- Singapore Management University Lee Kwan Yew Research Excellence Award, 2008
- Defense Science and Technology Agency Innovation Excellence Award, 2009.
- Best Paper Award (Honorable Mention) in IEEE International Conference on IEEM, 2011
- Best Paper Award Runner Up in Learning and Intelligent Optimization Conference LION, 2015
- Best Paper Award Honorary Mention in ACM Conference on CSCW, 2016.

研究领域

刘教授主要研究方向包括：智慧物流与交通、数据挖掘与机器学习、运筹学（最优化）与人工智慧算法、决策分析系统、多智能体系统等。目前具体的研究领域包括：基于 Agent 的模型和数据资源规划的启发式调度和协调的问题，在物流、交通和旅游规划，重点解决城市环境下物流规划和运营问题。他已经在一个电子商务平台，使多个利益相关者的合作，提高“最后一公里”的物流业务发展工具。刘教授为联邦国际快递公司，伯灵顿，PSA，EADS，ST 以及不同的政府机构提供了解决方案，取得了重大社会及经济效益。

学术成果

研究成果发表在 European Journal of Operational Research, Journal of the Operational Research Society, Annals of Operations Research, Journal of Artificial Intelligence Research, IEEE Transactions on Automation Science and Engineering, ACM Transactions on Intelligent Systems and Technology 等多份计算与工业工程国际期刊上。其中，发表 SSCI 期刊 30 余篇。此外重要人工智能国际会议 (NIPS, AAAI, IJCAI, AAMAS,

ICAPS, UAI) 发表文章 30 余篇。在世界著名学术出版社出版了 1 部专著和书籍 5 个章节。其论文和专著被引用将超过 2600 次(Google Scholar)，1000 次（Scopus/Web of Science）。

国际会议受邀演讲 (Plenary, Invited talks)

- Two Recent Variants of Vehicle Routing Problems in City Logistics. 2018 智慧物流与供应链管理国际研讨会, Chengdu, China, 12-13 January 2018.
- Combining Machine Learning and Optimization for Real-World Scheduling Applications. Multidisciplinary International Scheduling Conference (MISTA), Kuala Lumpur, Malaysia, December 2017.
- Tackling e-Commerce Challenges with Urban Logistics Innovations 利用城市物流创新应对电子商务挑战. International Congress on Cross-border Electronic Commerce 跨境电子商务大会, Zhengzhou, China, 30 Mar, 2017.
- Enabling Win-Win and Sharing in Urban and Multimodal Logistics: Research Challenges and Technology 城市物流和多式联运之间的双赢和共享:研究挑战和技术. 3rd China International Logistics Development Conference, Suining, China, 30 Oct – 1 Nov 2016.
- Agent-based Systems in Urban Transportation and Logistics: Research and Applications. International Symposium on Agents, Multi-Agent Systems and Robotics (ISAMSR), Kuala Lumpur, 18-19 August, 2015.
- Last-Mile Delivery in Smart Cities: Challenges and Solutions. ACM Fifth International Symposium on Information and Communication Technology (SOICT), Hanoi, 4-6 December, 2014.
- Collaborative Urban Logistics – Challenges, Current Practices and Future Research. SMU Urban Logistics and Supply Chain Symposium, 28 November 2014.
- Resource Allocation and Coordination in Urban Logistics Management. 城市物流管理中的资源规划与协调 (In Chinese) Ningbo Academy of Smart City Development and NIT Zhejiang University, 12 and 13 June, 2014.
- Analytics for Urban Safety and Security Management. SCDF (Singapore Civil Defense Force) Annual Workplan Seminar, 17 April 2014.
- Coordination of Last-Mile Delivery in Urban Cities - a review of current practices and future prospects. Conference on Global Challenges in Smart Logistics organized by Netherlands Ministry of Economic Affairs, Utrecht, Netherlands, November 2013.
- Dynamic Experience Management in Theme Parks via Coordination and Incentives. ERATO Distinguished Speaker Series, Sendai, Japan, March 2013.
- Coordinating the Transportation of Freight and Passengers to Improve Sustainability. Tsinghua Workshop on Sustainable Logistics & Transportation in Mega-Cities, Beijing, China, December 2012.
- Multi-Agent Coordination in Humanitarian and Emergency Response Logistics. AAAI Fall Symposium Workshop on Multiagent Coordination under Uncertainty. Arlington, Virginia, USA, November 2011.
- Real World Project Management: How to Efficiency Generate a Robust Schedule? Distinguished Speaker Series, Leeds School of Business, University of Colorado (Boulder), USA, December 2010.
- Master Physician Scheduling Problem. Asia Pacific Workshop on Decision Support Technology, Taipei, Republic of China, August 2010.
- Optimising Performance in Logistics And Supply Chains Through Real-TimeOptimisation Technology. *Defense Logistics (Middle East) Summit*, Abu Dhabi, UAE, January 2009.
- A Combinatorial Auction Framework for Solving Decentralized Resource Allocation and Scheduling. *DiCoMAS Seminar on New Approaches to Planning and Scheduling*, Brussels, Belgium, November 2009.

- Combinatorial Auction as a Meta-Heuristic Mechanism for Decentralized Resource Allocation. *Special Conference on Methods and Applications of Metaheuristics*, Guangzhou, China, December 2009.
- Hedging Uncertainty with Robust Project Schedules. *Annual MINDEF d-Logistics Seminar*, Singapore, September 2008.
- Dynamic Response Aircraft Payload System. *Annual MINDEF d-Logistics Seminar*, Singapore, September 2006.
- Integrated Vehicle and Driver Resource Optimization for Supporting Centralized MT Line. *Annual MINDEF d-Logistics Seminar.* Singapore, September 2004.
- Optimization of Spares Allocation for Corrective Maintenance in a Multi-Echelon Time-Varying Environment. *Annual MINDEF d-Logistics Seminar*, Singapore, September 2003.
- Integrated Spares and Resource Allocation for Corrective Maintenance under Non-Stationary Demands. *Annual MINDEF d-Logistics Seminar*, Singapore, September 2002.
- Routing of Vehicles Reactively. *Asia Pacific Transport and Logistics Congress*, Singapore, October 2000.
- A Multi-Criteria, Multi-Modal Passenger Route Advisory System. *1999 IES-CTR Int'l Symp. Public Transportation for the 21st Century*, Singapore, 1999.
- Dynamic Vehicle Routing. CIT 3rd IT in Logistics and Transportation Seminar, 1998.

领导（参与）过的主要科研项目

起止时间	项目性质和来源	经费总额（新币）	参与人数	申报人的具体职位和任务
2000 (1 year)	省部级， Agency for Science and Technology Research (A*STAR)	96,000	5	Co-Principal Investigator
2000-2001 (1 year)	校级，新加坡国立大学 National University of Singapore	28,000	2	Principal Investigator
2002-2007 (5 years)	省部级，新加坡国防部 Defense Science and Technology Agency (DSTA)	5,000,000	20	Programme Director and Principal Investigator
2006-2009 (3 years)	省部级 Agency for Science and Technology Research (A*STAR)	440,000	6	Principal Investigator
2009-2010 (1 year)	横向项目，企业 PSA Inc.	50,000	2	Principal Investigator
2010-2011 (1 year)	横向项目，企业 ST Dynamics Pte Ltd	90,000	2	Principal Investigator
2011-2015 (5 years)	国家级，新加坡国家自然科学基金项目 National Research Foundation (NRF)	26,000,000	40	Deputy Director and Area Investigator
2011-2015 (5 years)	国家级，新加坡国家联合项目，Singapore-MIT Alliance (SMART) Future Urban Mobility Programme	475,000	4	Principal Investigator (2011-13) Co-PI (2014-15)
2013-2015 (2 years)	省部级 Agency for Science and Technology Research (A*STAR)	580,000	5	Principal Investigator
2016-2017 (1 year)	省部级，新加坡内政部 Ministry of Home Affairs (MHA)	610,000	6	Principal Investigator
2014-2019	国家级，新加坡国家自然科学基	21,000,000	40	Director and Principal

(5 years)	金项目 National Research Foundation (NRF)			Investigator

主要论著

(a) 教材

S. Kimbrough and H. C. Lau. Business Analytics for Decision Making, CRC Press, 2016.

(b) 编辑成册

Haolan Zhang and Hoong Chuin Lau. Special Issue in Multi-agent-based problem solving methods in Big Data Environment, Web Intelligence and Agent Systems Journal, IOS Press, 2014.

Hoong Chuin Lau, Günther R. Raidl and Pascal Van Hentenryck. New developments in Metaheuristics and their applications. Journal of Heuristics, 22:4, 2016. doi:10.1007/s10732-016-9313-x

(c) 论文 -- 发表文章约 200 篇，代表性 20 篇论文：

发表时间 Publication Date	论著（论文）标题 Title of Work(Paper)	发表载体 Publication Media
2018	State Aggregation Approach for Stochastic Multi-Period Last-Mile Ride-Sharing Problem	Transportation Science
2018	ADOPT: Combining parameter tuning and Adaptive Operator Ordering for solving a class of Orienteering Problems	Computers and Industrial Engineering
2017	Local Gaussian Processes for Efficient Fine-Grained Traffic Speed Prediction	IEEE Trans. on Big Data
2017	Risk-Sensitive Stochastic Orienteering Problems for Trip Optimization in Urban Environments	ACM Trans on Intelligent Systems and Technology
2017	Well-Tuned Algorithms for the Team Orienteering Problem with Time Windows.	Journal of the Operational Research Society
2016	Achieving Economic and Environmental Sustainability in Urban Consolidation Center with Bi-Criteria Auction	IEEE Trans. Automation Science and Engineering
2016	Achieving Stable and Fair Profit Allocation with Minimum Subsidy in Collaborative Logistics	AAAI Conference on Artificial Intelligence Proceedings
2015	Robust Execution Strategies for Project Scheduling under Unreliable Resources and Stochastic Durations	Journal of Scheduling
2015	Risk based Optimization for Improving Emergency Medical Systems	AAAI Conference on Artificial Intelligence Proceedings
2014	Patrol Scheduling in an Urban Rail Network	Annals of Operations Research
2014	A hybrid heuristic algorithm for the 2D variable-sized bin packing problem	European Journal of Operational Research
2013	Master Physician Scheduling Problem	Journal of the Operational Research Society
2013	Clustering of Search Trajectory and its Application to Parameter Tuning	Journal of the Operational Research Society

2012	Robust Local Search for Solving RCPSP/max with Durational Uncertainty	Journal of Artificial Intelligence Research
2011	Allocating resources in multi-agent flowshops with adaptive auctions	IEEE Trans. Automation Science and Engineering
2010	Periodic Resource Reallocation in Two-Echelon Repairable Item Inventory Systems	IEEE Trans. Automation Science and Engineering
2008	Efficient Algorithms for Machine Scheduling Problems with Earliness and Tardiness Penalties	Annals of Operations Research
2006	Evaluation of Time-Varying Availability in Multi-Echelon Spare Parts Systems with Passivation	European Journal of Operational Research
2004	A Periodic-Review Inventory Model with Application to the Continuous-Review Obsolescence Problem	European Journal of Operational Research
2003	Vehicle Routing Problem with Time Windows and a Limited Number of Vehicles	European Journal of Operational Research

专利

申请日 Date of Filling	公开公告号 Publication Number	专利名称 Patent Title	国家或区域 State or Organization	权利人 Assignee
Mar 2015（granted August 2017）	10201509975U	Crowd Management System	State	SMU

产品

- 现代信全息数据平台主题公园系统（与 RWS Sentosa 联合开发）：此产品结合移动 APP 来实时监测及协调的人群动向。负责此项研究的刘洪泉教授说：“这是全球首个一步步引导游客的程式，预计在一两年内能让采用这项技术的主题公园，通过这个方式管理园内人潮。此项研究产品与美国卡内基梅隆大学合作开发，相关技术被圣淘沙、星和等集团等采用，产品介绍被《联合早报》等媒体报道。

- 交互式物流系统，能较好的协调“最后一公里”问题（与 Y3 Technologies 联合开发）。此平台是一套智能化的城市物流电子平台，将过去分散于多处的物流资源进行集中处理，发挥整体优势和规模优势，为企业和相关部门提供智能决策服务。核心技术利用人工智能手法能够能够在复杂环境下匹配托运人交付的需求复杂的动态能力与载体的卡车.

开设课程

研究生博士生课：

- Optimization and Decision Support
- Design and Analysis of Algorithms

- Advanced Topics in Intelligent Systems
- Combinatorial Graph Algorithms

本科生课：

- Computational Thinking
- Enterprise Analytics for Decision Support;
- Software Engineering