Professor (Research) LI, ZHIWU

Department of Engineering Science, Faculty of Innovation Engineering
Macau University of Science and Technology

Office：A420
E-mail：zwli@must.edu.mo

Academic Qualification:

1995　Ph. D. degree in Mechanical Engineering, Xidian University, Xi'an, China
1992　Master degree in Mechanical Engineering, Xidian University, Xi'an, China
1989　B. S. degree in Mechanical Engineering, Xidian University, Xi'an, China

Teaching Area

Discrete event systems

Research Area

Discrete event systems; Petri nets; Intelligent manufacturing and automation; Intelligent Traffic, GameTheory; Data and model mining; Granular computing

Working Experience

Jul. 2013 - Present　　　Professor, Institute of Systems Engineering, Macau University of ScienceandTechnology, Macau
Sep. 2002 - Jun. 2013　Professor, Xidian University, China
Jul. 1997 - Aug. 2002　Associate Professor, Xidian University, China
Sep. 1992 - Jun. 1997　Assist Professor, Xidian University, China

Academic Publication（selected）

Monographs:

[1] Yufeng Chen and **Zhiwu Li**, Optimal Supervisory Control of Automated Manufacturing Systems, NewYork: CRC Press, Taylor & Francis Group, 2013.

[2] **Zhiwu Li** and Mengchu Zhou, Deadlock Resolution in Automated Manufacturing Systems: A Novel
Petri Net Approach, London: Springer-Verlag, Feb. 2009.

Selected journal articles:

[1] Zhu, Guanghui; Feng, Lei; Wu, Naiqi; **Li, Zhiwu**, An efficient fault diagnosis approach basedoninteger linear programming for labeled Petri nets, *IEEE Transactions on Automatic Control*, accepted, June 30, 2020.

[2] Ma, Ziyue; Yin, Xiang; **Li, Zhiwu**, Marking predictability and prediction in labeled Petri nets, *IEEETrans. Automatic Control*, accepted, Feb 8, 2020

[3] Wang, Xi; **Li, Zhiwu**; Wonham, M, Real-time scheduling based on nonblocking supervisory control of
state-tree structures, *IEEE Trans. Automatic Control*, accepted, Feb 17, 2020.

[4] Ma Ziyue; Zhu, Guanghui; **Li, Zhiwu**; Giua, A, Marking estimation in Petri nets using hierarchical

basis reachability graphs, ***IEEE Trans. Automatic Control***, accepted, Jan 24, 2020.

[5] Hu Yihui; Ma, Ziyue; **Li, Zhiwu**, Design of supervisors for active diagnosis in discrete event systems, ***IEEE Trans. Automatic Control***, accepted, DOI: 10.1109/TAC.2020.2970011, 2019

[6] Ma, Ziyue; Zhu, Guanghui; **Li, Zhiwu**; Giua, Alessandro, Computation of admissible markingsets inweighted synchronization-free Petri nets by dynamic programming, ***IEEE Transactions on AutomaticControl***, vol. 65, no. 6, pp. 2662-2669, 2020.

[7] Saadaoui, Ikram; **Li, Zhiwu**; Wu, Naiqi, Current-state opacity modelling and verification in partiallyobserved Petri nets, ***Automatica***, vol. 116, pp. 1-10, 2020.

[8] Ma, Ziyue; **Li, Zhiwu**; Giua, Alessandro, Marking estimation in a class of time labeled Petri nets, ***IEEE Transactions on Automatic Control***, vol. 65, no. 2, pp. 493-506, 2020

[9] Li, Liang; Basile, Francesco; **Li, Zhiwu**, An approach to improve permissiveness of supervisors forGMECs in time Petri net systems, ***IEEE Transactions on Automatic Control***, vol. 65, no. 1, pp. 237-251, 2020.

[10] He, Zhou; **Li, Zhiwu**; Giua, Alessandro; Basile, Francesco; Seatzu, Carla, Some remarks onstateestimation and fault diagnosis of labeled time Petri net systems with unobservable transitions, ***IEEETransactions on Automatic Control***, vol. 64, no. 12, pp. 5253-5259, 2019.

[11] Liu, Yingying; Cai, Kai; **Li, Zhiwu**, On scalable supervisory control of multi-agent discrete-event systems, ***Automatica***, vol. 108, pp. 0-0, 2019

[12] Yang, Lan; **Li, Zhiwu**; Giua, Alessandro, Influence minimization in linear threshold networks, ***Automatica***, vol. 100, pp. 10-16, 2019

[13] Zhu, Guanghui; **Li, Zhiwu**; Wu, Naiqi, Model-based fault identification of discrete event systems usingpartially observed Petri nets, ***Automatica***, vol. 96, pp. 201-212, 2018.

[14] Zhang, Huimin; Feng, Lei; **Li, Zhiwu**, A learning-based synthesis approach to the supremal nonblocking supervisor of discrete-event systems, ***IEEE Transactions on Automatic Control***, vol. 63, no. 10, pp. 3345-3360, 2018

[15] Cong, Xuya; Fanti, Maria Pia; Mangini, Agostino Marcello; **Li, Zhiwu**, On-line verificationofcurrent-state opacity by Petri nets and integer linear programming, ***Automatica***, vol. 94, pp. 205-213, 2018.

[16] He, Zhou; **Li, Zhiwu**; Giua, Alessandro, Performance optimization for timed weighted markedgraphsunder infinite server semantics, ***IEEE Transactions on Automatic Control***, vol. 63, no. 8, pp. 2573-2580, 2018.

[17] Wang, Xi; **Li, Zhiwu**; Wonham, W. M., Priority-free conditionally-preemptive scheduling of modularsporadic real-time systems, ***Automatica***, vol. 89, pp. 392-397, 2018

[18] Tong, Yin; **Li, Zhiwu**; Seatzu, Carla; Giua, Alessandro, Decidability of opacity verification problemsin labeled Petri net systems, ***Automatica***, vol. 80, pp. 48-53, 2017.

[19] Tong, Yin; **Li, Zhiwu**; Seatzu, Carla; Giua, Alessandro, Verification of state-based opacity usingPetri

nets, ***IEEE Transactions on Automatic Control***, vol. 62, no. 6, pp. 2823-2837, 2017

[20]] Ma, Ziyue; Tong, Yin; **Li, Zhiwu**; Giua, Alessandro, Basis marking representation of Petri net
reachability spaces and its application to the reachability problem, *IEEE Transactions on AutomaticControl* , vol. 62, no. 3, pp. 1078-1093, 2017

[21] Ma, Ziyue; **Li, Zhiwu**; Giua, Alessandro, Characterization of admissible marking sets in Petri nets withconflicts and synchronizations, *IEEE Transactions on Automatic Control* , vol. 62, no. 3, pp. 1329-1341, 2017

[22] Ma, Ziyue; **Li, Zhiwu**; Giua, Alessandro, Petri net controllers for generalized mutual exclusionconstraints with floor operators, *Automatica* , vol. 74, pp. 238-246, 2016.

[23] Tong, Yin; **Li, Zhiwu**; Giua, Alessandro, On the equivalence of observation structures for Petri net
generators, *IEEE Transactions on Automatic Control* , vol. 61, no. 9, pp. 2448-2462, 2016.

[24] Ma, Ziyue; **Li, Zhiwu**; Giua, Alessandro, Design of optimal Petri net controllers for disjunctivegeneralized mutual exclusion constraints, *IEEE Transactions on Automatic Control* , vol. 60, no. 7, pp. 1774-1785, 2015.

[25] Chen, Yufeng; **Li, Zhiwu**; Barkaoui, Kamel; Giua, Alessandro, On the enforcement of a class ofnonlinear constraints on Petri nets, *Automatica* , vol. 55, pp. 116-124, 2015.

[26] Liu, Ding; **Li, Zhiwu**; Zhou, Mengchu, A parameterized liveness and ratio-enforcing supervisor for aclass of generalized Petri nets, *Automatica* , vol. 49, no. 11, pp. 3167–3179, Nov 2013.

[27] Chen, Yufeng; **Li, Zhiwu**, On structural minimality of optimal supervisors for flexible manufacturingsystems, *Automatica* , vol.48, no.10, pp. 2647–2656, 2012.

[28] Chen, Yufeng; **Li, Zhiwu**, Design of a maximally permissive liveness-enforcing supervisor withacompressed supervisory structure for flexible manufacturing systems, *Automatica* , vol.47, no.5, pp. 1028–1034, 2011.

[29] Liu, Ding; **Li, Zhiwu**; Zhou, Mengchu, Liveness of an extended S3PR, *Automatica* , vol.46, no.6, pp. 1008–1018, June 2010.

Professional Certification and Awards

1) The 2018 Science and Technology Award of Macau-The Third Prize of Natural Science
2) The 2016 Science and Technology Award of Macau-The Third Prize of Technological
3) Highly cited researchers in Thomson Reuters' Highly Cited Researchers 2013-2018

Professional Society Membership

Fellow of IEEE (2016)