Dr. Pang Yan, James

Citizenship: Chinese (Singapore Permanent Resident)
Language Spoken: Mandarin (native), English (fluent), Cantonese (fluent)
Email: jamespang@nus.edu.sg
Home page: http://bizfaculty.nus.edu/faculty-profiles/514-james

PROFESSIONAL EXPERIENCE

National University of Singapore (NUS)   04/2014-Present

Visiting Associate Professor at School of Computing   **04/2016-Present**

Visiting Assistant Professor at School of Computing   **04/2014-03/2016**

- Lead the collaboration among School of Computing, Business School and Saw Swee Hock School of Public Health to set up the new Healthcare Analytics vertical at NUS Master of Science in Business Analytics (MSBA) programme.
- Lead the research and education activities in new Healthcare Analytics vertical. Research focuses on big data analytics, optimization, healthcare analytics, supply chain planning and analytics, and cognitive systems.
- Lead the BA center industry collaboration with strategic partners in capstone projects and student education, e.g. Ministry of Health Holding, SingHealth, IHIS, OPTUM, SAS, Microsoft, CFLD, Swiss-Re, ANZ, etc.
- Lead the MSBA admission process.

IBM Corporation   04/2009-Present

Client Technical Advisor (**Chief Architect**) of IBM Public Sector (ASEAN)   **03/2013-03/2014**

- Lead the Business Analytics (BA) Reference Architecture design, and provide technical leadership to important mega deals engagement in ASEAN Healthcare and Government industry, e.g. Singapore National Electronic Health Record (NEHR), Singapore Customs New TradeNet and TradeXchange, MSF SSNet, IRAS ELA, etc.
- Lead the technical solution design of the first worldwide Watson Cognitive Computing Platform for citizen service (Singapore Government).
- Core member of an IBM GMU (Growth Market Unit, including 150+ countries) Distinguish Engineer (DE) Challenge project – DHL Logistics Cloud. Design the global logistics operation and optimization solution for DHL.
- ASEAN leader for IBM GMU technical Community and responsible for solution architecture strategy in public sector.

Senior Manager and Lead Architect in IBM R&D Labs (GCG)   **05/2011-03/2013**

- Lead the R&D activities in IBM Shanghai Labs. Research focuses on new analytics modeling methodology and new optimization algorithms.
- Lead the ILOG CPLEX Optimization product development and service team, including optimization engine (CPLEX & CP optimization engine) and modeling platform (OPL & ODME).
- Initiate and lead IBM worldwide Optimization Cloud strategy and development.
- Lead the Optimization service team to provide optimization consultancy and solutions in supply chain/logistics, manufacturing, retail, and financial service industry. Project includes RICHTEK supply chain planning, Shanghai Electric Group Company (SEC) production planning solution, Hongkong International Terminals (HIT) intelligent yard planning, China Foreign Exchange Trade System (CFETS) transaction optimization solution, ATM Restocking Cash Management optimization solution, etc.

- Lead the solution design of NingBo Logistics Cloud ($33M USD) project, which is the first IBM Industry Cloud landing in Greater China Group (GCG).

Advisory Architect in IBM Software Labs   **04/2009-04/2011**
- Lead the R&D activities of mathematical optimization solutions in manufacturing and logistics industry at Shanghai Lab (China).
- Lead the IBM first optimization-based SCM solution (MPO – Manufacturing Productivity Optimization at FAW Car) win in GCG, including engagement, solution design, and end-to-end project delivery. (Achieved 20+M USD production cost saving annually for FAW the biggest automotive company in China; This project was highlighted in IBM IMPACT 2010 conference.)
- Lead the solution design of a number of anchor customer projects, including Bank of QingDao (BQD) SOA project, NOL Empty Container Reposition project, Chery CPM project, AnHui tobacco production planning, TAL production planning, DACHSER transportation management system, etc.
- Initiate and chair IBM GCG BAO (Business Analytics and Optimization) community, and lead the BAO team to design and develop cross-brand solution assets based on IBM ILOG Optimization, Cognos, and SPSS software framework.

Motorola Electronics Pte Ltd, Singapore   04/2007-03/2009

Research Scientist in Motorola Labs to provide technology solutions and consultancy to Motorola Integrated Supply Chain (ISC) organization. Projects include:
- Lead a global team to develop an optimization-based Surface Mount Technology (SMT) lines scheduling system for Motorola Asia manufacturing sites (improved capacity utilization by 15%, scheduling lead time reduced from a few hours to a few minutes).
- Develop inventory model to optimize the MOI (Motorola Owned Inventory) and VMI (Vendor Managed Inventory) in warehouses (reduced inventory by about 20%).
- Develop vehicle routing optimization solution in Motorola Singapore inbound supply chain operations (achieve lead time improvement 133%, cost savings 28%).

Micron Technology Inc (Tech Semiconductor), Singapore   07/2006-03/2007

Staff Engineer in Manufacturing Science section to provide planning and scheduling solutions to the most complex and advanced manufacturing system – 300 mm DRAM wafer FAB
- Design analytical models and simulation models based on queuing theory for analyzing 300mm wafer fabrication process to reduce the cycle time and cost (reduced DRAM wafer fabrication cycle time from about 72 days to 35 days).
- Design scheduling algorithms for the 300mm wafer dispatching system.

National University of Singapore (NUS), Singapore

Massachusetts Institute of Technology (MIT), USA   06/2002-09/2006

PhD Research scholar at Singapore – MIT Alliance (SMA), advised by Prof. Andrew Y.C. Nee (NUS) and Prof. Kamal Youcef-Toumi (MIT)
- Work on algorithms for assembly plan optimization and augmented reality (AR) assembly environment realization.
- Research in robust AR technology for assembly simulation and evaluation.
- Research in assembly design and planning in AR environment.
- Analyze and balance the assembly line through optimization techniques.

EDUCATION

National University of Singapore (NUS), Singapore   06/2002-09/2006

Joint with **Massachusetts Institute of Technology (*MIT*), US** under Singapore-MIT Alliance

(SMA) program
Ph.D., Manufacturing System and Technology, September 2006

Zhejiang University, Hangzhou, China   **07/1995-03/2002**

      M.Eng, Manufacturing System, March 2002
      B.Eng, Mechanical Engineering, June, 1999

RESEARCH INTEREST

Big Data Analytics, Supply Chain Management, Production Planning and Scheduling,

Healthcare Aanlytics, Software Architecture

SELECTED HONORS AND AWARDS

- IBM Invention Plateau Award   11/2015
- IBM Invention Development Team Award   10/2015
- IBM Patent Award   06/2013
- IBM Outstanding Technical Achievement Award (OTAA)   11/2011
- IBM Outstanding Employee Equity Award   11/2012
- Best Paper Award at 2010 IBM GCG RTE Technical Conference   10/2010
- IBM Customer Service Star   10/2010
- IBM Eminence and Excellence Award   05/2010
- Motorola Performance Management (PM) Excellent Award   01/2009
- Nominated for the Andrew Fraser Prize 2007 (best postgraduate paper), Institute of Mechanical Engineers (IMechE)   04/2007
- Singapore Government Scholarship   2002-2006
- Outstanding Master of Zhejiang Province   03/2002
- Outstanding Bachelor of Zhejiang University   06/1999
- Distinguished Student Scholarship in Zhejiang University   1995-2002

PROFESSIONAL CERTIFICATION/SERVICES

- Master Certified Architect in the Open Group (Open CA)
- IBM Certified Architect
- Member of NUS SoC Furnace Incubator Advisory Committee (Jan 2016 – Present)
- Member of IBM AP Invention Disclosure Review Board (Jan 2015 – Present)
- Member of IBM BAO (Business Analytics and Optimization) Architecture Board (May 2012 – Dec 2013)
- Member of IBM SDE (Software Defined Environment) Architecture Advisory Board (Mar 2013 – Mar 2014)
- Member of IBM Shared University Research (SUR) program review board (Jan 2012 – Dec 2012)
- Member of IBM-China MOE (Ministry of Education) collaboration board (Jan 2011 – Dec 2011)
- Member of IBM China Development Labs architecture board (Jan 2010 – Dec 2013)

PATENTS/DISCLOSURES

1. Y. Pang, "System Component Failure Diagnosis", US 14/872276, Filed in May, 2015
2. Y. Pang, R. Faferko, J.W. Chen, Y.X. Liu, M. Donovang-Kuhlisch, "Application Service Aggregation and Management", US 14/302496, Filed in Feb, 2014. (The patent work have been incorporated in IBM GTS Cloud solution offering)
3. Y. Pang, J. Xu, "System and Method for Intelligent Advertisement using CAPTCHAs", CN820130769, Filed in Jul, 2013

4. Y. Pang, "Method and System for Building Mathematical Optimization Model using Interactive Graphical Pipeline", IPCOM000237716D, Published in Oct, 2014

5. H.T. Peng, Y. Pang, Y. Zhang, L. Nie, Y.Z. Cui, "System and Method of Smart Traffic Control based on Prediction", IPCOM000236690D, Published in Apr, 2014

6. Y. Pang, Y.Z. Cui, and Philip Starhill, "New format for mathematical optimization model", IPCOM000220104D, Published in Apr, 2012 (The patent disclosure work has been incorporated into IBM ILOG CPLEX Optimization Products)

7. "Method and System for Printed Circuited Board Production Scheduling", by Y. Pang, Y.S. Yip and H. Zhang, Motorola Invention Disclosure CML07329, Nov, 2008

8. "Evaluation and Benchmarking Method for Surface Mount Technology Assembly Line", by Y. Pang, K.T. Kee, Motorola Invention Disclosure CML07341, Dec, 2008

PUBLICATIONS (selected)

1. Y. Pang, "How Big Data Analytics Impacts Evidence-based Healthcare", Sigma: Insurance Research, Swiss Re Ltd, Aug, 2016

2. Y. Pang, J.W. Chen, R. Faferko, G. Africa, "An Architecture Model for Cloud Service Broker", IEEE Transactions on Cloud Computing, Submitted on Feb (under revision), 2015

3. Lam Shao Wei, Teo Joo Keng, Chiew Koon Yeow, Rajagopal Mohanavalli, Y. Pang, Ong Eng Hock, "Predictive Analytics for the Waiting Times of Critical Patients in the Emergency Department", SGH 21st Annual Scientific Meeting, Apr, 2015

4. Y. Pang, Xin Sheng Mao, "Next Generation Information Technology", chapter in the National Report of "China's 12th Five-Year Development Plan", published by China National Development and Reform Commission (NDRC), Nov, 2012

5. Y. Pang, L. Lian, "An ontology-based Asset Portal for Harvesting Optimization Solution Assets", IBM GCG RTE Conference, Aug, 2010 (best paper award)

6. S.K. Ong, Y. Pang and A.Y.C. Nee, "Augmented Reality Aided Assembly Design and Planning", Annals of the CIRP, Vol. 56, No. 1, pp.49 -- 52

7. Y. Pang, G. LAM, R. McLAIN, Y. Bai, C.L. Ren, "FAW Car Chooses Manufacturing Productivity Optimization Solution to Improve Production Productivity and Reduce Cost", IBM IMPACT 2010, May, 2010

8. Y. Pang and Y.S. Yip, "A Production Scheduling Model of Surface Mount Technology Lines", 2008 Motorola Technical Symposium (2008MTS), July, 2008

9. Y. Pang, "RFID in Supply Chain Operations: Opportunities and Challenges", July, 2007, Motorola Technical Report

10. Y. Pang, "Design for Logistics", Oct, 2007, Motorola Technical Report

11. Y. Pang, M.L. Yuan, A.Y.C. Nee, S.K. Ong and Kamal Youcef-Toumi, "A Markerless Registration Method for Augmented Reality based on Affine Properties", Hobart, Australia. CRPIT, 50. Piekarski, W., Ed. pp. 25-32

12. Y. Pang, A.Y.C. Nee, S.K. Ong, M.L. Yuan and Kamal Youcef-Toumi, "Assembly Feature Design in an Augmented Reality Environment", Assembly Automation, Vol.26, No.1, pp.34-43, January, 2006

13. Y. Pang, A.Y.C. Nee, S.K. Ong and Kamal Youcef-Toumi, "Evaluation and Planning of Manual Assembly on Workstation in an Augmented Reality Environment", Singapore-MIT Alliance Annual Symposium, 17-19 January 2006, Singapore

14. A.Y.C. Nee, S.K. Ong, Y. Pang and J.W.S. Chong, 2006, "Robot Programming and Assembly Design using Augmented Reality", Proceedings of the International Manufacturing Conference with China on Advances in Manufacturing Engineering, IMCC2006, ed. C.Y. Jiang, Northwestern Polytechnical University Press, ISBN 7-5612-2132-0, keynote address, 21-23 September 2006, Xian, Shaanxi, China, p. 4

15. Y. Pang, A.Y.C. Nee, Kamal Youcef-Toumi, S.K. Ong and M.L. Yuan, "Assembly Design and Evaluation in an Augmented Reality Environment", Singapore-MIT Alliance Annual Symposium, 19-20 January 2005, Singapore

16. Y.Q. Xia, R.Z. Tang, and Y. Pang, "Research in Production Planning and Scheduling for Semi-process Industry", Modular Machine Tool & Automatic Manufacturing Technique, 2003, No. 1, pp. 12 – 15

Book (chapter):
1. Prashant Jain, Y. Pang, "Cloud Computing Architecture Patterns", Chapter on "Handbook of Research on End-to-End Cloud Computing Architecture Design", IGI Global Publisher, July 2016

Invited Presentations and Talks (selected)
1. *2017 Global Big Data for Healthcare Workshop*, Peking University, Beijing, China, Jan, 2017 (Topic: Healthcare Operations Analytics)
2. *Europe Data Science Conference (EDSC) 2016*, Luxembourg, Nov, 2016 (Keynote: Big Data and Business Analytics: Accelerating Digital Transformation in Enterprises and Industries)
3. *China Smart Enterprise Summit 2016*, Boao, Hainan, China, Sep, 2016 (Topic: Big Data Analytics and Optimization in Supply Chain Planning)
4. *IHiS Healthcare Technology Seminar*, Integrated Healthcare Information Systems Pte Ltd, Singapore, June, 2016 (Topic: Key Technologies in Healthcare Analytics)
5. *Big Data for Precision Medicine Workshop*, The University of Hong Kong, Hong Kong, China, June, 2016 (Topic: A Study of Personalized Patient Treatment in Rheumatoid Arthritis (RA))
6. *Singapore Data Scientist Seminar*, Singapore, May, 2015 (Topic: Fundamentals in Business Analytics)
7. *IBM GMU Technical Conference*, Dubai, UAE, Feb, 2014 (Topic: Healthcare Analytics Reference Architecture)
8. *Singapore Healthcare Analytics Workshop*, IBM, Singapore, Nov, 2013 (Topic: The Next Frontier in Healthcare Analytics)
9. *Social Program Management Solution Technical Workshop*, Ministry of Social and Family Development, Singapore, Sep, 2013 (Topic: Analytics in Next Generation Social Service Platform)
10. *IRAS Technical Workshop*, Inland Revenue Authority of Singapore, Singapore Aug, 2013 (Topic: Apply Watson Cognitive Computing Technology in Citizen Service)
11. *IBM Healthcare Architect Annual Meeting*, Dallas, TX, US, June, 2013 (Topic: Healthcare Process Improvement – A Case Study from Singapore)
12. *Customs Solution Technical Workshop*, Singapore Customs, Singapore, Jan, 2013 (Topic: The Vision and Architecture Design of New TradeNet and TradeXchange)
13. *SuNing e-Commerce Symposium*, SuNing, Nanjing, Jiangsu, China, June, 2012 (Topic: Supply Chain Network Optimization and Inventory Optimization)
14. *IBM China Research and Development Open Day*, Beijiang, China, May, 2012 (Topic: Optimization-based Production Planning and Scheduling)
15. *Advanced Manufacturing Technical Workshop*, Foton Motor, Beijing, China, Apr 2011 (Topic: Manufacturing Productivity Optimization Solution)
16. *LARC Research Seminar*, Singapore Management University, Singapore, Mar, 2011 (Topic: Advanced Analytics and Optimization (AAO) Framework to Solve Complex Real World Problems)
17. *Supply Chain Management Forum*, Tsingdao Brewery, Qingdao, China, Aug, 2010 (Topic: Production Planning and Scheduling in Process Manufacturing Industry)
18. *FAW production planning and scheduling seminar*, First Automotive Works (FAW), Changchun, China, Jan, 2010 (Topic: Improve Productivity using Optimization-based Production Planning and Scheduling)
19. *Manufacturing Technology Workshop*, Changan Ford, Chongqing, China, Sep, 2009 (Topic: How to Apply Optimization Techniques in Manufacturing System)
20. *Chery Automotive Technical Workshop*, Chery Automotive, Wuhu, Anhui, China, Aug, 2009 (Topic: Supply Chain Optimization)
21. *Manufacturing Technology Forum,* Motorola, Penang, Malaysia, May, 2008 (Topic: The Optimization of Printed Circuit Board Assembly Lines)

TEACHING

1. Healthcare Analytics (CO5237), graduate course at NUS Business Analytics Center and School of Public Health, NUS (2016, Spring)
2. Business Analytics Capstone Module (DSC5102), graduate course at NUS Business Analytics Center and Business School, NUS (2017, Spring)
3. Business Intelligence Analytics (NICF), executive training course in Strategic Technology Management Institute at School of Computing, NUS (Jun, Oct, 2016)