

CHAO GU

Gender: Male

Date of Birth: February 12, 1992

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EDUCATION EXPERIENCE

Sep. 2017– Present In **Ph.D. co-tutorship** between University of Cagliari, Italy (Electronics and Computer Engineering) and Xidian University, China (Control Theory and Control Engineering)

Thesis: Behavioral Property Analysis and Supervisory Control of Petri Nets Using Semi-Structural Approaches

Co-supervised by: Prof. Zhiwu Li (IEEE Fellow) and Prof. Alessandro Giua (IEEE Fellow, IFAC Fellow)

Sep. 2014– Jun. 2017 **Master of Engineering**, Control Engineering, Xidian University, China

Thesis: Multistep Look-Ahead Deadlock Avoidance Policy for Automated Manufacturing Systems

Supervisor: Prof. Zhiwu Li

Sep. 2010– Jun. 2014 **Bachelor of Engineering**, Automation, North China Electric Power University, China

OVERSEA RESEARCH EXPERIENCE

Nov. 2018– Aug. 2020 Joint **Ph.D.** Program, Department of Electrical and Electronic Engineering, University of Cagliari, Cagliari, Italy

Co-supervisor: Prof. Alessandro Giua

RESEARCH INTERESTS

- Petri Net Theory and Its Applications
 - Discrete Event Systems
 - Supervisory Control Theory
 - Security Problems in Cyber-Physical Systems
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RESEARCH FUNDINGS

Nov. 2018– Aug. 2020 **Host (1/1)**, Grant No: 201806960056

The State Scholarship Fund of China, National Education Fund Management Committee,
16,200 Euro.

PUBLICATIONS

Journal Papers: (* represents the corresponding author)

- [1] C. Gu, Z. Y. Ma, Z. W. Li*, and A. Giua, "Verification of nonblockingness in bounded Petri nets with min-max basis reachability graphs," *IEEE Transactions on Systems, Man and Cybernetics: Systems*, 2022. Early access online. DOI: 10.1109/TSMC.2021.3138266.
- [2] C. Gu, Z. Y. Ma, Z. W. Li*, and A. Giua, "Non-blockingness verification of bounded Petri nets using basis reachability graphs," *IEEE Control Systems Letters*, vol. 6, pp. 1220-1225, 2022.
- [3] C. Gu, Z. W. Li*, N. Q. Wu, M. Khalgui, T. Qu, and A. Al-Ahmari, "Improved multi-step look-ahead control policies for automated manufacturing systems," *IEEE Access*, vol. 6, pp. 68824-68838, 2018.
- [4] C. Gu, Z. W. Li*, and A. Al-Ahmari, "A multistep look-ahead deadlock avoidance policy for automated manufacturing systems," *Discrete Dynamics in Nature and Society*, vol. 3, pp. 1-16, 2017.
- [5] X. Y. Cong, C. Gu, M. Uzam, Y. F. Chen, A. Al-Ahmari, N. Q. Wu, M. C. Zhou, and Z. W. Li*, "Design of optimal Petri net supervisors for flexible manufacturing systems via weighted inhibitor arcs," *Asian Journal of Control*, vol. 20, no. 1, pp. 511-530, 2018.

Peer-Reviewed Conference Papers:

- [1] C. Gu, Z. Y. Ma, Z. W. Li*, and A. Giua, "Non-blockingness verification of bounded Petri nets using basis reachability graphs," *60th IEEE Conference on Decision and Control* (Austin, TX, USA), accepted, 2021. (Oral presentation, jointly submitted to *IEEE Control Systems Letters*)
- [2] C. Gu, Z. W. Li*, and A. Giua, "Analysis of behavioural properties of bounded Petri nets with a semi-structural approach," In *proceedings of the 59th IEEE Conference on Decision and Control* (Jeju Island, South Korea), pp. 4467-4472, 2020.
- [3] C. Gu, Z. Y. Ma, Z. W. Li*, and A. Giua, "Verification of nonblockingness in bounded Petri nets with a semi-structural approach," In *proceedings of the 58th IEEE Conference on Decision and Control* (Nice, France), pp. 6718-6723, 2019.

Submitted and Under Review:

- [1] C. Gu, Z. Y. Ma, and Z. W. Li*, "Liveness and deadlock-freeness verification and enforcement in bounded Petri nets using basis reachability graphs," *Automatica*, **Under Review**, 2022.

SELECTED HONORS & REWARDS

- *Best Paper Award*, Ph.D. Day Forum, University of Cagliari, Italy, Jun. 2020
- *Best Paper Award*, Graduate Academic Annual Forum, Xidian University, Nov. 2020
- *Outstanding Graduates Prize*, Xidian University, Jun. 2017
- *First-Class Graduate Scholarship*, Academic Years 2018-2019 and 2019-2020, SEME, Xidian University.

TEACHING

- Analysis and Control of Cyber-Physical Systems Spring 2020
Teaching Assistant
Graduate Course in Electronic Engineering, University of Cagliari

PROFESSIONAL AFFILIATIONS

- *Graduate Student Member*, IEEE
- *Member*, IEEE CSS Technical Committee on Discrete Event Systems

PROFESSIONAL ACTIVITIES

Journal Reviewer

- Automatica
- IEEE Transactions on Industrial Informatics
- European Journal of Control
- IEEE Control Systems Letters
- IEEE Access

Conference Reviewer

- IEEE Conference on Decision and Control
- IEEE International Conference on Systems, Man, and Cybernetics
- International Conference on Control, Decision and Information Technologies
- IFAC Workshop on Discrete Event Systems

ACADEMIC ACTIVITIES

May 2019	2019 EECI International Graduate School on Control, Hybrid Control Design, L'Aquila, Italy.
Jun. 2019	2019 DRIEI Ph.D. Program in Electronic and Computer Engineering, Cagliari, Italy. (<i>Oral presentation</i>)
Jun. 2020	2020 DRIEI Ph.D. Program in Electronic and Computer Engineering, Cagliari, Italy. (<i>Oral presentation</i>)
Sep. 2021	AUTOMATICA.IT 2021 Workshop, Virtual Edition, Catania, Italy. (<i>Oral presentation</i>)