


# Yuriy Zacchia Lun, Ph.D.




Curriculum Vitae et Studiorum

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## Education

- 2017  **Ph.D. Comput. sci., Gran Sasso Science Institute (GSSI) / IMT Lucca (joint program).**  
Diss. title: *Stability and optimal control of polytopic time-inhomogeneous Markov jump linear systems.*
- 2012  **M.Sc. Telecom. Eng., University of L'Aquila.** Final score: 110/110.  
Diss. title: *Algorithm for refinement of telecommunication network infrastructure localization.*
- 2008  **B.Sc. Telecom. Eng., University of L'Aquila.** Final score: 110/110.


## Employment History

- Since 2022  **Assistant professor (non-tenure track: RTDa),** Department of Information Engineering, Computer Science and Mathematics (DISIM), University of L'Aquila.
- 2018 – 2022  **Research collaborator,** SysMA research unit, IMT School for Advanced Studies Lucca.  
Projects: Industrial cybersecurity - SINCERA; Cyber range scenario design and management; Methodologies and tools for data network security.
- 2017 – 2018  **Research collaborator,** University of L'Aquila and Center of Excellence DEWS.  
Project: Formal verification for security in cyber-physical systems.
- 2013  **Industrial R&D Assistant Researcher,** WEST Aquila S.r.l.
- 2012 – 2013  **ICT Training Analyst,** CONSEL - ELIS Consortium.  
Activities: Design of the vocational master on "Development of applications and services in the cloud" and teaching of the "Administration of salesforce.com" course.



## Visiting Positions

- 2017/02 – 2017/07  **Visiting Ph.D. student** within ERASMUS+ for Traineeship programme, OXCAV group, Department of Computer Science, University of Oxford.



## Awards

- 2019  **Best work in progress paper award,** 15th IEEE International Workshop on Factory Communication Systems (WFCS).




## Skills

- Languages  Strong reading, writing and speaking competencies for English, Italian, and Russian.
- Coding  Strong proficiency with MATLAB and  $\LaTeX$ .





## Professional Associations

- IEEE  **Member** since 2016.
- ACM  **Member** since 2024.


## Professional Activities

- 2015 – present  Technical **reviewer** for several international journals and conferences, including ACM TCPS, Elsevier Automatica, Nonlinear Analysis: Hybrid Syst., and European J. Control, IEEE TAC, L-CSS, ICC, GLOBECOM, and CDC.
- 2019  Co-chair of a regular session at the 18th European Control Conference (FrC5: Sliding and Switched Control).
- 2017  Co-chair of a regular session at the 20th IFAC World Congress (MoP24: Stability and Stabilization of Hybrid Systems).

## Teaching at the University of L'Aquila

- Since 2023  ICT Security - F4Z, I4F, and I3N - 6 ECTS credits. Principal lecturer: Dr. Walter Tiberti. Activities: 32 hours of lessons (4 ECTS credits).
- Since 2022  Complementi di analisi dei segnali e campi elettromagnetici (Complements of signal analysis and electromagnetic fields, conducted in Italian) - I3D - 3 ECTS credits. Activities: 15 hours of lessons and exercises (3 ECTS credits).
  -  Industrial communications - I4S - 9 ECTS credits. Principal lecturer: Prof. Piergiuseppe Di Marco. Activities: 30 hours of lessons (3 ECTS credits).
- 2021 – 2022  Analisi dei segnali e campi elettromagnetici (Signals analysis and electromagnetic fields, conducted in Italian) - I3D - 9 ECTS credits. Principal lecturer: Prof. Fortunato Santucci. Activities: 20 hours of lessons (2 ECTS credits) within the Signals analysis course unit.

## Research Interests

-  Automatic control of wireless networked control systems; communication, computation, and control co-design; stochastic hybrid systems, formal methods, and security in cyber-physical domains.

## Research Publications

### Journal Articles

- 5 **Zacchia Lun**, Y., Rinaldi, C., D'Innocenzo, A., & Santucci, F. (2024). Co-designing wireless networked control systems on IEEE 802.15.4-based links under Wi-Fi interference. *IEEE Access*, 12, 71157–71183. [doi:10.1109/ACCESS.2024.3402082](https://doi.org/10.1109/ACCESS.2024.3402082)
- 4 Impicciatore, A., **Zacchia Lun**, Y., Pepe, P., & D'Innocenzo, A. (2024). Optimal output-feedback control over Markov wireless communication channels. *IEEE Transactions on Automatic Control*, 69(3), 1643–1658. [doi:10.1109/TAC.2023.3328268](https://doi.org/10.1109/TAC.2023.3328268)
- 3 Soderi, S., Masti, D., & **Zacchia Lun**, Y. (2023). Railway cyber-security in the era of interconnected systems: A survey. *IEEE Transactions on Intelligent Transportation Systems*, 24(7), 6764–6779. [doi:10.1109/TITS.2023.3254442](https://doi.org/10.1109/TITS.2023.3254442)
- 2 **Zacchia Lun**, Y., D'Innocenzo, A., & Di Benedetto, M. D. (2019). Robust stability of polytopic time-inhomogeneous Markov jump linear systems. *Automatica*, 105, 286–297. [doi:10.1016/j.automatica.2019.03.031](https://doi.org/10.1016/j.automatica.2019.03.031)
- 1 **Zacchia Lun**, Y., D'Innocenzo, A., Smarra, F., Malavolta, I., & Di Benedetto, M. D. (2019). State of the art of cyber-physical systems security: An automatic control perspective. *Journal of Systems and Software*, 149, 174–216. [doi:10.1016/j.jss.2018.12.006](https://doi.org/10.1016/j.jss.2018.12.006)

## Conference Proceedings

- 15 **Zacchia Lun**, Y., Rinaldi, C., Santucci, F., & D’Innocenzo, A. (2023, July). Wireless networked control over lossy uplinks abstracted by finite-state Markov channels. In *Proceedings of the 22nd IFAC World Congress: IFAC-PapersOnLine (56) 2* (pp. 3041–3047). Elsevier. [doi:10.1016/j.ifacol.2023.10.1432](https://doi.org/10.1016/j.ifacol.2023.10.1432)
- 14 Impicciatore, A., Tsiamis, A., **Zacchia Lun**, Y., D’Innocenzo, A., & Pappas, G. J. (2022, December). Secure state estimation over Markov wireless communication channels. In *Proceedings of the 61st IEEE Conference on Decision and Control (CDC)* (pp. 2935–2940). IEEE. [doi:10.1109/CDC51059.2022.9992668](https://doi.org/10.1109/CDC51059.2022.9992668)
- 13 Florenzan Reyes, L. F., Smarra, F., **Zacchia Lun**, Y., & D’Innocenzo, A. (2021). Learning Markov models of fading channels in wireless control networks: a regression trees based approach. In *Proceedings of the 20th Mediterranean Conference on Control and Automation (MED)* (pp. 232–237). IEEE. [doi:10.1109/MED51440.2021.9480310](https://doi.org/10.1109/MED51440.2021.9480310)
- 12 Impicciatore, A., **Zacchia Lun**, Y., Pepe, P., & D’Innocenzo, A. (2021). Optimal output-feedback control and separation principle for Markov jump linear systems modeling wireless networked control scenarios. In *Proceedings of the 2021 American Control Conference (ACC)* (pp. 2700–2706). IEEE. [doi:10.23919/ACC50511.2021.9482674](https://doi.org/10.23919/ACC50511.2021.9482674)
- 11 **Zacchia Lun**, Y., Rinaldi, C., Alrish, A., D’Innocenzo, A., & Santucci, F. (2020, July). On the impact of accurate radio link modeling on the performance of WirelessHART control networks. In *Proceedings of the 2020 IEEE Conference on Computer Communications (INFOCOM)* (pp. 2430–2439). IEEE. [doi:10.1109/INFOCOM41043.2020.9155285](https://doi.org/10.1109/INFOCOM41043.2020.9155285)
- 10 **Zacchia Lun**, Y., & D’Innocenzo, A. (2019, December). Stabilizability of Markov jump linear systems modeling wireless networked control scenarios. In *Proceedings of the 58th IEEE Conference on Decision and Control (CDC)* (pp. 5766–5772). IEEE. [doi:10.1109/CDC40024.2019.9029202](https://doi.org/10.1109/CDC40024.2019.9029202)
- 9 **Zacchia Lun**, Y., Abate, A., & D’Innocenzo, A. (2019, June). Linear quadratic regulation of polytopic time-inhomogeneous Markov jump linear systems. In *Proceedings of the 17th European Control Conference (ECC)* (pp. 4094–4099). IEEE. [doi:10.23919/ECC.2019.8796279](https://doi.org/10.23919/ECC.2019.8796279)
- 8 Alrish, A., **Zacchia Lun**, Y., D’Innocenzo, A., & Santucci, F. (2019, May). Work in Progress: Systematic Derivation of Accurate Analytic Markov Channel Models for Industrial Control. In *Proceedings of the 15th IEEE International Workshop on Factory Communication Systems (WFCS)* (pp. 1–4). IEEE. [doi:10.1109/WFCS.2019.8757917](https://doi.org/10.1109/WFCS.2019.8757917)
- 7 **Zacchia Lun**, Y., Wheatley, J., D’Innocenzo, A., & Abate, A. (2018). Approximate abstractions of Markov chains with interval decision processes. In *Proceedings of the 6th IFAC Conference on Analysis and Design of Hybrid Systems (ADHS): IFAC-PapersOnLine (51) 16* (pp. 91–96). Elsevier. [doi:10.1016/j.ifacol.2018.08.016](https://doi.org/10.1016/j.ifacol.2018.08.016)
- 6 **Zacchia Lun**, Y., D’Innocenzo, A., Abate, A., & Di Benedetto, M. D. (2017, December). Optimal robust control and a separation principle for polytopic time-inhomogeneous Markov jump linear systems. In *Proceedings of the 56th IEEE Conference on Decision and Control (CDC)* (pp. 6525–6530). IEEE. [doi:10.1109/CDC.2017.8264642](https://doi.org/10.1109/CDC.2017.8264642)
- 5 **Zacchia Lun**, Y., D’Innocenzo, A., & Di Benedetto, M. D. (2017a). Robust LQR for time-inhomogeneous Markov jump switched linear systems. In *Proceedings of the 20th IFAC World Congress: IFAC-PapersOnLine (50) 1* (pp. 2199–2204). Elsevier. [doi:10.1016/j.ifacol.2017.08.281](https://doi.org/10.1016/j.ifacol.2017.08.281)
- 4 **Zacchia Lun**, Y., D’Innocenzo, A., & Di Benedetto, M. D. (2017b). Robust stability of time-inhomogeneous Markov jump linear systems. In *Proceedings of the 20th IFAC World Congress: IFAC-PapersOnLine (50) 1* (pp. 3418–3423). Elsevier. [doi:10.1016/j.ifacol.2017.08.838](https://doi.org/10.1016/j.ifacol.2017.08.838)
- 3 **Zacchia Lun**, Y., D’Innocenzo, A., & Di Benedetto, M. D. (2016, December). On stability of time-inhomogeneous Markov jump linear systems. In *Proceedings of the 55th IEEE Conference on Decision and Control (CDC)* (pp. 5527–5532). IEEE. [doi:10.1109/CDC.2016.7799118](https://doi.org/10.1109/CDC.2016.7799118)

- 2 **Zacchia Lun**, Y., Tennina, S., Di Renzo, M., Graziosi, F., & Verikoukist, C. (2013, November). WSN-Aided People Localization: A Ray Tracing Network Planning and Performance Analysis Tool. In *Proceedings of the 11th ACM Conference on Embedded Networked Sensor Systems (SenSys)* (Article 36). ACM. [doi:10.1145/2517351.2517406](https://doi.org/10.1145/2517351.2517406)
  - 1 Tennina, S., Kartsakli, E., Lalos, A., Antonopoulos, A., Mekikis, P.-V., Di Renzo, M., ... Verikoukis, C. (2013). WSN4QoL: Wireless Sensor Networks for quality of life. In *Proceedings of the 15th IEEE International Conference on e-Health Networking, Applications and Services (HealthCom)* (pp. 277–279). IEEE. [doi:10.1109/HealthCom.2013.6720683](https://doi.org/10.1109/HealthCom.2013.6720683)
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