

S. JOE QIN, Ph.D.  
NAI Fellow; IFAC Fellow; AIChE Fellow; IEEE Fellow  
Email: [sjoeqin@outlook.com](mailto:sjoeqin@outlook.com); [president@ln.edu.hk](mailto:president@ln.edu.hk)

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## EDUCATION

**Ph.D., Chemical Engineering.** Department of Chemical Engineering and Institute for Systems Research, University of Maryland at College Park. 1992.

**M.S., Automatic Control.** Department of Automation, Tsinghua University, Beijing. 1987

**B.S., Automation.** Department of Automation, Tsinghua University, Beijing. 1984

## ACADEMIC AND INDUSTRIAL EXPERIENCE

- President and Wai Kee Kau Chair Professor, Lingnan University, Hong Kong, from 09/01/2023 -
- President Designate, Acting President, and Wai Kee Kau Chair Professor, Lingnan University, Hong Kong, from 07/01/2023 - 08/31/2023
- **Chair Professor of Data Science**, School of Data Science, City University of Hong Kong, Hong Kong, 01/2020 - 6/30/2023
- **Dean**, School of Data Science, City University of Hong Kong, Hong Kong, 01/2020 - 1/1/2023; Acting Dean, 01/2023 - 6/30/2023
- **Director**, Hong Kong Institute for Data Science, City University of Hong Kong, Hong Kong, 02/2020 - 6/30/2023
- **Director**, Centre for Systems Informatics Engineering, City University of Hong Kong, Hong Kong, 08/2020 - 6/30/2023
- **Fluor Professor**. Mork Family Department of Chemical Engineering and Materials Science, Ming Hsieh Department of Electrical Engineering, and Daniel J. Epstein Department of Industrial and Systems Engineering, **University of Southern California**, 08/2007 - 12/2019
  - **Vice President and Presidential Chair Professor**, Chinese University of Hong Kong, Shenzhen, 1/2014-12/2016 (on leave from University of Southern California)
- **Paul D. and Betty Robertson Meek and American Petrofina Foundation Centennial Professorship in Chemical Engineering and Quantum Chemical Corporation Endowed Fellowship in Engineering, The University of Texas at Austin**, 08/2003 - 08/2007
- **Associate Professor and Quantum Chemical Corporation Endowed Fellowship in Engineering, The University of Texas at Austin**, 08/2000 - 08/2003
- **Assistant Professor** of Chemical Engineering, **The University of Texas at Austin**, 08/1995 - 08/2000
- **Visiting Professor**, Dept. of Chemical and Biological Engineering, University of Wisconsin, Madison, Spring Semester, 2004.
- **Visiting Professor**, Intel Corp., Chandler, AZ, May 2005 - September 2005
- Sabbatical Leave, Advanced Micro Devices, Austin, Texas, July 2001 - August 2002. Developed fab-wide control, optimization and monitoring technology for the next generation wafer fabs at AMD.
- **Principal Engineer**, Fisher-Rosemount Systems, Inc. (current Emerson Electric), Austin, Texas, 1992 - 1995.

## ADMINISTRATIVE POSITIONS

- **Member**, CityU (Dongguan) Senior Management Committee (Chair by CityU President-Elect Boey), 09/2022 - present
- **Chair**, Senate ad hoc TLQ Review Committee on TLQ and its use in PBPR, 01/2022 - present
- **Committee Member, Honorary Awards Committee** of the University elected by the Senate, 01/2022 - 12/2023
- **Committee Member**, Recommending Committee for Appointment of Director of Knowledge Transfer, Dec. 2021 - Aug. 2022
- **Committee Member**, Search Committee for Appointment of Dean of College of Business. Sept. 2021 - present
- **Committee Member**, Dongguan Campus Steering Committee of CityU; 1/2020 - present

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- **Committee Member**, Knowledge Transfer Committee of CityU; defining policies for knowledge transfer, July 1, 2020 - Jun 30, 2022
- **Committee Member**, Recommending Committee for Appointment of Director of Student Development Services, Dec. 2021 - March 2022
- **Committee Member**, Approving Committee of the Senior Advancement Analyst in OVPDE of CityU, Oct. 2021.
- **Committee Member**, Search Committee for Appointment of Dean of School of Energy and Environment, Oct. 2021 - April 2022
- **Committee Member**, University Committee for Chair Professors and Professors, 9/1/2021 - 8/31/2022; 9/1/2022 - 8/31/2023.
- **Committee Member**, Appeal Committee for the Disciplinary Authority regarding disciplinary actions, City University, 2021
- **Committee Member**, Recommending Committee for Appointment of Director of the Global Engagement Office of the City University, 2021
- **Committee Member**, Recommending Committee for Appointment of Director of the Enterprise Solutions Office of the City University, 2021
- **Committee Member**, University Appeals Committee (processing appeal cases for faculty promotions), 2021
- **Committee Member**, HK Tech 300 Executive Committee of CityU, overseeing \$500M investment in technology incubation over three years. 2021
- **Committee Member**, Search Committee for Appointment of Dean of College of Science. March - Nov. 2021.
- **Committee Member**, High Performance Computing Steering Committee of CityU, Jan. 2021 - present
- **Committee Member**, Selection Committee for Vice President of Student Affairs at CityU, Oct.-Nov. 2020
- **Committee Member**, Committee for Academic Structure and Staffing, CityU, 2020
- **Dean**, School of Data Science, City University of Hong Kong, Hong Kong, Jan. 2020 - present
  - **Chair and Organizer**, CityU HK Tech Forum on Data Science and AI cum Data Science Day (online), City University of Hong Kong, July 26-27, 2022
  - **Chair and Organizer** of Data Science Day, International Forum on Data Science (online), City University of Hong Kong, Aug. 2021
  - **National Chair and Organizer** of IFAC Virtual International Workshop on Data Science and Systems, free registration, March, May, and July 2021
  - **Chair and Organizer** of Data Science Day, International Forum on Data Science (online), City University of Hong Kong, Aug. 2020
  - **Chair and Organizer**, Data Science Approach to the COVID-19 Pandemic, free registration, City University of Hong Kong, May 2020
  - **Member** (Ex-officio), Management Board of CityU; advising role to the President. Jan. 2020 - present
  - **Member** (Ex-officio), Academic Policy Committee, Jan. 2, 2020 - present
  - **Senate Member**, CityU. Jan. 2, 2020 - present
- **Director**, Hong Kong Institute for Data Science, City University of Hong Kong, Hong Kong, Feb. 2020 - present
- **Vice President and Presidential Chair Professor**. The Chinese University of Hong Kong, Shenzhen, 2014.1 - 2016.12. Oversaw Globalization, Student Affairs, Admissions, and Communication and Public Relations
  - **Improved admissions to be on par or ahead of 985 universities in China**
  - **Administered Student Affairs**
    - Established student organizations and clubs
    - Established communications with CUHK Student organizations
    - Promoted experiential learning with Cultural Colloquia, Master Colloquia, and Liberal Education Colloquia
  - **Administered and directly managed Global Partnership Programs:**

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- **Europe:** Established partnerships with 15 European universities including Cambridge (UK), Exeter (UK), LSE (UK), Southampton (UK), Sussex (UK), UCL (UK), TU Dortmund (Germany), UC Dublin (Ireland), and University of St. Gallen (Switzerland)
  - **North America:** Inaugurated partnerships with UBC (Canada) UC Berkeley (US), Duke (US), UCLA (US), Minnesota (US), etc.
  - **Asia-Pacific:** Established partnerships with six top Asian universities in Japan, Korea, and Taiwan
  - **Board Member:** University Provisional **Executive Board**, March 2014-2016
  - **Board Member:** University Provisional **Academic Board**, March 2014-2016
  - **Committee Member:** University **Resource Allocation Committee**, March 2014-2016
  - **Member:** Search Committee for Head Master of the Diligentia College, 2016
  - **Member:** Search Committee for Head Master of the Shaw College, 2015.
- **Vice Dean**, Viterbi School of Engineering. University of Southern California, 2011 - 2014.1
  - **Developed Partnerships with:** Tsinghua University, Peking University, Shanghai Jiaotong University, Tongji University, University of Science and Technology of China, Huazhong University of Science and Technology, Beijing Jiaotong University, Beijing University of Chemical Technology, Hong Kong University of Science and Technology, National Tsing Hua University (Taiwan), etc., and universities in Japan and Korea.
  - **Developed the Inaugural Dual M.S. Degree Program** between USC and Tsinghua University that breaks the traditional barrier.
  - Developed Integrated BS-MS degree programs between the distance education network (DEN) from USC and Chinese partners.
  - Chaired and Organized bilateral Symposia between USC and Tsinghua University faculties to exchange new research ideas and results.
  - Chaired and Organized bilateral Workshops between USC and Hong Kong University of Science and Technology.
  - Organized undergraduate research exchange students between USC and Tsinghua University
  - Developed fund raising perspectives and organized faculty to apply for US-China international funds for research and education.
- **Engineering Faculty Council Member**, Viterbi School of Engineering. University of Southern California, 2008 - 2011.
- **Associate Chair**, Department of Chemical Engineering. University of Texas at Austin, 2005 - 2007. Responsible for undergraduate education curriculum planning and teaching staff assignment.
- **Director, Graduate Admissions**, Department of Chemical Engineering. University of Texas at Austin, 2001-2003

### ADJUNCT POSITIONS

- **Cheung Kong (Changjiang) Chair Professor**, Tsinghua University, China, 2006 - 2009
- **Adjunct Professor**, Director of Green Engineering and Renewable Technology, Beijing University of Chemical Technology, Beijing, 2010 - 2013
- **Adjunct Professor**, School of Chemical Engineering, South China University of Technology, Guangzhou, China, 2001 - 2004

### HONORS AND AWARDS

- **The 2022 IEEE CSS Transition to Practice Award.** *“For distinguished contributions to the field of data-driven control engineering, particularly for methodological advances and knowledge transfer in model predictive control, systems safety and...”*
- **CAST Computing in Chemical Engineering Award**, 2022, by American Institute of Chemical Engineers (AIChE).

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- **Grand Prize:** Microsoft Outstanding AI Influencer Award (Academic Group) and **Gold Award**, Global AI Challenge for Building E&M Facilities organized by EMSD of Hong Kong, 2022. Project Supervisors: S Joe Qin and XY Zhao; Team leader: Yiren Liu (SDSC PhD student). Team members: SL Yao, YX Huang, and G Han.
- **World's Top 2% Most-cited Scientists** published by Stanford University since 2019.
- **The IAI Conference Best Paper Award**, Yining Dong, Yingxiang Liu, S. Joe Qin, Dynamically Embedded Latent Feature Analysis for Plant-Wide Troubleshooting, the 3rd International Conference on Industrial Artificial Intelligence, Nov. 8-11, 2021, Shenyang, China.
- **The IEEE INFOCOM 2021 Best Poster Award.** Yanfang Mo, Qiulin Lin, Minghua Chen, S. Joe Qin, Optimal Peak-Minimizing Online Algorithms for Large-Load Users with Energy Storage, paper #1570699920. May 2021
- **Fellow, National Academy of Inventors (NAI).** Citation: "have demonstrated a highly prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on the quality of life, economic development, and the welfare of society", 12/2020
- **Chair Professor of Data Science**, City University of Hong Kong, 2020.1-present.
- **Fluor Professor of Process Engineering**, University of Southern California, 2007-2019.12.
- **Fellow**, American Institute of Chemical Engineers (AIChE), July 2018.
- **First Class Academic Award in Natural Science of Liaoning Province**, China, July 2015
- **Fellow**, International Federation of Automatic Control (IFAC), 2014.
- **Zhang Zhongjun Best Paper Award**, 2012 Chinese Process Control Conference, A Combined Index for ICA and Its Applications on Multivariate Process Fault Diagnosis, co-authored by JC Fan, YQ Wang, and SZ Qin, Xiamen, August 12, 2012.
- **Fellow**, Institute of Electrical and Electronics Engineers (IEEE), 2011, "For contributions to model predictive control technology and fault diagnosis in industrial processes"
- **Best paper award of 2011 by *Acta Automatica Sinica***, Gang Li, S. Joe Qin, Yindong Ji, and Donghua Zhou (2009). Total PLS based contribution plots for fault diagnosis. *Acta Automatica Sinica*, 35 (6): 759-765.
- **The Northrop Grumman Excellence in Teaching Award**, Viterbi School of Engineering, University of Southern California, 2011
- **Cheung Kong (Changjiang Chair) Professor**, elected by the Ministry of Education of China, Tsinghua University, China, 2006 - 2009
- **Control Engineering Practice Best Paper Prize**, "*For an excellent survey and unification of different methods and applications of model predictive control theory*" based on S.J Qin and T.A. Badgwell, *A survey of industrial model predictive control technology*, Control Engineering Practice, 2003, at the 16th International Federation of Automatic Control (IFAC) World Congress, Prague, July 4-8, 2005
- **Faculty Appreciation 2003 Award**, '*In Recognition to Your Commitment to Teaching Excellence*'. Student Engineering Council, University of Texas, March 2003
- **U.S. National Science Foundation, CAREER Award**, 2000
- **Distinguished Overseas Young Investigator Award**, National Natural Science Foundation of China, 2003-2006.
- **Faculty Research Assignment Award**, The University of Texas, 2001-2002
- **Halliburton/Brown & Root Young Faculty Excellence Award**, College of Engineering, University of Texas, 1999.
- **DuPont Young Professor Award**, 1999-2002.
- **Paul D. and Betty Robertson Meek and American Petrofina Foundation Centennial Professorship in Chemical Engineering**, University of Texas, 2003-2007
- **Quantum Chemical Corporation Endowed Faculty Fellowship in Engineering**, University of Texas, 2001-2007
- **Chevron Teaching Fellowship in Chemical Engineering**, University of Texas, 2000-2001

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- **Faculty Excellence Award**, College of Engineering, University of Texas, Austin, 1997.
- **Departmental Teaching Award**, Dept. of Chemical Engineering, The University of Texas, Austin, 1997.
- **Alcoa Foundation Award**, 1997.
- **Control Product of the Year** and **Overall Product of the Year**. 1995 Manufacturing Industry Achievement Awards in Birmingham, UK, for FRSI's Intelligent Fuzzy Logic Controller for which I was the inventor. Sponsored by The Dept. of Trade and Industry, The Engineering Council, Omron, and Shell Oil.
- **Product Recognition Award**. Sponsored by *Control Engineering* Magazine. In recognition of the *auto-tuned fuzzy logic control* work at Fisher-Rosemount Systems, Inc. 1994
- **Best Paper Awards Coauthored with Students**
  - **Best Student Paper Award**, *AEC/APC Symposium XV* organized by Sematech, with C. Harrison, R. Good, and D. Kadosh, Sept. 2003
  - **Best Student Paper Award**, *AEC/APC Symposium XIV* organized by Sematech, with G. Cherry and R. Good, Sept. 2002
  - **Best Student Paper Award**, *AEC/APC Symposium XIII* organized by Sematech, coauthor, with K. Chemness, R. Good, and G. Cherry, Oct. 2001

**PROFESSIONAL SERVICES AND ACTIVITIES** ←

- **Member**, Application Prize Selection Committee for the 2023 IFAC World Congress.
- **Panelist**, Virtual Digital Manufacturing and Processing Workshop, organized online by AIChE Advanced Manufacturing Society, June 3, 2021.
- **External Reviewer** for the Green Tech Fund, Environmental Protection Department of Hong Kong, 2021
- **Hong Kong Convention Ambassador**, appointed by The Hong Kong Tourism Board (HKTB), 2020-present
- **Working Group Chair**, Big Data Analytics for IFAC TC6.1: *Chemical Process Control*, 2017 - present
- **President**, Tsinghua Alumni Academia Club (TAAC), with over 600 T/TT professors from North American universities, March 2018 - Dec. 2020
- **Chairman and President**, North America Federation of Tsinghua Alumni Associations, September 10/2017 - 12/2019
- **Vice-Chair on Education**, *IFAC Technical Committee in Modeling, Identification and Signal Processing*, 2017 - present
- **Member**, *IFAC Technical Committee in Modeling, Identification and Signal Processing*, 2003 - present
- **Member, Technical Committee**, *IFAC Technical Committee on Chemical Process Control*, 2012 - present
- **Member**, *Technical Committee on Big Data Applications, Society of Automation of China*, July 2016 - present
- **Member**, *Technical Committee on Control Theory of the Society of Automation of China*, Jan. 2014 - present
- **Executive Member**, *Technical Committee on Process Control, Chinese Association of Automation*, July 2009 - present
- **Member**, *IEEE Technical Committee on Industrial Process Control*, 2008 - 2014
- **Member of the International Advisory Board to the President**, Beijing Jiaotong University, 2013-2017.
- **Member of the Advisory Board**, University of Maryland, College Park, Department of Chemical Engineering, 2013 - 2015.
- **Member**, AIChE International Committee, 2011- 2014
- **Lawrence Berkeley National Laboratory BEST-Dairy Project Advisory Committee**, 6/2008 - 6/2010

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- **Member**, IFAC *Journal of Process Control*, Best Paper Prize Selection Committee, 2008 - 2011
- **Member**, IFAC *Control Engineering Practice*, Best Paper Prize Selection Committee, 2005 - 2008
- **Director**, AIChE Computing and Systems Technology (CAST) Division, 2003 - 2006.
- **Work Group Chair**, Industrial Process Control, Control Systems Society, IEEE, 1995-1996.
- **Panelist**, IFAC World Congress, 1999.
- **Panelist**, IFAC World Congress, 1996.
- **Panelist**, National Science Foundation CBE Proposal Review Panel, 2009.
- **Panelist**, National Science Foundation CBE Proposal Review Panel, 2007.
- **Panelist**, National Science Foundation SBIR/STIR Proposal Review Panel, 2005.
- **Panelist**, National Science Foundation SBIR/STIR Proposal Review Panel, 1999.
- **Reviewer**, *National Science Foundation, Automatica, AIChE Journal, IEEE Trans. on Automatic Control, IEEE Trans. on Control Systems Technology, IEEE Trans. on Semi. Manufacturing, Chem. Eng. Sci., Computers & Chem. Eng., J. of Process Control, I&EC Research, IEEE Control Systems Magazine, Canadian J. of Chemical Eng., J. of Chemometrics, etc.*
- **Fellow**, *International Federation of Automatic Control* (since 2014)
- **Fellow**, *IEEE* (since 2011, Member No. 03484631)
- **Fellow**, *AIChE* (since 2018, Member No. 133853)
- **Member**, AAAS (2013-2022)

**EDITORIAL ACTIVITIES** 

- **Guest Editor**, Special Section, T. Yang, J. Ding, K. G. Vamvoudakis and S. J. Qin, "Guest Editorial: Industrial Artificial Intelligence for Smart Manufacturing," in: *IEEE Transactions on Industrial Informatics*, vol. 17, no. 12, pp. 8319-8323, Dec. 2021.
- **Guest Editor**, Special Issue: F. Qian, Y. Jin, S. J. Qin and K. Sundmacher, "Guest Editorial Special Issue on Deep Integration of Artificial Intelligence and Data Science for Process Manufacturing," in: *IEEE Transactions on Neural Networks and Learning Systems*, vol. 32, no. 8, pp. 3294-3295, Aug. 2021.
- **Guest Editor**, Tom Edgar special issue in *Computers & Chemical Engineering*, with Hahn, J., and Baldea, M., 4 Oct 2020, in: *Computers and Chemical Engineering*. 141, 107011
- **Associate Editor**, *Journal of Process Control*, 2005 - 2015; 2019-present.
- **Senior Editor**, *Journal of Process Control*, 2015-2018.
- **Editor**, *Control Engineering Practice*, Journal for Int'l Federation of Automatic Control (IFAC), 1999-2005.
- **Associate Editor**, *IEEE Control Systems Magazine*, 2011-2013.
- **Member of the Editorial Board**, *Control Engineering of China*, Jan. 2005- present.
- **Member of the Editorial Board**, *Journal of Chemometrics*, Jan. 1999- present.
- **Associate Editor**, *IEEE Transactions on Industrial Informatics*, 2008 - 2011.
- **Associate Editor**, *Journal of Control Sci. and Eng.*, 2006 - 2009.
- **Editor**, *AIChE Chemical Engineering Faculty Directory*, 2000-2007.
- **International Editor**, *ICHEME Transactions Part A: Chem. Eng. Research and Design*, 2002-2004
- **Associate Editor**, *IEEE Transactions on Control Systems Technology*, 1994-1997.
- **Guest Editor**, Special Issue, *Journal of Process Control*, Big Data: Data Science for Process Control and Operations, Volume 67, Pages 1-206. 2018
- **Guest Editor**, Special Issue: Chai, T., Wang, H., Qin, S. J., Chen, T., & Shah, S. L. (2014). Guest editorial integrated optimization of industrial automation. *IEEE transactions on automation science and engineering*, 11(4), 963-964.

- **Guest Editor**, Special Issue on Thomas McAvoy Festschrift, *Journal of Process Control*, with Prof. Dale Seborg, Volume 21, Issue 3, March 2011, Pages 309-310.
- **Guest Editor**, Special Section on Industrial Control, *IEEE Transactions on Industrial Informatics*, volume 6, no. 1, with Prof. W.K. Ho, 2010.
- **Guest Editor**, Special Issue on Advanced Process Control for Semiconductor Manufacturing, *Journal of Process Control*, with Prof. W.K. Ho, 2008
- **Guest Editor**, Special Issue on Dynamics and Control of Chemical Processes, *Control Engineering Practice*, with Profs. Jay Lee and E. Yoon, June 2002.
- **Guest Editor**, Special Issue on Advanced Control of Chemical Processes, *Control Engineering Practice*, with Prof. L.T. Biegler, August 2001.

#### CONFERENCE ORGANIZATION ACTIVITIES

- **International Program Committee Member**, the 12th IFAC Symposium on Advanced Control of Chemical Processes, Toronto, Canada, July 14 - 17, 2024.
- **Session Chair**, Statistical Learning II, The 2023 62nd IEEE Conference on Decision and Control (CDC), December 13-15, 2023, Singapore.
- **Session Chair**, Modeling and Identification, IEEE Conference on Control Technology and Applications (CCTA), Bridgetown, Barbados on August 16-18th, 2023.
- **Session Chair**, Time Series Modelling, the 22nd IFAC World Congress, July 11, 2023, 13:30-15:30, Track 6, Room 311. Yokohama, Japan
- **Technical Area Co-Chair and Associate Editor (Modeling, Learning, and Identification)**, the 11<sup>th</sup> IFAC DYCOPS Symposium, 2022
- **Session Chair**, IEEE CDC 2021 Session *Statistical Learning*, Dec. 14-17, 2021, Austin, TX (online)
- **International Program Co-Chair**, 3<sup>rd</sup> International Conference on Industrial AI, co-sponsored by IEEE IES, IEEE CIS, and CAA, Shenyang, Liaoning, Nov. 8-11, 2021
- **Invited Session Chair/organizer**, co-chaired and organized by Rolf Findeisen, Machine Learning for Systems Analytics and Control Conference: 19th IFAC Symposium on System Identification. Virtual, July 13-16, 2021.
- **National Organization Chair**, IFAC Workshop Series on Control Systems and Data Science, Modules 1-3, March 19, May 21, and July 9, 2021. Online.
- **International Program Co-Chair**, 3<sup>rd</sup> International Conference on Industrial AI, co-sponsored by IEEE IES, IEEE CIS, and CAA, Shenyang, Liaoning, Aug. 20-22, 2021
- **National Organization Chair**, IFAC Workshop Series on Control Systems and Data Science, March 19 - July 7, 2021, three online modules, Hong Kong, China.
- **Member**, International Program Committee for IFAC SYSID 2021, Italy
- **International Program Co-Chair**, 2<sup>nd</sup> International Conference on Industrial AI, co-sponsored by IEEE IES, IEEE CIS, and CAA, Shenyang, Liaoning, Oct. 23-25, 2020
- **Invited Session Chair**, The 21st IFAC World Congress, VI161-02: Data Science for Systems, Berlin, Germany, July 13-17, 2020
- **Invited Session Co-Chair**, The 21st IFAC World Congress, VI161-03: Industrial Data Science and Machine Learning Applications, Berlin, Germany, July 13-17, 2020
- **Technical Area Co-Chair**, International Conference on the Foundations of Process Analytics and Machine learning, Raleigh, North Carolina, August 6-9, 2019
- **International Program Chair**, 1<sup>st</sup> International Conference on Industrial AI, co-sponsored by IEEE IES, Shenyang, Liaoning, July 22-26, 2019
- **General Chair**, The 2<sup>nd</sup> Forum on Frontiers of Science and Engineering - Smart and Sustainable Communities, Tsinghua University Campus, Beijing, China, July 3-5, 2019
- **Chair and Organizer**, Workshop on Industrial Data Science (WIDS), Shenzhen, China, Jan. 7-8, 2019
- **Chair and Organizer**, Workshop on Challenges and Opportunities in Machine Learning for Industrial Intelligence (MLII), Shenzhen, China, July 30-Aug. 1, 2018
- **National Organization Chair**, the 10<sup>th</sup> IFAC ADCHEM Symposium, July 25-27, 2018, Shenyang, China.



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- **General Chair**, Forum on Frontiers of Science and Engineering - Everything towards AI, GIX Campus, University of Washington, Seattle, WA, May 28-30, 2018
- **IPC International Chair (USA)**, World Congress on Intelligent Control and Automation (WCICA), Shenyang, June 2014.
- **Associate Editor** (Contributed Papers) for **SysTol'13**, 2013 2nd International Conference on Control and Fault Tolerant Systems, Nice, France, October 9-11, 2013.
- **IPC Area Co-chairman: Process and Control Monitoring**, IFAC ADCHEM Symposium 2012, Singapore.
- **Plenary Session Chair**, "Plenary II", IFAC ADCHEM Symposium 2012, Singapore;
- **Keynote Session Chair**, "Keynote 10" IFAC ADCHEM Symposium 2012, Singapore;
- **Keynote Session Co-chair**, "Keynote 11", IFAC ADCHEM Symposium 2012, Singapore
- **Advisory Committee Member**, 8<sup>th</sup> International Conference on Process Control, 2012
- **Associate Editor**, AIChE Sessions for 2011 American Control Conference, San Francisco
- **Session Chair**, IEEE CDC 2011, Dec. 10-13, 2011, Orlando FL.
- **Session Chair**, AIChE Annual Meetings, 2011, Modeling, Optimization and Control of Sustainable Processes, Minneapolis, MN.
- **Session Chair**, 2011 American Control Conference session "Predictive Control Applications", June 29-July 01, 2011
- **Session Co-chair**, IEEE CDC 2010 session "Filtering and Estimation IV", Dec. 14 -17, 2010, Atlanta, GA
- **Session Chair**, AIChE Annual Meetings, 2010, 10B04 Process Monitoring and Fault Detection, Salt Lake City, Utah
- **Associate Editor**, 7th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes (SAFEPROCESS), June 30 - July 3, 2009, Barcelona, Spain.
- **Session Chair**, *PCA-based methods*, at IFAC Safeprocess Symposium, Barcelona, Spain, 6/30 - 7/3/2009.
- **Session Chair**, *Safety and reliability*, at IFAC Safeprocess Symposium, Barcelona, Spain, 6/30 - 7/3/2009.
- **Session Chair**, AIChE Annual Meetings, 2008, Centennial Session, Philadelphia
- **Session Chair**, IFAC World Congress, *Automation*, July 2008, Seoul, Korea.
- **IPC Area Co-chairman**, 2007 IFAC-DYCOPS-8 Symposium: Monitoring and supervision, Cancun, Mexico, June 6-8, 2007.
- **Session Chair/Co-Chair**, AIChE Annual Meetings, 2006 (San Francisco), 2005 (Cincinnati, OH), 2004 (Austin, TX), 2003 (San Francisco), 2002 (Indianapolis, IN), 2001 (Reno, NV), 1999 (Dallas, TX), 1998 (Los Angeles), 1996 (San Francisco).
- **Session Chair**, 2007 AIChE Spring National Meeting: 10B00 Process and Control System Monitoring
- **IPC Member**, the 6th World Congress on Intelligent Control and Automation, June 21-23, 2006, Dalian, China.
- **IPC Member**, 6th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes (SAFEPROCESS), August 30 - September 1, 2006, Beijing, China.
- **IPC Member**, 8<sup>th</sup> IFAC ADCHEM Symposium 2006, April 2 - 5, Gramado, Brazil.
- **Session Co-chair and Co-organizer**, IFAC Symposium on System Identification, March 29 - 31, 2006, Newcastle, Australia
- **Session Co-chair**, IEEE Conference on Decision and Control, 2004, Atlantis, Bahamas.
- **IPC Member**, 2004 IEEE International Symposium on Intelligent Control. Sept. 2-4, 2004, Taipei, Taiwan
- **IPC Area Co-chairman**, 2004 IFAC-DYCOPS-7 Symposium, Boston, MA, July 4 -6.
- **IPC Area Co-chairman: Modeling and Identification**, IFAC ADCHEM Symposium 2004, Jan. 11-14, Hong Kong.

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- **NOC Member**, IFAC ADCHEM Symposium 2004, Jan. 11-14, Hong Kong.
- **Session Chair**, AIChE Spring Meeting, 2003, New Orleans.
- **Session Co-chair**, AEC/APC Symposium XIV, Salt Lake City, 2002
- **Session Chair and Organizer**, American Control Conference, 2002.
- **Keynote Session Chair**, IFAC DYCOPS-6, Korea, June 4, 2001.
- **IPC Member**, IFAC CHEMFAS, Korea, 2001.
- **IPC Member**, IFAC DYCOPS-6, Korea, 2001.
- **Session Chair**, Second Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean, May 20 -24, 2001.
- **Session Chair**, Chemical Process Control-VI, Tucson, AZ, January 2001.
- **IPC Member**, IFAC ADCHEM 2000, Italy, 2000.
- **Session Chair**, American Control Conference, 1999.
- **Session Co-Chair**, IFAC World Congress, 1999.
- **IPC Member**, IFAC DYCOPS-5, Greece, 1998.
- **IPC Member**, IFAC Symposium on Control of Natural Disasters, Japan, 1998.
- **Vice-Chair for Industry & Applications**, *American Control Conference* 1997.
- **Session Co-Chair**, IFAC World Congress, 1996.
- **Work Group Chair**, Industrial Process Control, Control Systems Society, IEEE, 1995-1996.
- **Session Chair**, American Control Conference, 1995.
- **Session Chair**, American Control Conference, 1994.
- **Chair and Organizer**, *Advanced Control Workshop* for the User Group for Fisher-Rosemount, 1993 and 1994.

**GRANTS AND RESEARCH SPONSORS** 

1. **PI (Co-PI: YN Dong)**. 大型遥感卫星在轨机电性能退化的压缩感知及预测方法课题 **04**: 基于压缩感知的卫星在轨机电性能退化趋势预测算法, 国家科技部国家重点研发计划项目, **RMB 2,160,000**. **01 May 22 - 30 Apr 25**
2. **PI (Co-I: YN Dong)**, Research on Shenzhen Metro Passenger Flow Big Data Dimensionality Reduction Real-time Modeling, Congestion Alarming and Smart Commuting Methods, RMB1,000,000 (PI share: 70%), 2021 年深港澳科技计划 C 类项目. 1/06/22 - 31/05/25
3. **Project Coordinator (Co-I's: Lishuai Li, YN Dong)**, Aerospace System Prognostics and Health Management Model and Telemetry Task Optimization (航空航天系統故障診斷與預測數據建模及測控任務優化). Hong Kong ITF-TCFS, HK\$2,492,500. (PC share: 45%) GHP/145/20. Sept. 1, 2022-Aug. 31, 2024
4. **PI, General Research Fund** by RGC, Dimension reduction modeling methods for high dimensional dynamic data in smart manufacturing and operations, HK\$1,093,580, No. 11303421, Sept. 1, 2021-Aug. 31, 2024.
5. **Co-PI**, "Big data-driven abnormal situation intelligent diagnosis and self-healing control for process industries (U20A20189) (大数据驱动的流程工业过程异常工况智能诊断与自愈控制)", NSF-China. Grant total: RMB2,640,000, RMB1,056,000 (Co-PI share). 2021.1.1-2024.12.31.
6. **Co-PI**, CityU Strategic Interdisciplinary Research Grant (SIRG), A Big Data Predictive Decision System for COVID-19 Epidemic in Hong Kong, HK \$300,000, PI: QP Zhang, 1 July 2021 - 30 Jun. 2023.
7. **PI, IFAC Activity Fund** to organize the first IFAC Workshop Series on Control Systems and Data Science, March - July, 2021, Euro 50,000.
8. **Co-PI**, RGC CRF Crant, Resilient PPE Supply Chains for Hong Kong Health Systems: Current and Post Covid-19 Pandemic (C1143-20G), grant total: HK\$4,172,126 (PI: Houmin Yan, Co-PI's share: HK\$410,000). 1 March 2021 - 29 Feb. 2024.

9. **PI**, SGP: Bridging between Systems Theory and Dynamic Data Learning towards Industrial Intelligence and Industry 4.0, City University of Hong Kong: HK \$1,989,940, 1/09/20 - 31/08/23. Grant date: 22/06/20.
10. **Co-PI**, HMRF: Modelling of Hong Kong COVID-19 control strategies considering different population immunity scenarios (PI: Sean Yuan, Co-PIs: D. Pfeiffer, S.J. Qin, QP. Zhang), Health and Medical Research Fund, HK \$749K. 1/11/2020-31/10/2021.
11. **PI**, Hong Kong Institute for Data Science, City University of Hong Kong. Director, manages HK \$30,000,000, 01/07/2018 - 30/06/23.
12. **Co-PI**, U.S. Department of Energy, Enabling Efficient Surveillance, Control, and Automation of Geothermal Operations with Advanced Predictive Analytics (DE-EE0008765), Co-PI with Behnam Jafarpour, \$624,456 (Joe Qin's share: \$196,719; withdrawn due to job change), Aug. 2019-July 31, 2021.
13. DLG Energy Pty Ltd. Study on battery systems control and management, \$130,000, Aug. 2018-Aug. 2020.
14. Shenzhen Committee of Science and Innovations. Fundamental Research Grant, RMB3,000,000 (\$437,317). Dynamic Latent Variable Analytics for Big Data, July 2017 - June 2019.
15. Genentech Inc. BioProcess Fault Detection and Root-cause Diagnosis, \$82,500, Jan. 1 - Dec. 31, 2017.
16. Shenzhen Committee of Science and Innovations. Fundamental Research Grant No. 20160207, RMB 3,000,000 (\$461,538). Demand side management technology research for smart-grids, Aug. 2016 - July 2019.
17. NSF China Ultra Key Project No. 61490704, RMB2,480,000 (\$403,252). Big data and knowledge based fault modeling theory and methodology for high speed train information and control systems. Jan. 2015-Dec. 2019
18. Chevron CiSoft, \$143,932. *Efficient and Scalable Data Cleansing and Compression towards Smart Data Management*. Jan.1- Dec. 31, 2016.
19. Chevron CiSoft, \$302,640. *Inferential Molecular Modeling* (\$140,650); *Efficient and Scalable Data* (\$161,990). Jan.1- Dec. 31, 2015.
20. Chevron CiSoft, \$336,192. *Inferential Modeling of Important Upstream Physical Properties* (\$162,900); *Efficient and Scalable Data Cleansing and Compression towards Smart Data Management* (\$171,292). Jan.1- Dec. 31, 2014.
21. Johnson Controls, Inc., Total: \$165,000 (2007: \$10,000; 2008: \$25,000; 2009: \$25,000; 2010: \$35,000; 2011: \$35,000; 2012: \$35,000), TWCCC (Texas-Wisconsin-California Control Consortium) unrestricted grant, 8/16/2007 - 12/15/2013.
22. Weyerhaeuser, Total: \$100,000 (2007: \$25,000; 2008: \$25,000; 2009: \$10,000; 2010: \$10,000; 2011: \$10,000; 2012: \$10,000; 2013: \$10,000), TWCCC (Texas-Wisconsin-California Control Consortium) unrestricted grant, 8/16/2007 - 10/1/2014.
23. Bayeco-Technologies, Inc., Total: \$100,000 (2011: \$35,000; 2012: \$35,000; 2013: \$30,000), TWCCC (Texas-Wisconsin-California Control Consortium) unrestricted grant, 6/11/2011 - 06/10/2014.
24. Air Liquide, Inc., \$35,000 (1/1/2013) TWCCC unrestricted grant
25. Chevron CiSoft, \$135,000. *Inferential Modeling of Important Upstream Physical Properties*. Jan.1- Dec. 31, 2013.
26. Praxair, Inc., Total: \$141,500 (2008: \$25,000; 2009: \$25,000; 2010: \$35,000; 2011: \$35,000; 2012: \$21,500), TWCCC (Texas-Wisconsin-California Control Consortium) unrestricted grant, 7/31/2008 - 12/10/2014.
27. State Administration of Foreign Experts Affairs of China, Special Program for Elite Overseas Experts, RBM 270,000, Aug. 2012 - Aug. 2013.
28. Chevron CiSoft, \$271,600. *Inferential Modeling of Important Upstream Physical Properties* (\$145,500); *Efficient and Scalable Data Cleansing and Compression towards Smart Data Management* (\$126,100). Jan.1- Dec. 31, 2012.
29. State Administration of Foreign Experts Affairs of China, Special Program for Elite Overseas Experts, RBM 270,000, Aug. 2011 - Aug. 2012.
30. Natural Science Foundation of China, Major International (Regional) Joint Research Project, *Plant-wide Optimal Control for Complex Industrial Processes Using a Hybrid*

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**S. JOE QIN**

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- Data-driven and Model-based Approach.* Project No. 61020106003, RMB 2,980,000 (Co-PI), 1/2011-12/2013.
31. Chevron CiSoft, \$250,000. *MCH: Multivariable Control Health* (\$150K); *IMM: Inferential Molecular Modeling* (\$100K). Jan.1- Dec. 31, 2011.
  32. ExxonMobil Research Corp. Knowledge Build grant, \$20,000 (Sept. 22, 2011).
  33. Praxair, Inc., \$35,000 (12/11/2010) TWCCC unrestricted grant.
  34. Weyerhaeuser, \$10,000 (10/31/2010) TWCCC unrestricted grant
  35. Viterbi Research Initiation Grant, \$10,000, Smart buildings, 12/2010 - 12/2011, with Prof. Ramesh Govindan.
  36. CISCO, \$40,000, Grid-friendly Smart Buildings, 10/2010 - 10/2011
  37. Chevron via CiSoft, *Control Health Performance Monitoring*, \$125,000, 1/1/10 - 12/31/10
  38. Weyerhaeuser, \$10,000 (10/31/2009) TWCCC unrestricted grant
  39. Praxair, Inc., \$25,000 (7/31/2009) TWCCC unrestricted grant
  40. Chevron via CiSoft, *Real-time Production Monitoring*, \$62,000, 1/1/09 - 12/31/09
  41. Weyerhaeuser, \$25,000 (10/31/2008) TWCCC unrestricted grant
  42. Praxair, Inc., \$25,000 (7/31/2008) TWCCC unrestricted grant
  43. Chevron via CiSoft, *Real-time Production Monitoring*, \$80,000, 1/1/08 - 12/31/08
  44. USC, *Organized Research Unit (ORU) on Carbon Capture an Sequestration-Meeting the Needs of the Energy Sector*, \$10,000, 1/1/08 - 12/31/08 (Lead PI: Kristian Jessen).
  45. Weyerhaeuser, \$25,000 (10/31/2007) TWCCC unrestricted grant
  46. National Science Foundation (DMII-0432433, jointly sponsored by Semiconductor Research Corporation and International Sematech Manufacturing Initiative), *Fab-wide Control and Disruption Management in High Volume Semiconductor Manufacturing*, \$400,000, 9/16/04-8/31/09 (Co-PIs: E. Kutanoglu and J. Hasenbein, UT-Austin)
  47. National Science Foundation CAREER Grant (CTS-9985074), *A New Framework of Dynamic Monitoring and Control for Semiconductor Processing*, \$310,000, 6/1/00-5/31/05 (with extension)
  48. National Science Foundation (CTS-9814340), *Development of a Novel Subspace Approach to the Monitoring and Control of Chemical Processes*, \$165,623, 3/1/99-12/31/02
  49. National Natural Science Foundation - China, Distinguished Overseas Young Investigator Grant, \$48,780, 3/1/03-2/28/06
  50. Texas Higher Education Coordinating Board, Advanced Research Program, *Multi-scale Analysis Theory and Applications to Chemical Engineering Processes*, \$115,740, 1/1/00-8/31/02
  51. DuPont Young Professor Grant, \$75,000, 6/1/1999 - 5/31/2002
  52. Weyerhaeuser, \$175,000, 10/1/2000 - 2006
  53. Johnson Control, Inc., \$25,000, 12/2003 - 2006
  54. Texas Instruments, Inc., \$75,000, 3/1/2005 - 2/28/2008
  55. Advanced Micro Devices, Inc., \$150,000, 1/1/1998 - 2006
  56. Advanced Micro Devices, Inc., \$42,000, 9/1/2001-5/31/01, sabbatical matching fund
  57. ITRI, Taiwan, \$50,000, 12/2003 - 12/2005
  58. Mitsubishi Chemicals, \$96,500, 2/1/02- 2006
  59. Union Carbide, \$37,500, 1/1/98 - 12/31/2000
  60. DuPont Educational Aid Grant, \$63,000, 6/1/96 - 5/31/99
  61. Pertamina Indonesia, \$27,500, 1/1/98 - 12/31/99
  62. Union Camp Corp., \$60,000, 1/1/96 - 12/31/98
  63. Air Products and Chemicals, Inc., \$60,000, 1/1/96 - 12/31/98
  64. National Instruments, Inc., \$16,000, 9/1/96 -8/31/98
  65. ALCOA Foundation Award, \$10,000, 1/1/97 - 12/31/97
  66. Boise Cascade Corp., \$20,000, 1/1/98 - 12/31/98
  67. Fisher-Rosemount Systems, Inc., \$20,000, 9/1/95 - 8/31/97
  68. Monsanto Co., \$20,000, 1/1/96 - 12/31/96
  69. Fisher-Rosemount, Aspen Tech, and AMD, summer salary support, 1996 - 1999
  70. The University of Texas, Faculty Development Grant, \$42,000, 2001-2002

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**S. JOE QIN**


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71. College of Engineering, The University of Texas, Equipment Matching Grant, \$10,000, 2001-2002
72. College of Engineering, The University of Texas, Academic Development Funds, \$17,000, 1996-1997, 1997-1998, 1998-1999, 2002-2003
73. The University of Texas, Research Grant, \$5,000, 1996

**CONSULTING** ↩

- Aspen Academy, Aspen Technology, Inc., Jan. 2017 - present
- INFICON, Syracuse, NY. June 19-21, 2019
- Chevron Energy Technology Company, 2012 - 2013
- Northern Microelectronics Company, Beijing, China, November 2007 - 2009
- Intel Visiting Professor, May - September, 2005
- Weyerhaeuser Visiting Professor, June 2004
- Taiwan Industrial Technology Research Institute, 2003 - 2006
- Fisher-Rosemount Systems, Inc. 1995 - 1997
- Praxair, Inc., Process Control Scouting, 1996 - 1998
- AMD, Inc., 1995 - 2002
- Aspen Technology, 1998 - 2000, 2006

**UNIVERSITY COMMITTEE SERVICES** ↩**University of Southern California**

- **USC Ambassador**, Oct. 2008 - 2019

**Viterbi School, University of Southern California (2007 - 2014)**

- **Vice Dean**, Academic Initiatives, July 2011- Dec. 2013
- **Member**, Committee on Academic Promotion and Tenure, Spring 2011
- **Member**, Committee on Viterbi Information Technology, Spring 2011
- **Member**, Engineering Faculty Council, School of Engineering, 2008 - 2011
- **Member**, Committee on M.S. Programs, 2009- 2011
- **Member**, Committee on Faculty Professional Awards, 2007- 2010

**Departmental, University of Southern California (2007 - 2014)**

- **Chairman**, Committee on Faculty Professional Awards, 2007- 2010
- **Chairman**, Committee on Pings Lectureship, 2007-2008
- **Member**, Committee on Faculty Merit Evaluations, 2009
- **Member**, Committee on Midcourse Evaluation of Assistant Prof. Kristian Jessen, 2009
- **Member**, Committee on Faculty Application of Prof. Ratnesh Lal, 2009
- **Member**, Promotion Committee for Assistant Prof. Pin Wang, 2009

**Departmental (University of Texas, 1995 - 2007)**

- **Associate Department Chair**, September 1, 2005 - 2007
- **Graduate Recruiting Advisor**, June 2002-2003
- **Supervisor**, ChE Undergraduate Computer Lab, 2000-2001
- **Chairman**, ad hoc Committee on Computing in CHE Curriculum, 2001
- **Chairman**, CHE360 Curriculum Review Committee, 1996
- **Member**, CHE353M Curriculum Review Committee, 1996
- **Member**, Graduate Recruiting Committee, 1996-2000
- **Member**, Undergraduate Computing Committee, 1996-2000
- **Member**, Selection Committee for Departmental Teaching Award, 1997-1998
- **Faculty Mentor**, Fall Freshmen Gathering, 2002
- **Faculty Mentor**, Fall Freshmen Gathering, 1997

**College of Engineering, University of Texas (1995 - 2007)**

- **Chair**, Committee on the promotion of Dr. Robert Young to Professor of Research, Jan. 2019

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**S. JOE QIN**

- **Member**, Committee on the promotion of Dr. Behnam Jafarpour to Professor, Jan. 2019
- **Member**, Committee on the renewal of Dr. Fred Aminzadeh as Research Professor, 2018
- **Chairman**, Degrees and Courses Committee, 2006 - 2007
- **Member**, Degrees and Courses Committee, 2005 - 2006
- **Member**, Outreach Education/Instructional Technology Committee, 2002-2003
- **Member**, Instructional Technology Committee, 1997-2001
- **Member**, Computer Committee, 2000-2001
- **Member**, Outreach Education/Instructional Technology Committee, 1998-1999
- **Member**, Classroom Studio Committee, 1996-1997

**GRADUATE STUDENTS/VISITORS** ←

**Ph.D. Students Graduated**

1. **Ricardo Dunia** (Ph.D., 1997). A Unified Geometric Approach for Process Monitoring and Control (Lecturer, McKetta Department of Chemical Engineering, University of Texas at Austin, USA)
2. **Manish Misra** (Ph.D., 1999). On-line Multivariate Chemical Data Compression and Validation Using Wavelets (Faculty at University of Southern Alabama)
3. **Hongyu Yue** (Ph.D., 2000). Multivariate Statistical Monitoring and Diagnosis with Applications in Semiconductor Processes (employed at Tokyo Electron)
4. **Sergio Valle-Cervantes** (Ph.D., 2001). Plant-wide Monitoring of Processes under Closed-loop Control (Professor at Institute of Technology-Durango)
5. **Christopher A. McNabb** (Ph.D., Aug. 2002). MIMO Control Performance Monitoring Based on Subspace Projections (Engineering Fellow, International Paper)
6. **Henry G. Potrykus** (Ph.D., 2002). An Idempotent-Analytic ISS Small Gain Theorem with Applications to Complex Process Models (employed at the Institute for Defense Analysis, VA)
7. **Jin Wang** (Ph.D., May 2004). A Novel Subspace Identification Algorithm and Its Application in Stochastic Fault Detection (Walt and Virginia Woltosz Professor at Auburn University, USA)
8. **Richard A. Good** (Ph.D., Aug. 2004). The stability and performance of the EWMA and Double-EWMA Run-to-Run Controllers with Metrology Delay (employed at AMD).
9. **Qinghua He** (Ph.D., May 2005). Innovative Techniques for Industrial Process Modeling and Monitoring (Associate Professor at Auburn University, USA).
10. **Weilu Lin** (Ph.D., May 2005). Closed-loop Subspace Identification and Fault Diagnosis with Optimal Structured Residuals (employed at Univ. of Newcastle upon Tyne, UK).
11. **Elaine Hale** (Ph.D., August 2005). Numerical Methods for d-Parametric Nonlinear Programming with Dynamic Real-Time Optimization Applications (employed at NREL, USA).
12. **Chris Harrison** (Ph.D., August 2006). Towards the Performance Monitoring of Constrained Control Systems (Employed at Marathon Oil).
13. **Gregory Cherry** (Ph.D., December 2006). Methods for Improving the Reliability of Semiconductor Fault Detection and Diagnosis with Principal Component Analysis (Data Scientist at Google).
14. **Jie Yu** (Ph.D. 2007). Data-Driven Approach for Control Performance Monitoring and Fault Diagnosis (Head of Digital & Data Science Product Management, Johnson & Johnson).
15. **Clare Schoene** (Ph.D. 2007). Electrical Parameter Control for Semiconductor Manufacturing (Project Manager - Digital Avatar at Schlumberger, USA).
16. **Yiwei Cai** (Ph.D. 2008). Semiconductor Manufacturing Inspired Integrated Scheduling Problems: Production Planning, Advanced Process Control, and Predictive Maintenance (Software Engineer at Facebook).
17. **Gang Li** (Ph.D. 2010, jointly with Prof. D.H. Zhou at Tsinghua University). Quality related fault diagnosis and prognosis for industrial processes (AntFin).

18. **Brent Bregenzer** (Ph.D. 2011). Interaction of Scheduling and Control in Semiconductor Manufacturing.
  19. **Carlos Alcalá** (Ph.D. 2011). Process Fault Diagnosis with Statistical Methods (employed at Johnson Controls).
  20. **Zhijie Sun** (Ph.D. 2012). Performance Monitoring and Disturbance Adaptation For Model Predictive Control (employment: Halliburton)
  21. **Yingying Zheng** (Ph.D. 2012). Modeling and Optimization of Oil Production Processes, (Associate Director of Data Science at Gilead Sciences).
  22. **Jingran Ma** (ChE Ph.D. 2012). Economic model predictive control for energy systems applications (employment: Praxair → Westlake Financial).
  23. **Hu Li** (Ph.D. 2012, jointly advised with Profs. T. Tsotsis and M. Sahimi). Performance prediction, state estimation and production optimization of a landfill (Data Science Manager at Facebook).
  24. **Qiang Liu** (Ph.D. 2012, Co-advisee), Northeastern University of China (Professor at Northeastern University of China).
  25. **Yu Zhao** (Ph.D. EE, 2014). (Lead Data Scientist at Activision Blizzard, USA)
  26. **Tao Yuan** (Ph.D. EE, 2014). (Manager, ML Science at Amazon)
  27. **Johnny Yu Pan** (Ph.D. ChE, 2015), Provost Fellow. (Senior Data Science at Publicis Sapient)
  28. **Yining Dong** (EE, Ph.D., 5/2017), (Faculty at City University of Hong Kong)
  29. **Alisha Deshpande** (ChE, Ph.D., 5/2017), Chevron Fellow (employment: Chevron)
  30. **Zhaohui Zhang** (ChE, Ph.D., 5/2017), Mork Fellow (Applied Science Manager at Amazon)
  31. **Qinqin Zhu** (ChE, Ph.D., 12/2017), Provost Fellow (Faculty at Univ. of Waterloo)
  32. **Yuan Jin** (ChE, Ph.D., 12/2018), Viterbi Fellow (Research Scientist at Facebook)
- Former Students Terminated due to job relocation to CityU of Hong Kong**
33. Wei Ling (ChE, PhD, 2018-2020), USC Fellow
  34. Zheyu Wang (ChE, PhD, 2019-2020)
  35. Zheyu Li (ChE, Ph.D., 2019-2020)
  36. Sam Liu (EE, Ph.D., 2019-2020)
  37. Fiona Guo (ChE, 2019-2020)

#### Ph.D./MS Students in Progress

1. Yiren Liu (DS, PhD, 2020- present)
2. Haonan Feng (DS, PhD, 07/2021 - present)
3. Shiqin Tang, HKPFS Fellow (DS, PhD, 08/2021 - present)
4. Jiaxin Yu (DS, PhD, 08/2021 - present)
5. Junhao Chen (DS, PhD, 09/2021 - present)
6. Jicheng Li (DS, PhD, 10/2021 - present)
7. Shumei Chen (DS, PhD, 09/2022 - present)
8. Xiao Cai (DS, PhD, 09/2022 - present)

#### M.S. Students Graduated

1. **Victor Martinez** (M.S., 1997)
2. **Glen Scheid** (MS, 1999)
3. **Chris McNabb** (MS, 1999)
4. **Manish Misra** (MS, 1999)
5. **Toto Nugroho** (MS, 1999)
6. **Ricky Mak** (MS, 2001)
7. **Qi Wang** (MS, 2004)
8. **Yamin Yu** (MS, 2009)
9. **Ge An** (ChE, MS, 2018)
10. **Aayush Patel** (ChE, MS, 2018)
11. **Zheyu Li** (ChE, MS, 2018)
12. **Sam Liu** (EE, MS, 2018)
13. **Wei Ling** (ChE, MS, 2018)
14. **Lijun Chen** (CityU MSDS, 2020)

## 15. Jicheng Li (CityU MSDS, 2021)

**Former Undergraduate Research Students**

1. Steve Helmuth (1996)
2. Carl Durrenberger (1997)
3. Charles Surjaputral (1997)
4. Mark Fiteny (1998)
5. Alex B. Solberg (2000)
6. Sharon Yeh (Undergraduate Honor Thesis), (Fall 2001, Spring 2002)

**Post-Doctoral/Visiting Researchers**

1. Post-doc, Yanfang Mo (Ph.D. from HKUST), City University, 3.2020-present
2. Post-doc, Yongjian Wang (Ph.D. from BUCT), City University, 1.2021-12.2021
3. *Visiting Professor*, Prof. Changjun Lee, Pohang University, Aug. 2018 -Aug. 2019.
4. *Visiting Scholar*, B.Y. Yang, Xian Jiaotong University, Dec. 2017 - Dec. 2018.
5. *Visiting Professor*, Prof. Hongbin Liu, Nanjing University of Forestry, Nov. 2017 - Dec. 2018.
6. *Post-Doc Associate*, Dr. Qiang Liu, Northeast University of China, September 2014 - Oct. 2016.
7. *Post-Doc Associate*, Dr. Gang Li, Tsinghua University, December 2013 -Oct. 2015.
8. *Visiting Professor*, Dr. Ying Zheng, Huazhong University of Science and Technology, December 2013 - December 2014.
9. *Visiting Professor*, Dr. Lijuan Li, Nanjing University of Technology, April 2013 - April 2014.
10. *Visiting Professor*, Dr. Juncheng Liu, Huabei University of Electrical and Power Engineering, Sept. 2011 - Sept. 2012
11. *Visiting Professor*, Dr. Changyin Sun, Southeast University, Aug. 2011 - Feb. 2012
12. *Postdoctoral Fellow*, Dr. Jesus Mina, Sept. 1, 2008 - Aug. 31, 2009
13. *Visiting Professor*, Dr. Maying Yang, Zhejiang University of Technology, Hangzhou, China, March 1, 2008 - Feb. 28, 2009
14. *Visiting Professor*, Dr. Li Li, Tongji University, Shanghai, China, Sept. 1, 2007 - Aug. 31, 2008
15. *Visiting Professor*, Dr. Yingwei Zhang, Northeastern University, Shenyang, China, Sept.1, 2006 -Aug. 31, 2007
16. *Postdoctoral Fellow*: Dr. Jong-Min Lee, KOSEF Fellow, March 2005 - March 2006
17. *Visiting Scholar*: Mr. Koichi Onodera, Mitsubishi Chemical, October 2003 - October 2005
18. *Postdoctoral Fellow*: Dr. In-Sik Chin, KOSEF Fellow, Aug. 2002 - Aug. 2003
19. *Postdoctoral Fellow*: Dr. Ricardo Dunia, 2000 - 2002
20. *Postdoctoral Fellow*: Dr. Rongfu Luo, 1996-1998
21. *Postdoctoral Fellow*: Dr. Weihua Li, 1997-1999
22. *Visiting Professor*: Dr. B. Foss (Norwegian Institute of Technology, Norway, 1996)
23. *Visiting Students*: Vahid Vahedi (Denmark, 1996); Josep Mirats (Spain, 1998); Kristin Hestetun (Norwegian Institute of Technology, Norway, 2002); Mr. Y.-H. Chu (POSTECH, Korea, 2002-2003); Mr. Andrea Micchi (Pisa, Italy, Dec. 2007 - Sept. 2008)

**SUMMARY OF CITATIONS PUBLICATIONS AND WORKS** 

- Archival Journal Papers/ Book Chapters **【Total: 171】**
- Archival Conference Papers **【Total: 145】**
- U.S. Patents granted **【Total: 12】** ; U.S. Patent-pending **【7】**
- Plenary/Keynote/Invited Presentations **【Total: 69】**
- Invited Seminar Presentations **【Total: 123】**
- Short Courses and Workshops **【26】**



- **Presentations with Refereed Abstracts 【Total: 70】**

Web of Science Citations: 19,203; h-index: 66

SCOPUS Citations: 24,219; h-index: 73

Google Scholar Citations: 37,504; h-index: 83

#### ARCHIVAL JOURNAL PAPERS/BOOK CHAPTERS ↩

1. Yanfang Mo, Qiulin Lin, Minghua Chen, and S. Joe Qin (2023). Online Peak-Demand Minimization Using Energy Storage, submitted to Automatica.
2. Qiang Liu, Li Wen, S. Joe Qin (2023). RALIF-SVM: Data-Driven Process Fault Diagnosis for Closed-Loop Systems with Consistent Fault Dynamics, submitted to IEEE Transactions on Automation Science and Engineering, June 2023.
3. Qiang Liu, Chao Yang, S. Joe Qin (2022). Semi-Supervised Dynamic Latent Variable Regression for Prediction and Quality-Relevant Fault Monitoring", submitted to IEEE Transactions on Control Systems Technology, paper number "22-0634", Aug. 2022.
4. Z. Zhan, Q. Liu, C. Wang, and S. Joe Qin (2021). Towards Lightweight Dynamic Convolutional Neural Network Modeling for Soft Sensors, submitted for publication to IEEE Transactions on Cybernetics, No. CYB-E-2021-12-3396, Dec. 2021
5. Gang Li and S. Joe Qin (2022). Multidirectional reconstruction-based contributions for fault identification in dynamic processes. To be submitted.
6. Xu Chen, Xiao He, S. Joe Qin (2023). Bidirectional Dynamic Latent Variable Analysis for Closed-loop Process Monitoring", submitted to IEEE Transactions on Industrial Electronics.
7. Xinyu He; Yanfang Mo; Jianxiang Huang; S. Joe Qin; Lishuai Li (2023). A competition-based route network planning method for drone delivery services in cities, submitted to Transportation Research Part C, Manuscript Number: TRC-23-00286
8. Yongjian Wang, Cheng Qian, S. Joe Qin (2023). Attention-mechanism based DiPLS-LSTM and its application in industrial process time series big data prediction, Computers & Chemical Engineering, 108296
9. Yongjian Wang, De Bao, S. Joe Qin (2023). A novel bidirectional DiPLS based LSTM algorithm and its application in industrial process time series prediction, Chemometrics and Intelligent Laboratory Systems, 104878
10. Yiren Liu and Qin, S. Joe (2023). Knowledge-informed Sparse Learning for Relevant Feature Selection and Optimal Quality Prediction, in *IEEE Transactions on Industrial Informatics*. doi: 10.1109/TII.2023.3247008.
11. Jicheng Li and S. Joe Qin (2023). Applying and Dissecting LSTM Neural Networks and Regularized Learning for Dynamic Inferential Modeling, in Computers and Chemical Engineering, Volume 175, 108264
12. Pierre-Cyril Aubin-Frankowski, Alain Bensoussan, and S. Joe Qin (2023). Alternate Minimization for Simultaneous Estimation of a Latent Variable and Identification of a Linear Continuous-Time Dynamic System, accepted in Communications in Optimization Theory.
13. Qin, S. Joe, Y. Liu, and Shiqin Tang (2023). Partial Least Squares, Steepest Descent, and Conjugate Gradient for Regularized Predictive Modeling, AIChE Journal, 69 (4), e17992
14. Qin, S. Joe, Y. Liu, and Dong, Yining (2023). Dynamic Data Feature Engineering for Process Operation Troubleshooting, Book Chapter submitted for possible publication in Artificial Intelligence in Manufacturing, edited by Masoud Soroush and Richard D. Braatz, Elsevier, 24-Jan-2022
15. Yu, Jiabin, & Qin, S. J. (2022). Latent State Space Modeling of High-Dimensional Time Series with a Canonical Correlation Objective. IEEE Control Systems Letters, 6, 3469-3474.
16. Qin, S. Joe (2022). Latent Vector Autoregressive Modeling and Feature Analysis of High Dimensional and Noisy Data from Dynamic Systems, AIChE Journal, 68(6): e17703. doi:10.1002/aic.17703
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133. Luo, R., S.J. Qin and D. Chen (1998). A new approach to closed loop autotuning for PID controllers, *Proc. of American Contr. Conf.*, June 21-23, 1998, Philadelphia, PA.
134. Qin, S.J and R. Dunia (1998). Determining the number of principal components for best reconstruction, *Proc. of the 5-th IFAC Symposium on Dynamics and Control of Process Systems*, 359-364, June 8-10, 1998, Corfu, Greece.
135. Yi Cheng, S.J. Qin, T.F. Edgar, M.J. Gatto, and C. Nauert (1997). Modeling of OES data to estimate etch rate for etching equipment, *SPIE Proceedings*, vol. 3213, pp. 108-118.
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143. Qin, S.J. (1994). Fuzzy logic control -- A tutorial. Presented at *1994 ISA Conference*. October 23-27, 1994, Anaheim, CA.
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145. Qin, S.J. (1993). Partial least squares regression for recursive system identification, *Proc. of the 32nd IEEE Conference on Decision and Control*, Vol. 3: 2617-2622, December 15-17, 1993, San Antonio, TX.
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147. Qin, S.J. (1993). A statistical perspective of neural networks for process modeling and control, *Proc. of IEEE Int. Symposium on Intelligent Control*, 599-604, August 25-27, 1993, Chicago.
148. Qin, S.J. & Rajagopal, B. (1993). Combining statistics and expert systems with neural networks for empirical process modeling, *Proc. of ISA Conference*, 1711-1720, October, 1993, Chicago.
149. Qin, S.J. and McAvoy, T.J. (1992). Process control through neural computing, *Preprints of Congress Interkama'92*, October 5-10, 1992, Dusseldorf, Germany.
150. Qin, S.J. and McAvoy, T.J. (1992). A data-based process modeling approach and its applications, *Proceedings of the 3rd IFAC DYCORS+ Symposium*, pp. 321-326, April 26-29, 1992, College Park, Maryland.



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152. 秦泗钊, 王桂增, 陶洛文, 方崇智. 长输管线的泄漏故障诊断. 见: 工业过程模型化及控制(中国自动化学会第二届过程控制科学报告会论文集). 上海: 华东化工学院出版社, 1988

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2. Methods for Online Peak-Demand Reduction of Large-Load Users with Energy Storage Discharging. CHEN, M., LIN, Q., MO, Y. & QIN, S. J., 7 Feb 2022, (US Patent Filed) Priority No. 17/650,089
3. S.J. Qin (2021). Latent Vector AR Modeling and Feature Analysis of Data with Reduced Dynamic Dimensions, US Patent Application Number 17/644114, 12/14/2021
4. S.J. Qin and Yiren Liu (2021). Method of Stable Lasso Model Structure Learning to Build Inferential Sensors, US Patent Application Number 17374563, 06/24/2021
5. A Deshpande, SZJ Qin, LA Brenskelle (2018). Fault detection system utilizing dynamic principal components analysis - US Patent App. 15/811,477, Publication date: 5/17/2018
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8. Ying Zheng, S.J. Qin, Yang Wang, and Hong Zhang (2019). Method of Multiple Process Mode Identification based on Principal Component Similarity Analysis. Chinese Patent **ZL201810204240.1** - Publication date: 08/30/2019
9. S.J. Qin and Yining Dong (2021). System and Method for Extracting Principal Time Series Data, **US Patent 10,955,818** - March 23, 2021
10. Yingying Zheng, S.J. Qin and Michael Barham (2018). System and Method for Control Performance Monitoring. **U.S. Patent 9964967**. Issued on 5/8/2018
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18. Qin, S.J. and G. Borders (2000). *Multi-region Fuzzy Logic Control Systems with Auxiliary Variables*. **US Patent 6,041,320**, March 21, 2000.
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## PLENARY/KEYNOTE/INVITED PRESENTATIONS

1. **AICHE CAST Computing Award Talk, *Data +***, AICHE CAST Award Banquet, Nov. 15, 2022, Phoenix, AZ.

2. **Distinguished Invited Talk**, Latent State Space Modeling of High-Dimensional Time Series (with Jiaxin Yu), The 4th International Forum on Frontiers of Data-driven Optimization of Complex Systems, Chengdu, China, Oct. 28, 2022 (online).
3. **Invited Talk**, Modeling Low Dimensional Dynamics in High Dimensional Data (with Jiaxin Yu), The 29th Forum on Frontiers of Uncertainties in Complex Systems by *China Science: Information Science*, Beijing, China, Oct. 27, 2022 (online).
4. **Distinguished Invited Talk**, Improved Sparse Learning for Variable Selection and Optimal Predictive Modeling, the 4th International Forum on Frontiers of Automation and Artificial Intelligence (FAAI 2022, online), Shenyang, China, Sept. 23 - 25, 2022.
5. **Plenary**, Dynamic Latent Feature Learning and Troubleshooting of Manufacturing Processes, the 2022 IEEE 11th Data Driven Control and Learning Systems Conference, August 4, 2022, Emei, Sichuan, China (hybrid)
6. **Plenary**, Dynamic Latent Variable Modeling and Feature Analysis of Systems with Reduced Dynamic Dimensions, the 41<sup>st</sup> Chinese Control Conference, July 25-27, 2022, Hefei, China (hybrid).
7. **Keynote**, Yiren Liu and S. Joe Qin (2022). A Novel Two-step Lasso Approach for Inferential Sensor Variable Selection and Estimation, IFAC DYCOPS Symposium, Korea, June 14-17, 2022.
8. **Plenary**, Dynamic Feature Analysis for Production Performance Troubleshooting, the 12<sup>th</sup> CAA Safeprocess, December 17-19, 2021, Chengdu, China (online)
9. **Plenary**, Control Conference Africa 2021 (CCA 2021). December 7-8, 2021, Magaliesberg, South Africa (Online)
10. **Keynote Speech**, Latent Dynamic Modeling and Fault Monitoring of High Dimensional Data with Reduced Dimensional Dynamics 4th International Conference on Electronics and Electrical Engineering Technology (EEET 2021), December 3-5, 2021, Nanjing, China (Online)
11. **Keynote Speech**, Digital Transformation, Data Science, and Industrial Intelligence, in "Industry 4.0, Digital Twins, and Digital Transformation II", AIChE Annual Meeting, Boston, MA, November 7-19, 2021
12. **Distinguished Invited Talk**, Predictive Latent Dynamic Modeling for High-dimensional Time-dependent Data, the 3rd International Forum on Frontiers of Automation and Artificial Intelligence (FAAI 2021), Shenyang, China, Nov. 8 - 9, 2021.
13. **Invited Lecture**, A Whole New World with Data Science (数据科学的崭新时代), Beijing-Hong Kong Master Class (京港大学堂), Aug. 26, 2021 (Online).
14. **Plenary**, Latent Vector AR Modeling and Feature Analysis of Data with Reduced Dynamic Dimensions, the 2nd International Academic Forum on Financial Mathematics and Fintech, Aug. 13-15, 2021 (Online)
15. **Invited Lecture**, Predictive Analytics in Industrial IoT, Data, and Systems, IFAC Workshop Series on Control Systems and Data Science, March 19, 2021 (online).
16. **Invited Distinguished Talk**, Dynamic predictive monitoring, the 2nd International Forum on Frontiers of Automation and Artificial Intelligence (FAAI 2020), Shenyang, China, Oct. 22-23, 2020. (Online)
17. **Keynote Speech**, Dynamic latent variable analytics for anomaly detection and monitoring, 2<sup>nd</sup> TBSI Workshop on Learning Theory (WOLT), July 20-22, 2020, Shenzhen, China. (Online)
18. **Semi-Plenary**, Digitalization, Integrated Framework of Systems, Data, and Industrial Intelligence towards Industry 4.0, 21<sup>st</sup> IFAC World Congress, July 14, 2020, Berlin, Germany. (Online)
19. **Plenary**, Inferential Monitoring of Quality and Process Faults with Supervised Learning, The 18th IFAC Symposium on Control, Optimization and Automation in Mining, Mineral and Metal Processing, Aug. 28-30, 2019, Stellenbosch, South Africa (trip cancelled)
20. **Plenary**, Machine Learning for Process Analytics and Smart Manufacturing, Conference on the Foundations of Process Analytics and Machine learning, August 6-9, 2019, Raleigh, North Carolina

21. **Plenary**, Dynamic Latent Variable Learning Methods in Engineering and Science, 1st International Forum on Frontiers of Automation and Artificial Intelligence (FAAI 2019), Shenyang, China, July 22-25, 2019
22. **Keynote**, Data Analytics for Performance Troubleshooting of Feedback Controlled Manufacturing Plants, the 6th IFAC Conference on Nonlinear Model Predictive Control, Aug. 19-22, 2018, Madison, WI.
23. **Keynote**, Advances in big data analytics research and development, with Leo Chiang, PSE2018, July 1-5, 2018, San Diego, CA
24. **Plenary**, Data Analytics for Performance Troubleshooting of Feedback Controlled Manufacturing Plants. The 10<sup>th</sup> Forum on the Frontiers of Control Theory and Practice. May 16-17, 2018, Rizhao, China
25. **Invited talk**, Dynamic Data Analytics, in Approaches in Big Data Analytics, AIChE Spring Meeting, April 2018, Orlando, FL.
26. **Plenary**, Dynamic Data Distillation for Smart Process Monitoring and Analytics, Chinese Safeprocess Conference, Aug. 19-20, 2017, Qingdao, China.
27. **Invited talk**, High-Dimensional Dynamic Data Distillation and Analytics, 2017 Symposium on Industrial Big Data, July 30, 2017, Chongqing, China.
28. **Invited talk**, Data Distillation, Analytics, and Machine Learning, Chemical Process Control and FOCAP0 Conference, with Yining Dong. Jan. 8-12, 2017, Tucson, AZ.
29. **Plenary**, *Robust Dynamic Principal Component Analysis Method for Modeling Process Data*, the 2016 AIChE Annual Meeting CAST Division (co-authored with Alisha Deshpande and Lisa A. Brenskelle), Nov. 14-18, 2016, San Francisco, CA.
30. **Invited talk**, *An Outlook of Big Data Analytics for Industrial Operations*, Chinese Automation Congress, Nov. 27-29, 2015, Wuhan, China.
31. **Keynote**, *Big Data Process Analytics* (S12-K3), the 8<sup>th</sup> Sino-U.S. Chemical Engineering Conference, Oct. 13-16, 2015, Shanghai, China.
32. **Plenary**, *Data Analytics in the Era of Big Data*, the 2015 IFAC ADCHEM Symposium, June 8-10, 2015, Whistler, British Columbia, Canada.
33. **Plenary**, *Process Data Analytics - Present and Future*, the 25<sup>th</sup> Conference on Process Control of China, Aug. 9-11, 2014, Dalian, China.
34. **Invited talk**, *Optimal Predictive Control Methods for Energy Efficiency in Smart Buildings*, Forum for Academicians on Smart Cities and Big Data, March 22, 2014, CUHK Shenzhen
35. **Invited talk**, *Process Analytics based on Big Data*, Chinese Automation Congress, October 2013, Changsha, China.
36. **Plenary**, Multi-level Data-driven Process Chemometrics - Process Data Analytics, IPAC2013: International Process Analytics and Control Congress, Beijing, Aug. 27-29, 2013.
37. **Invited talk**, *Quality-Relevant Process Monitoring in Semiconductor Manufacturing*, International Sematech APC Workshop, San Jose, May 21, 2012.
38. **Invited talk**, *Predictive Control Methods to Improve Energy Efficiency and Reduce Demand in Buildings*, Chemical Process Control Conference, Tim Salsbury, Prashant Mhaskar, and S. Joe Qin. Jan. 8-12, 2012, Savannah, GA.
39. **Semi-plenary**, *Data-driven MIMO Control Performance Monitoring*, the 2011 Chinese Conference on Decision and Control, Mianyang, Sichuan Province, China, May 23-25, 2011.
40. **Invited talk**, *University of Southern California Green Research, Education, and Practice*. Tsinghua International Symposium on Green University, Beijing, October 27 - 28, 2010
41. **Keynote**, *Variability Reduction in Micro-/Nano-scale Manufacturing*. Conference on Ubiquitous Informatics in Manufacturing, Shenyang, China, Sept. 15 -16, 2010
42. **Invited talk**, *Optimal Feedback Strategy for Building Demand Response Control*, International Conference on Low Carbon Clean Energy, Ordos, Inner Mongolia, July 19 - 21, 2010.
43. **Plenary**, *Data-driven Fault Detection and Diagnosis in Complex Industrial Processes*, at Fault Detection Symposium of China, Wuhan, China, August 2009

44. **Plenary**, *Data-driven Fault Detection and Diagnosis in Complex Industrial Processes*, presented at IFAC Safeprocess Symposium, Barcelona, Spain, 6/30 - 7/3/2009.
45. **Keynote**, *An Overview of Model Predictive Process Control*, at AEC/APC Symposium -Asia in Kumamoto, Japan, November 29-30, 2007
46. **Invited talk**, *Fab-wide Control of Electrical Parameters*. IFAC Workshop on APC for Semiconductor Manufacturing, Singapore, Dec. 5, 2006.
47. **Keynote**, *Multivariable Control Performance Monitoring*. at the 2006 IFAC ADCHEM Symposium, Gramado, Brasil, April 2 - 5.
48. **Invited talk**, *An Overview of Subspace Identification*. International Conference on Chemical Process Control (CPC-7), Lake Louise, Alberta, CA, January 8 - 13, 2006.
49. **Plenary**, *Semiconductor Manufacturing Process Control*, at the Chinese Process Control Conference and Safeprocess, Jinan, Shandong, July 31, 2005
50. **Plenary**, *Control Performance Monitoring: Theoretical Advancement and Practical Issues*. at the Annual Chinese Process Control Conference, July 31 - Aug. 1, 2004, Changchun, China
51. **Keynote**, *Control and Monitoring of Semiconductor Manufacturing Processes: Challenges and Opportunities*, at the 2004 IFAC DYCOPS-7 Symposium, Boston, MA, July 5-7.
52. **Invited talk**, *APC in Semiconductor Manufacturing*, Intel APC Submit, March 8 - 9, 2004, Rio Rancho, NM.
53. **Plenary**, *Statistical Process Monitoring: Basics and Beyond*. at the Annual Chinese Process Control Conference, Aug. 16 - 17, 2003, Zhangjiajie, Hunan, China.
54. **Invited talk**, *Process Monitoring for Feedback Systems*. Gordon Research Conference on Statistics in Chemistry and Chemical Engineering, July 27-August 1, 2003, Mount Holyoke College, MA.
55. **Plenary**, *Process Chemometric Techniques and Applications*, Advances in Process Analytics and Control Technology 2003 Conference (APACT 03), April 28-30, 2003, York, UK.
56. **Invited Keynote**. *Statistical Process Monitoring: A Tutorial*. AIChE Spring Meeting, New Orleans, LA, April 2, 2003.
57. **Invited talk**, *Fault Detection and Diagnosis in Dynamic Processes with Maximal Sensitivity*. Louisiana Workshop on Systems Safety. Sponsored by NASA and Louisiana Board of Regents, Baton Rouge, LA, Feb. 28, 2003.
58. **Keynote**, *Process Systems Engineering in Microelectronics Manufacturing*. PSE-Asia, Taipei, Taiwan, December 4-6, 2002
59. **Invited Speaker**, AspenWorld 2002, October 27-31, 2002, Washington, D.C.
60. **Keynote**, *From Chemical Process Control to Semiconductor Manufacturing Control*. AEC/APC XIV Symposium, Salt Lake City, UT, September 8-13, 2002.
61. **Invited talk**, *Process Chemometrics*, International Chemometrics Research Meeting, Veldhoven, Netherlands, May 27-30, 2002
62. **Invited talk**, *Subspace Approaches to Dynamic Modeling and Fault Diagnosis*, Second Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean, Ankara, Turkey, May 20 -24, 2001.
63. **Invited talk**, *Fault Detection and Classification Theory for the User --- Tutorial*. Presented at *AEC/APC Symposium XII*, September 23-28, 2000, Tahoe, CA.
64. **Invited talk**, *Advanced Sensor Validation Methods*, AspenWorld 2000, Orlando Florida, February 6-9, 2000
65. *Nonlinear Predictive Control and Moving Horizon Estimation -- An Introductory Overview*. An invited minicourse presented at 1999 European Control Conference, August 31 - September 3, Karlsruhe, Germany, with Frank Allgower, James Rawlings, Steven Wright, and Tom Badgwell.
66. *An Overview of Nonlinear MPC Applications*, Invited Plenary Keynote at the Workshop on Nonlinear Model Predictive Control - Assessment and Future Direction. Ascona, Switzerland, June 2 - 6, 1998.
67. *Control Performance Monitoring - An Assessment*, Invited talk at the NSF/NIST Vision 2020 Workshop on Process Measurement and Control, New Orleans, March 6-8, 1998.
68. *An Overview of Model Predictive Control Technology*, with Tom Badgwell, International Conference on Process Control -V, Tahoe, CA, January, 1996.

69. *Building Intelligent Sensors with Neural Networks*, Keynote at Fisher-Rosemount Systems Advanced Control Seminar, Birmingham, UK, November, 1995.
70. *Building Intelligent Sensors with Neural Networks*. Keynote at Monsanto PCI Meeting, St. Louis, May 1995.

#### INVITED SEMINAR PRESENTATIONS

1. *Data + PSE Principles and Applications*, AIChE CAST Webinar, Jan. 24, 2023.
2. *Data Analytics with Process Operation and Control Principles*. Seminar presented at the Seoul National University, Korea, Jan. 3, 2023.
3. *Dynamic Latent Variable Modeling and Troubleshooting for High-dimensional Process Data*, Seminar at Department of Chemical and Biological Engineering, Hong Kong University of Science and Technology, March 4, 2022.
4. *Dynamic Latent Predictive Analytics for Systems Data*, Ezra's Round Table / Systems Seminar, Cornell University, May 7, 2021 (online).
5. *Latent Variable Analytics for Dynamic Data and IoT Systems*, Epstein Department of Industrial and Systems Engineering, University of Southern California, Jan. 28, 2020.
6. *Process Data Analytics for Troubleshooting of Feedback Controlled Manufacturing Plants*. Dept. of Chemical Engineering, University of British Columbia, Vancouver, BC, Oct. 26, 2018.
7. *Process Data Analytics and Machine Learning Methods*, AIChE CAST Webinar, Sept. 19, 2018.
8. *Data Analytics for Performance Troubleshooting of Feedback Controlled Manufacturing Plants*, Dept. of Chemical Engineering, Tsinghua University, Sept. 10, 2018
9. *Machine Learning and Data Analytics towards Process Intelligence*, Research Institute of ChemChina, Beijing, Aug. 6, 2018.
10. *Data Analytics and Machine Learning for Operation and Process Intelligence*, CAS Institute of Process Engineering, Beijing, Aug. 6, 2018.
11. *From Data Science to Asset Performance Intelligence*, invited talk presented at the Aspen Tech Academy, Boston, MA, May 3, 2018.
12. *Dynamic Analytics and Abnormal Situation Monitoring for Petroleum Big Data Problems*. China National Petroleum Corp. RIPED Institute, Beijing, March 20, 2018.
13. *Dynamic Data Distillation and Process Data Analytics*, seminar presented at KAIST, Korea, Jan. 10, 2018.
14. *Principal Time Series for High-dimensional Dynamic Data Distillation*, Distinguished Seminar presented at the Seoul National University, Korea, Jan. 9, 2018.
15. *Dynamic Data Analytics for Process Operations - Knowledge Extraction for Decision-Making*, invited talk presented at the Aspen Tech Academy, Boston, MA, Dec. 7, 2017.
16. *Dynamic Data Distillation and Process Data Analytics*, seminar presented at Honeywell Shanghai, China, Dec. 6, 2017.
17. *Dynamic Data Analytics and Abnormal Situation Monitoring for Petrochemical Big Data Problems*, seminar presented at the Chinese National Petroleum Corp. (CNPC), Beijing, China, Nov. 28, 2017.
18. *Industrial Data Analytics in the Era of Big Data*, seminar presented at the Chinese National Petroleum Corp. (CNPC), Beijing, China, June 23, 2017.
19. *Principal Time Series for High-dimensional Dynamic Data Distillation*. seminar presented at the IEEE SMC Society, University of British Columbia, Vancouver, BC, Canada, June 15, 2017.
20. *Industrial Process Data Systems towards Big Data*, seminar presented at the Chinese National Petroleum Corp. (CNPC), Beijing, China, May 18, 2017.
21. *Principal Time Series for High-dimensional Dynamic Data Mining*. The 11<sup>th</sup> USC-Tsinghua Faculty Symposium, Tsinghua University Beijing, China, May 17, 2017.
22. *Process Data Analytics towards Big Data*, seminar presented at the Chinese Rail-Road Corp. (CRRC), Qingdao, China, March 15, 2017.
23. *Latent Variable Modeling for Dynamic Time Series*, seminar presented at Tsinghua University, Department of Automation. Nov. 23, 2016.

24. *Process Data Analytics for Industrial Big Data*, seminar presented at the Northeastern University, Shenyang, China. July 17, 2016.
25. *Process Data Analytics for Industrial Big Data*, seminar presented at KAIST, Saudi Aramco-KAIST CO2 Management Center, Korea, July 14, 2016.
26. *Latent Variable Modeling for Dynamic Time Series*, seminar presented at The Hong Kong Polytechnic University, Department of Computing. March 16, 2016.
27. *Process Data Analytics towards Big Data*, seminar presented at The Chinese University of Hong Kong, Department of Aerospace and Mechanical Engineering, October 8, 2015.
28. *Process Data Analytics towards Big Data*, seminar presented at Huazhong Univ. of Science and Technology, Wuhan, China, April 8, 2015.
29. *Process Data Analytics - Present and Future Perspectives*, seminar presented at the Carnegie-Mellon University Pittsburgh, March 3, 2015
30. *Economic Model Predictive Control for Building Energy Systems*, seminar presented at the University of California, Santa Barbara, February 27, 2015
31. *Towards Big Data Process Analytics and Monitoring*, seminar presented at Hong Kong University of Science and Technology Workshop with USC Viterbi School of Engineering, Hong Kong, December 9, 2013
32. *Data-driven methods for process monitoring and data analytics*, Chinese University of Petroleum, Qingdao, China, Oct. 23, 2013
33. *Data-driven methods for process monitoring and data analytics*, Huawei, Shenzhen, Aug. 24, 2013.
34. *Model Quality Assessment for Model Predictive Control Performance Monitoring*, Institute of Systems Science, Chinese Academy of Sciences, Beijing, Aug. 16, 2013.
35. *Data-driven methods for process monitoring and data analytics*, Jiangnan University, Wuxi, China, Aug. 12, 2013.
36. *Model Quality Assessment for Model Predictive Control Performance Monitoring*, Huazhong Univ. of Science and Technology, Wuhan, China, Aug. 8, 2013.
37. *Data-driven methods for process monitoring and data analytics*, Harbin Institute of Technology, Harbin, China, July 30, 2013.
38. *Towards Big Data Process Analytics and Monitoring*, Seoul National University, Seoul, Korea, May 23, 2013.
39. *Quality-relevant Process Monitoring*. Seminar presented at Zhejiang University, Hangzhou, Jan. 12, 2013.
40. *Big Data and Quality-relevant Process Monitoring*. Seminar presented at Northeastern University, Shenyang, December 2, 2012.
41. *Recent Development in Data-based Fault Detection and Diagnosis*. Seminar presented at Tsinghua University, Beijing, Nov. 16, 2012.
42. *Big Data and Process Quality-relevant Monitoring*. Seminar presented at Georgia Institute of Technology, Atlanta, October 26, 2012.
43. *Big Data and Process Quality-relevant Monitoring*. Seminar presented at Beijing University of Chemical Technology, Beijing, October 22, 2012.
44. *Data-driven methods and applications for fault monitoring and diagnosis*. Seminar presented at North China University of Power Engineering, Beijing, Oct. 11, 2012.
45. *Predictive Control Methods to Improve Energy Efficiency and Reduce Demand in Buildings*. Seminar presented at University of Alberta, Edmonton, Sept. 7, 2012.
46. *Data-driven control performance monitoring and diagnosis*. Summer seminar presented at Tongji University, Shanghai, July 17, 2012
47. *Data-driven Multivariable Controller Performance Monitoring*. Seminar presented at Southeast University, Nanjing, Nov. 2011.
48. *Economic Model Predictive Control for Building Energy Systems*. Seminar presented at Hong Kong University of Science and Technology, Hong Kong, October 13, 2011.
49. *Data-driven Multivariable Controller Performance Monitoring*. Seminar presented at Huazhong University of Science and Technology, Wuhan, September 30, 2011.
50. *Data-Driven Fault Detection and Diagnosis*. Seminar presented at Beijing University of Chemical Technology, Beijing, September 26, 2011.

51. *Data-driven Multivariable Controller Performance Monitoring*. Seminar presented at the Department of Industrial Engineering and Management, Beijing University, Beijing, July 8, 2011.
52. *Oscillatory Control Systems Diagnosis with possible Actuator/Valve Hysteresis*. Seminar presented at South China University of Technology, Guangzhou, June 7, 2011.
53. *Data-Driven Fault Diagnosis, Modeling and Control - A Framework of Subspace Identification*. Seminar presented at Beijing Jiaotong University, Beijing, May 26, 2011.
54. *Optimal Feedback Strategy for Building Demand Response Control*, Seminar presented at University of California, Riverside, November 22, 2010
55. *Data-driven Fault Detection and Diagnosis in Complex Industrial Processes*, Seminar presented at University of California, Los Angeles, May 14, 2010
56. *Data-driven Fault Detection and Diagnosis in Complex Industrial Processes*, Seminar presented at ExxonMobil Research, New Jersey, April 4, 2010
57. *Control Loop Health Monitoring*. Chevron Process Automation/SCADA Roundtable, Houston, TX, March 31, 2010
58. *MIMO Control Performance Monitoring*, Seminar presented at Jilin University, October 14, 2009
59. *Data-driven Process Control and Operations*, Seminar presented at Auburn University, 11/5/2008
60. *Semiconductor process monitoring and control*, Seminar presented at Tsinghua University, Beijing, Nov. 23, 2007
61. *Semiconductor manufacturing process control*, Seminar presented at Tongji University, Shanghai, July 8, 2007
62. *Statistical Inference Methods for MIMO Control Performance Monitoring*, Seminar presented at National Taiwan University, July 4, 2007
63. *Fab-wide Control of Electrical Parameters*, seminar presented at Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan, July 3, 2007.
64. *Fab-wide Control of Electrical Parameters*. Seminar presented at The Chinese Academy of Sciences, Shenzhen Institute of Advanced Technology, Dec. 7, 2006.
65. *An Overview of Subspace Identification*. Seminar presented at Department of Chemical Engineering, National University of Singapore, Dec. 5, 2006.
66. *Multivariate Process and Control Performance Monitoring*, Seminar presented at ExxonMobil Research and Engineering, Clinton, NJ, Aug. 7, 2006.
67. *Interactions Between APC and Scheduling*, Seminar presented at Texas Instruments, Dallas, TX, Aug. 1, 2006.
68. *Industrial Model Predictive Control*, Seminar presented at National Instruments, Austin, TX, June 6, 2006.
69. *Industrial Model Predictive Control*, Seminar presented at Amazon.com, Seattle, March 13, 2006.
70. *Process Systems Engineering in Semiconductor Processing*. Seminar presented at the Mork Family Department of Chemical Engineering and Materials Science, University of Southern California, March 7, 2006.
71. *Optimization and Control in Chemical and Refinery Industries*. Seminar presented at the Department of Mathematics, University of California, Irvine, March 8, 2006.
72. *MIMO Control Performance Monitoring*. Seminar presented at the Department of Automatic Control, Shanghai Jiaotong University, December 8, 2005.
73. *Process Control in Semiconductor Manufacturing*. Seminar presented at School of Automation, Chongqing University, December 12, 2005.
74. *Process Monitoring in Semiconductor Manufacturing*. Seminar presented at McMaster Automatic Control Consortium, McMaster University, May 26, 2005.
75. *Batch Control and Monitoring in Semiconductor Manufacturing*. Seminar presented at Bristol-Myers-Squibb, New Jersey, May 24, 2005.
76. *Control and Monitoring Issues in Semiconductor Manufacturing*. Seminar at Department of Chemical Engineering, McMaster University, March 14, 2005.
77. *Control Performance Monitoring - Advances in Theory and Practice*, Seminar presented at Honeywell, Phoenix, AZ, Jan. 6, 2005.

78. *Update on APC and FDC in Semiconductor Manufacturing*, Seminar presented at Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan, Oct. 8, 2004.
79. *Integrated Systems Engineering for Semiconductor Manufacturing*, Seminar in the Distinguished Seminar Series, Microelectronics Research Center, University of Texas at Austin, June 14, 2004
80. *Systems Engineering Approach to Semiconductor Manufacturing*, Seminar at Department of Chemical and Biological Engineering, University of Wisconsin, April 13, 2004
81. *Process Integrity under Feedback Control and Optimization*, Seminar at Department of Chemical Engineering, Queens University, March 17, 2004
82. *Statistical Process Monitoring: Basics and Beyond*, Seminar presented at Department of Chemical Engineering, National Taiwan University, Oct. 2, 2003.
83. *Advanced Process Control in Semiconductor Processing - An Emerging Area in Process Control*, Seminar presented at Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan, Sept. 29, 2003.
84. *Process Monitoring and Diagnosis Using Multi-block Analysis*, Seminar presented at Department of Life Sciences, University of Amsterdam, August 25, 2003.
85. *Subspace Approaches to Dynamic Model Identification and Fault Diagnosis*, Seminar presented at Department of Automation, Tsinghua University, August 14, 2003.
86. *Process Sensor Integrity under Feedback Control and Optimization*, Seminar at Department of Chemical Engineering, University of Wisconsin, Nov. 26, 2002
87. *Process Identification for Control*, Seminar at National Instruments, Austin, TX, September 14, 2002
88. *Subspace Approach to Fault Identification via Reconstruction*. Seminar at the Department of Electrical Engineering, Linkoping University, March 19, 2002.
89. *Overview of Industrial Model Predictive Control*. Seminar at Chinese Academy of Sciences, Institute of Automation, Beijing, January 29, 2002.
90. *Advanced Process Control in Semiconductor Processing - An Emerging Area in Process Control*, Seminar presented at Department of Automation, Tsinghua University, January 28, 2002.
91. *Advanced Process Control in Semiconductor Processing*. Seminar presented at Mitsubishi Chemical, Tsukuba, Japan, January 24, 2002.
92. *Overview of Research in Process Monitoring and Control*. Seminar presented at Mitsubishi Chemical, Mizushima, Japan, January 22, 2002.
93. *Subspace Approaches to Dynamic Model Identification and Fault Diagnosis*. Seminar at The Institute of Systems Theory, University of Stuttgart, November 21, 2001.
94. *Overview of Subspace Approaches to Fault Detection and Diagnosis*. Seminar presented at Department of Chemical Engineering, McMaster University, November 13, 2001.
95. *Overview of Industrial Model Predictive Control*. Seminar at the Department of Electrical Engineering, Linkoping University, October 25, 2001.
96. *Overview of Industrial Model Predictive Control*. Seminar at Network for Process Intelligence, Mid-Sweden University, October 24, 2001.
97. *Overview of Industrial Model Predictive Control*. Seminar at the Department of Signals, Sensors and Systems, Royal Institute of Technology, October 22, 2001.
98. *Subspace Approaches to Dynamic Model Identification and Fault Diagnosis*. Seminar at the Department of Electrical Engineering, Linkoping University, October 16, 2001.
99. *Subspace Approaches to Dynamic Modeling and Fault Diagnosis*. Seminar at the Department of Chemical Engineering, University of Alberta, October 5, 2001.
100. *Industrial Model Predictive Control: An Updated Overview*. Seminar presented at McMaster Automatic Control Consortium, McMaster University, May 17, 2001.
101. *Subspace Approaches to Dynamic Modeling and Fault Diagnosis*. Seminar at the Department of Chemical Engineering, Louisiana State University, April 6, 2001.
102. *Fault Detection and Process Monitoring*. Seminar at Weyerhaeuser Technology Center, Seattle, WA, March 30, 2001.
103. *On-line data compression and validation using wavelets*. Seminar at Weyerhaeuser Technology Center, Seattle, WA, March 29, 2001.



104. *Process Monitoring and Control: An Evolving Game*. Seminar at the Department of Chemical Engineering, University of California at Santa Barbara, March 1, 2001.
105. *Subspace Model Identification and Its Applications in Process Control*. Presented at Weyerhaeuser Technology Center, Seattle, WA, September 8, 2000.
106. *Process Monitoring and Controller Performance Assessment: Are They Separable Tasks?* Presented at Weyerhaeuser Technology Center, Seattle, WA, September 7, 2000.
107. *Industrial MPC Applications -- An Updated Review*. Presented at Norwegian Institute of Technology, April 12, 2000.
108. *Dynamic Fault Detection and Identification with Maximized Sensitivity*. Presented at Norwegian Institute of Technology, April 10, 2000.
109. *Sensor and Process Fault Detection and Identification*. Seminar at Department of Chemical Engineering, Kyoto University, June 29, 1999.
110. *Between Open-loop and Closed-loop Control: Process Monitoring*. Seminar at the Department of Chemical Engineering, Purdue University, April 1, 1999.
111. *Sensor and Process Fault Detection and Identification*. Seminar at the Department of Chemical Engineering, University of Maryland, March 18, 1999.
112. *Sensor and Process Fault Detection and Identification*. Seminar at the Central Research of DuPont, Wilmington, DE, March 19, 1999.
113. *Fault Detection and Diagnosis*, Seminar presented at ALCOA Technical Center, Nov. 1997.
114. *Subspace Approach to Fault Detection and Diagnosis*. Aerospace Engineering Department, UT-Austin, October 14, 1997.
115. *A Geometric Approach to Fault Detection and Diagnosis*. Seminar presented at the Department of Chemical Engineering, University of California at Santa Barbara, April 11, 1997.
116. *Chemical Process Modeling, Monitoring, and Control*, seminar presented at 3M, Austin, June, 1996
117. *Multivariable Predictive Control Technology*. Monsanto PCI Meeting, St. Louis, May 1996.
118. *Sensor Validation*. Neural Net Club Meeting at the University of Maryland, College Park, September, 1995.
119. *Partial Least Squares for System Identification*. Dept. of Chem. Eng., University of Texas, March, 1995.
120. *Partial Least Squares for System Identification*. Dept. of Chem. Eng., University of Houston, February, 1995.
121. *Fuzzy Logic Uses in Process Control*. Monsanto PCI Meeting, St. Louis, December, 1994.
122. *Auto-tuned Fuzzy Control*. TMCC Meeting at University of Texas at Austin. September, 1994.
123. *Integrating Statistics with Neural Networks*. Dept. of Chem. Eng., University of Newcastle upon Tyne, UK, June, 1992.
124. *Neural Net PLS Approach to Soft Sensors*. Engineering Dept. at Mobil Research and Development, Princeton, January, 1992.
125. *Combining PCA and PLS with Neural Networks*. Neural Network Technology Center at Du Pont, Wilmington, July 1991.

#### SHORT COURSES AND WORKSHOPS

1. Process Monitoring and Data Analytics, Four-day short course delivered online to Seoul National University, August 2022.
2. Process Monitoring and Data Analytics, Four-day short course delivered online to Seoul National University, Sept. 13-16, 2021.
3. Workshop on *Process Analytics and Machine Learning*, at FOPAM, Raleigh, North Carolina, with R. Braatz and Leo Chiang, August 4-5, 2019
4. *Process Data Analytics and Machine Learning*. Two-day industrial short course at Aspen Technology, June 11-12, 2018

5. *Process Data Analytics and Machine Learning*. Two-day industrial short course at USC, Los Angeles, April 30-May 1, 2018
6. *Data Driven Fault Diagnosis Methods*, Pre-Symposium Course in IFAC SAFEPROCESS, August 2012, Mexico City, Mexico.
7. *Data-driven fault detection and diagnosis*. Three-day Workshop presented at Northeastern University, Shenyang, July 23-25, 2012
8. *Data-driven control performance monitoring and diagnosis*. Summer Workshop presented at Northeastern University, Shenyang, July 2011
9. *Data-driven fault detection and diagnosis*. One-day Workshop presented at Northeastern University, Shenyang, July 16, 2009
10. *Data-driven process monitoring in Semiconductor Manufacturing*. Workshop presented at Tsinghua University, Beijing, June 2 -13, 2008
11. *Run to Run Control and Fault Detection in Semiconductor Manufacturing*. Short course presented at Omron, Kyoto, Japan, December 2006
12. *Run to Run Control and Fault Detection in Semiconductor Manufacturing*. Short course presented at Renesas, Landshut, Germany (with Tom Edgar), May 2006.
13. *Model Predictive Control Theory and Practice*, Workshop at the 2006 World Congress on Intelligent Control and Automation, Dalian, China, June 20-22, 2006.
14. *System Identification*, Short course presented at Mitsubishi Chemical Corporation, Muzushima, Okayama, Japan, December 5 - 6, 2005.
15. *Advanced Process Control and Fault Detection*. Short course presented at Intel, Chandler, AZ, August, 25 - 26, 2005.
16. *System Identification*, Short course presented at Exxon-Mobil Chemicals, Houston, August 4 -5, 2005
17. *Applications of Run to Run Control and Fault Detection in Semiconductor Manufacturing*. Short course presented at AEC/APC Symposium, Sept. 18, 2004, Denver, CO, with Tom Edgar.
18. *Advanced Process and Equipment Control in Semiconductor Manufacturing*. Short course presented at ITRI Taiwan, September 30- Oct. 1, 2003, Hsinchu, Taiwan.
19. *Model Predictive Control and Monitoring*. Four-day short-course presented at the Mid-Sweden University, Sweden, May 19-22, 2003.
20. *Statistical Process Monitoring and Fault Diagnosis*. Four-day short-course presented at the Mid-Sweden University, Sweden, May 21-24, 2002.
21. *Model Predictive Control, Workshop at the 2001 IFAC Symposium on DYCOPS*, Cheju, Korea, May 2001.
22. *Run to Run Control and Fault Detection*. Short course presented to Applied Materials, October 5-6, 2000, Salt Lake City, UT, with Tom Edgar and J. Campbell.
23. *Run to Run Control and Fault Detection*. Short course presented at AEC/APC Symposium XII, September 23-28, 2000, Tahoe, CA, with Tom Edgar and J. Campbell.
24. *Multivariate Statistical Process Monitoring*. Four-day seminar presented at the XVIII Chemical Engineering Seminar at the Instituto Tecnológico de Celaya, Mexico, January 1998.
25. *Advanced Process Monitoring and Control*. Two-week course presented at Tsinghua University, Beijing, China, August 10-21, 1998.
26. *Advanced Process Modeling and Control Courses*, AMD, Inc., November 1995; February 1996; May, 1996; June 1997.

#### PRESENTATIONS WITH REFEREED ABSTRACTS

1. Jicheng Li and Qin, S. J. (2022). 432c - LSTM Neural Networks and Nonlinear State Space Model Identification, AIChE Annual Meeting, Phoenix, AZ, November 13-18, 2022
2. Yu, Jiabin and Qin, S. J. (2022). 12h - Latent State Space Modeling of High-Dimensional Data in Chemical Systems, AIChE Annual Meeting, Phoenix, AZ, November 13-18, 2022

3. S. Joe Qin (2021). 75e - Keynote Talk: Digital Transformation, Data Science, and Industrial Intelligence, in "Industry 4.0, Digital Twins, and Digital Transformation II", AIChE Annual Meeting, Boston, MA, November 7-19, 2021
4. S. Joe Qin, Zijun Zhang, and Xiang Zhou (2021). 241a - How to Make a Data Science Curriculum Embrace Engineering Domains and Vice Versa, AIChE Annual Meeting, Boston, MA, November 7-19, 2021
5. S. Joe Qin (2021). 246d - Data-Driven Dynamic Latent Variable Analysis of Chaotic and Oscillatory Chemical Systems, AIChE Annual Meeting, Boston, MA, November 7-19, 2021
6. S. Joe Qin, S. Guo, Z. Li, L. Chiang, and I. Castillo (2021). 635f - Statistical Machine Learning for the DOW Data Challenge Problem, AIChE Annual Meeting, Boston, MA, November 7-19, 2021
7. S. Joe Qin, Y.X. Liu, and Yining Dong (2020). Dynamic Data Feature Engineering for Process Operation Troubleshooting, presented online at the 2020 AIChE Annual Meeting, Nov. 16-20
8. Sungho Shin, Alexander Smith, S. Joe Qin and Victor M. Zavala (2019). Optimization Algorithms for Dynamic Latent Variable Problems, 2019 AIChE Annual Meeting, Wednesday, November 13, 2019
9. S. Joe Qin (2019). Panel Discussion: Chemical Engineering Data Science Class Instructor Perspective II, 2019 AIChE Annual Meeting, 1:42 PM - 2:00 PM, Nov. 12, 2019
10. S. Joe Qin and Yining Dong (2019). A Review and Outlook on Machine Learning and Data Science in Chemical Engineering, 2019 AIChE Annual Meeting, 3:30 PM - 3:47 PM, Nov. 12, 2019
11. S. Joe Qin and Yining Dong (2018). (393h) Why Plant Operations Are Unstable after All the Design and How Data Science Can Help, 2018 AIChE Annual Meeting (ISBN: 978-0-8169-1108-0)
12. S. Joe Qin, Yuan Jin, Zheng Li, Victor M. Saucedo, Angela Meier, Siddhartha Kunda, Briana Lehr, and Salim Charaniya (2018). (601b) Source Analysis of Process Variability in Multi-Step Bio-Process Manufacturing, 2018 AIChE Annual Meeting (ISBN: 978-0-8169-1108-0)
13. Qinqin Zhu and S. Joe Qin (2017). Dynamic Latent Variable Regression for Data Modeling and Monitoring, paper 646f, AIChE Annual Meeting, Oct. 29-Nov. 2, 2017, Minneapolis, MN.
14. Yining Dong and S. Joe Qin (2017). Dynamic Canonical Correlation Analysis for the Extraction and Diagnosis of Plant-Wide Oscillations, paper 328e, AIChE Annual Meeting, Oct. 29-Nov. 2, 2017, Minneapolis, MN.
15. S. Joe Qin (2017). Advances in Multivariate Analysis, presented at the 2017 Spring Meeting and 13th Global Congress on Process Safety, 3/28/2017, San Antonio, TX.
16. Zhaohui Zhang, Gang Li, Tim Salsbury, and S. Joe Qin (2014). "Game theory based distributed temperature control for energy saving of smart buildings." AIChE Annual Meeting, November 17, 2014, Atlanta, GA.
17. Wei Ma, Behnam Jafarpour, Joe Qin (2012). Estimating Aquifer Heterogeneity from CO<sub>2</sub> Sequestration Monitoring Measurements with the Ensemble Kalman Filter. AGU Fall 2012 Meeting, San Francisco, Dec. 3-7.
18. Jingran Ma, S. Joe Qin, and Tim Salsbury (2011). Minimizing the energy and demand cost of building energy systems based on economic MPC, AIChE Annual Meeting, Minneapolis, MN, Oct. 16, 2011.
19. Ricardo Dunia, Gary T. Rochelle and S. Joe Qin (2011). Adaptive Subspace System Identification for CO<sub>2</sub> Capture Processes, AIChE Annual Meeting, Minneapolis, MN, Oct. 16, 2011.
20. S. Joe Qin (2010). Quality-Relevant Process Monitoring, AIChE Annual Meeting, Salt Lake City, UT, Nov. 7-12, 2010.
21. Jingran Ma, S. Joe Qin, and Tim Salsbury (2010). Real-Time Model Predictive Control for Energy and Demand Optimization of Multi-zone Buildings, AIChE Annual Meeting, Salt Lake City, UT, Nov. 7-12, 2010.

22. Hu Li, S. Joe Qin, Muhammad Sahimi, and Theodore Tsotsis (2010). Landfill Modeling Using Ensemble Kalman Filtering, AIChE Annual Meeting, Salt Lake City, UT, Nov. 7-12, 2010.
23. Jesus Mina, Carlos F. Alcalá and S. Joe Qin (2009). Parity Space Based Fault Detection Schemes Using Subspace Approaches, AIChE Annual Meeting, Nashville, TN, Nov. 8-13, 2009.
24. S. Joe Qin, Bo Li, and Tim Salsbury (2009). Identification and Control for Optimizing Building Energy Demand, AIChE Annual Meeting, Nashville, TN, Nov. 8-13, 2009.
25. Alan Z. Sun and S. Joe Qin (2009). Adaptive Run-to-Run Control of Semiconductor Process, AIChE Annual Meeting, Nashville, TN, Nov. 8-13, 2009.
26. Carlos F. Alcalá and S. Joe Qin (2008). Unification of Contribution Analysis for Process Monitoring, AIChE Annual Meeting, Philadelphia, PA, Nov. 2008.
27. Quan Shen and S. Joe Qin (2008). Spurious Drop Detection In Subcutaneously Implanted Continuous Glucose Monitors, AIChE Annual Meeting, Philadelphia, PA, Nov. 2008.
28. Jie Yu and S. Joe Qin (2007). Diagonal Interactors and Adaptive Weighting for MIMO Control Performance Monitoring and Improvement, AIChE Annual Meeting, Salt Lake City, UT, Nov. 2007.
29. Clare Schoene, S. Joe Qin, and E. Kutanoglu (2007). Multi-step control in semiconductor manufacturing, INFORMS Conference, Nov. 2007. Seattle, WA.
30. Jie Yu and S. Joe Qin (2006). Variance Component Analysis Based Fault Diagnosis of Multi-Layer Overlay Lithography Processes, AIChE Annual Meeting, San Francisco, Nov. 12-17, 2006.
31. Weilu Lin and S. Joe Qin (2006). Optimal Structured Residuals for Multidimensional Fault Isolation Based on Multivariate Principal Component Models, AIChE Annual Meeting, San Francisco, Nov. 12-17, 2006.
32. B. Bregenzer, E. Kutanoglu, J. Hasenbein, and S.J. Qin (2005). Scheduling Practice in Semiconductor Manufacturing: Results of a Comprehensive Survey. INFORMS Annual Meeting, San Francisco, CA, 11/13 - 16.
33. E. Hale and S.J. Qin (2005). Nonlinear MPC using multi-parametric nonlinear programming solutions. AIChE Annual Meeting, Cincinnati, OH, 10/30-11/4, 2005
34. J. Wang and S.J. Qin (2005). SIMPCA with Modified Instrumental Variables to Improve Estimation Accuracy. AIChE Annual Meeting, Cincinnati, OH, 10/30-11/4, 2005
35. J. Yu and S.J. Qin (2005). Statistical Inference Methods for MIMO Control Performance Monitoring. AIChE Annual Meeting, Cincinnati, OH, 10/30-11/4, 2005
36. C.B. Schoene and S.J. Qin (2005). Blind Identification for the Detection and Estimation of Valve Stiction. AIChE Annual Meeting, Cincinnati, OH, 10/30-11/4, 2005
37. Q. Peter He, J. Wang, M. Pottmann, and S.J. Qin (2005). A Curve Fitting Method for Detecting Valve Stiction in Oscillating Control Loops. AIChE Annual Meeting, Cincinnati, OH, 10/30-11/4, 2005
38. K. Onodera, M. Ogawa, and S.J. Qin (2004). A comparative study of several closed-loop MIMO identification methods with industrial data. AIChE Annual Meeting, Austin, TX, November 7-14, 2004
39. P. He and S.J. Qin (2004). Multivariate Visualization in Data Analysis for Process Operations. AIChE Annual Meeting, Austin, TX, November 7-14, 2004
40. J. Wang and S.J. Qin (2004). Stochastic Fault Detection Algorithms Using Second Order Statistics. AIChE Annual Meeting, poster, Austin, TX, November 7-14, 2004
41. C. Harrison and S.J. Qin (2004). A STRAIGHTFORWARD FEEDBACK-INVARIANT APPROACH TO CLOSED-LOOP TIME DELAY ESTIMATION OF SISO PROCESSES. AIChE Annual Meeting, poster, Austin, TX, November 7-14, 2004
42. P. He, J. Wang and S.J. Qin (2003). Fault Diagnosis Using Fault Directions in Fisher Discriminant Analysis. AIChE Annual Meeting, paper 453f, San Francisco, CA, November 16-21, 2003
43. R. Good and S.J. Qin (2003). Stability Analysis of a MIMO Double-EWMA Run-to-Run Controller with Metrology Delay. AIChE Annual Meeting, paper 176e, San Francisco, CA, November 16-21, 2003

44. Richard Good and S. Joe Qin (2003), A Supervisory Control Methodology for Semiconductor Device Manufacturing, AEC/APC Symposium XV, September, 2003, Colorado Spring, Denver.
45. T.A. Badgwell and S.J. Qin (2003). A Survey of Industrial Model Predictive Control Technology, presented at AIChE Spring Meeting, New Orleans, April 2, 2003.
46. C.A. McNabb, A.P. Swanda, and S.J. Qin (2002), control performance monitoring of a wood waste power boiler, presented at the *52nd Canadian Chemical Engineering Conference*, Vancouver, BC, Oct.20-23, 2002.
47. S.J. Qin, J. Wang, and L. Ljung (2002). [255c] - Subspace Identification Methods Using Parsimonious Model Formulation, AIChE Annual Meeting, Indianapolis, November, 2002.
48. Chris McNabb and S.J. Qin (2002). [254d] - Plant-wide MIMO Control Performance Diagnosis via Subspace Projections, AIChE Annual Meeting, Indianapolis, November, 2002.
49. Greg Cherry, Rick Good, and S.J. Qin (2002). [261b] - Semiconductor Process Monitoring and Fault Detection with Recursive Multiway PCA Based on a Combined Index, AIChE Annual Meeting, Indianapolis, November, 2002.
50. Q. He, A. Toprac, and S.J. Qin (2002). [261e] - A New Thermal Model for the Hot-wall Low Pressure Chemical Vapor Deposition, AIChE Annual Meeting, Indianapolis, November, 2002.
51. M. Misra and S.J. Qin (2002). [271e] - On-line Wavelet Data Compression Using Adaptive Error Based Thresholding Criterion, AIChE Annual Meeting, Indianapolis, November, 2002.
52. S.J. Qin and T. Sonderman (2002). *From Chemical Process Control to Semiconductor Manufacturing Control*. Keynote, AEC/APC XIV Symposium, Salt Lake City, UT, September 8-13, 2002
53. J. Wang and S. Joe Qin (2001). SIMPCA: Subspace identification method via PCA. [Paper 279b], presented at *AIChE Annual Meeting 2001*, November 4-9, 2001, Reno, NV.
54. C.A.R McNabb and S. Joe Qin (2001). MIMO control performance monitoring based on subspace projections. [Paper 282b], presented at *AIChE Annual Meeting 2001*, November 4-9, 2001, Reno, NV.
55. Qin, S.J., S. Valle and M. Piovoso (2000). Analysis of multi-block PCA and PLS for fault detection and identification. *AIChE Annual Meeting 2000*, November, 2000, Los Angeles, CA.
56. W. Li and S.J. Qin (2000). Subspace identification models for dynamic sensor fault detection and diagnosis. *AIChE Annual Meeting 2000*, November, 2000, Los Angeles, CA.
57. J. Wang and S.J. Qin (2000). A new subspace identification approach based on principal component analysis. *AIChE Annual Meeting 2000*, November, 2000, Los Angeles, CA.
58. Yue, H. and S.J. Qin (2000). A wavelength selection method and its application in endpoint detection and fault detection. *AEC/APC Symposium 2000*, September 23-28, 2000, Tahoe, CA.
59. Scheid, G., S.J. Qin and T. Riley (1999). Run to Run Optimization, Monitoring, and Control on a Rapid Thermal Processor. Presented at AIChE Annual Meeting, Dallas, TX.
60. Yue, H., S.J. Qin, A. Toprac, and J. Wiseman (1999). Monitoring of Plasma Etching Processes Using High Resolution Optical Emission Spectroscopy. Presented at AIChE Annual Meeting, November 1-5, 1999, Dallas, TX.
61. McNabb, C. and S.J. Qin (1999). Block Decentralized MPC Control of a Kamyr Digester. Presented at AIChE Annual Meeting, November 1-5, 1999, Dallas, TX.
62. Misra, M., S.J. Qin, H. Yue and C. Ling (1999). Multivariate Sensor Data Validation and Compression Using Multi-scale PCA. Presented at AIChE Annual Meeting, November 1-5, 1999, Dallas, TX.
63. Valle-Cervantes, S. and S.J. Qin (1998). Determining the number of principal components. *AIChE Annual Meeting*, Nov. 16-20, 1998, Miami, FL.

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64. Misra, M., S. Kumar, S.J. Qin, and R.S. Seemann (1998). A New Recursive On-line Technique for Wavelet Based Data Compression. *AICHE Annual Meeting*, November 16-20, 1998, Miami, FL.
  65. Yue, H. and S. Joe Qin (1998). Fault Reconstruction and Subspace Control for Industrial Processes. *AICHE Annual Meeting*, November 16-20, 1998, Miami, FL.
  66. S. Joe Qin, W. Li and H. Yue (1998). Adaptive process monitoring. *FACSS Conf.*, October 11-15, 1998, Austin, TX.
  67. Cheng, Y., R. Markle, S.J. Qin, T.F. Edgar, M. Gatto, and C. Nauert (1997). Modeling of OES data to estimate etch rate for etching equipment. Invited paper, *SPIE's 1997 Symposium on Microelectronic Manufacturing*, October 1-2, 1997, Austin, TX.
  68. Luo, R., M. Misra, S.J. Qin, R. Barton and D. M. Himmelblau (1997). Fault detection via multiscale analysis and nonparametric statistical inference. Presented at *AICHE Annual Meeting*, November, 1997, Los Angeles.
  69. R. Dunia and Qin, S.J. (1997). Multidimensional fault detectability, identifiability, and reconstructability. Presented at *AICHE Annual Meeting*, November, 1997, Los Angeles.
  70. Qin, S.J., H. Yue, R. Markle, C. Nauert, and M. Gatto (1997). Fault detection and classification of plasma etchers via optical spectroscopy analysis. Presented at *AICHE Annual Meeting*, November 16-21, 1997, Los Angeles, CA.
  71. Dunia, R. and Qin, S.J. (1996). Fault detection and identification using principal component subspace models. Presented at *AICHE Annual Meeting*, November 10-15, 1996, Chicago.
  72. Cheng, Y., Qin, S.J., and Edgar, T.F. (1996). Multi-PCA modeling for an etching process monitoring. Presented at *AICHE Annual Meeting*, November 10-15, 1996, Chicago.
  73. Foss, B. and Qin, S.J. (1996). Nonlinear optimization-based control via interpolation. Presented at *AICHE Annual Meeting*, November 10-15, 1996, Chicago.
  74. Lu, Z.J. and S. J. Qin (1996). A range control algorithm for model predictive control and unit optimization. Poster presented at *AICHE Annual Meeting*, November 10-15, 1996, Chicago.
  75. Qin, S.J. (1993). A recursive PLS algorithm for system identification, *AICHE Annual Meeting*, November 7-12, 1993, St. Louis.
  76. Qin, S.J. and McAvoy, T.J. (1992). Building nonlinear FIR models via a neural net PLS approach for long-term prediction. *AICHE Annual Meeting*, November 1-6, 1992, Miami.
  77. Qin, S.J. and McAvoy, T.J. (1991). Neural net PLS approach to dynamic modeling: method and application. *AICHE Annual Meeting*, November, 1991, Los Angeles.

#### BOOK REVIEWS

1. S. Joe Qin (2007). Subspace methods for system identification: Tohru Katayama; Springer-Verlag, ISBN: 1-85233-981-0. *Automatica*, 43(4), 748-749.

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