KAI LIU

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EDUCATION

China University of Mining and Technology, Beijing *Sep. 2014–Jun. 2018*
Ph.D. in Mechatronic Engineering

University of California, Merced *Aug. 2015–Sep. 2017*
Visiting Scholar in Mechatronic Engineering

China University of Mining and Technology, Beijing *Sep. 2012–Jun. 2014*
M.S.E in Mechatronic Engineering

Zhongyuan University of Technology *Sep. 2008–Jul. 2012*
B.S.E. in Mechatronic Engineering and Automation

EXPERIENCE

Lam Research Corp. *Jul. 2018–Present*
Electrical Engineer *Fremont, CA*

· Develop/optimize control systems for pressure, temperature, RF power, impendence matching, motion control systems.
· Develop advanced control technology to improve control system performance using model-based control techniques, such as time-optimal control, iterative learning control, adaptive feedforward control, MIMO decoupling control, gain-scheduling control.
· Develop smart embedded systems using machine learning techniques.

Lam Research Corp. *Oct. 2015–Sep. 2017*
Researcher *Fremont, CA*

· Dynamic wafer temperature control of heaters and chillers.
· Run-to-run data testing software development for fast monitoring the repeatability performance of etching data.
· Multi-Zone temperature modelling and uniformity control in Matlab/Simulink.

PUBLICATIONS

Journal Papers

· **Liu K.**, Chen Y.Q., Zhang T., Tian S., Zhang X. A survey of run-to-run control for batch processes. *ISA Transactions.* 83(12):107-125, 2018 (Top3 Journals in Control Engineering)
· **Liu K.**, Chen Y.Q. Domański P.D. , Zhang X. A Novel Method for Control Performance Assessment with Fractional Order Signal Processing and Its Application to Semiconductor Manufacturing. *Algorithms.* 11(7), 90, 2018
· **Liu K.**, Zhang X., Chen Y.Q. Extraction of Coal and Gangue Geometric Features with Multifractal Detrending Fluctuation Analysis. *Applied Sciences.* 8(3):463, 2018
· **Liu K.**, Chen Y.Q., Zhang X. An Evaluation of ARFIMA (Autoregressive Fractional Integral Moving Average) Programs, *Axioms.* 6(2):1-16, 2017
· **Liu K.**, Zhang X. Coal consumption forecast based on fractional ARIMA model. *Journal of Mining Science and Technology.* 2(5), 2017 (Top3 Chinese Journals in Coal Mine Engineering)
· **Liu K.**, Wang Y, Zhu C, Zhang X. Research of fully mechanized working platform on the thin coal seam based on the genetic algorithm. *Coal Mine Engineering.* 47(12): 134-135, 2015. (Top3 Chinese Journals in Coal Mine Technology)

· Qiao H. B., **Liu K.**, Zhang J. etc. Matching evaluation research of fully mechanized working platform on the thin coal seam. *Coal Mine Machinery.* 35(12): 214-216, 2014

· Qiao H.B., Zhang J., **Liu K.**, etc. Study and Fluent Simulation of Gas in Underground Coal Bunker. Coal Technology. 34(9): 130-132, 2015.

· Wang Y., **Liu K.**, Li H. Design of Hydraulic Support Monitor Host System, *Coal Technology.* 34(7): 237-239, 2015.

· Wang G., Zhang X., Zhang Y., **Liu K.** Finite Element Analysis for O-ring Sealing Performance Based on ANSYS Workbench, *Coal Mine Machinery.* 36(10): 263-265, 2015.

Conference Papers

· **Liu K.**, Chen Y.Q. Domański P.D. Control Performance Assessment of the Disturbance with Fractional Order Dynamics. Proceeding of the 1st International Nonlinear Dynamics Conference (NODY-CON2019), Rome, Italy, February 17-20 2019.

· **Liu K.**, Chen Y.Q., Zhang X. An Application of the Seasonal Fractional ARIMA Model to the Semiconductor Manufacturing. Proceeding of the 20th World Congress of the International Federation of Automatic Control, Toulouse, France, 9-14 July 2017. (Top1 Conferences in Control Engineering)

· **Liu K.**, Chen Y.Q., Zhang X. Energy Informatics and Fractional Calculus. Proceedings of the International Design Engineering Technical Conferences, Cleveland, OH, USA, 6-9 August 2017.

· **Liu K.**, Chen Y.Q., Zhang X. An Evaluation of ARFIMA programs. Proceedings of the International Design Engineering Technical Conferences, Cleveland, OH, USA, 6-9 August 2017.

· Qiao H. B., **Liu K.**, Wang Y. L., Yu H. Study of reliability of on-line monitoring system for mine hoist braking system. Proceedings of the 2nd International Symposium of Mine Safety Science and Engineering, Beijing, China, 21-23 September 2013.

PROFESSIONAL ACTIVITIES

Referee for international journals

· ISA Transactions
· Control Engineering Practice
· IEEE Control Systems Technology
· IET Control Theory and Applications
· Nonlinear Dynamics
· Journal of Automatica, Sinica

Referee for international conferences

· Multisensor Fusion and Integration
· American Control Conference
· IEEE Conference on Decision and Control

Invited Talks

· Control engineering in semiconductor manufacturing   2018.12.30
  @Zhejiang University Invited by Professor: Ni, Dong

TECHNICAL STRENGTHS

Computer Languages   MATLAB, Simulink, Python, C, MatrixX

DISCLOSURES & PATENTS

Model-based ESC Coolant Supply Temperature Control using Smith Predictor (Pending)