

# Francesco Giannini

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- 📍 Via Ponte Pietro Bucci, Cubo 41C, Rende (CS)
- 📘 Francesco Giannini
- 🌐 Francesco Giannini
- 📖 "Un homme s'engage dans sa vie, dessine sa figure, et en dehors de cette figure il n'y a rien."



## Professional Summary

As an automation engineer, my focus is on the theoretical aspects of Control Theory. My professional aims are to continue my research activity on Model Predictive Control and Reinforcement Learning, and to pursue a career as a Lecturer. I have worked in the field of Autonomous Intelligent Transportation systems and I have good MATLAB coding skills.

## Teaching Experience

- Lecturer ■ **Laboratorio di Automatica**,  
Università della Calabria, I semestre, AA 2022/23, 20 hours.
- Tutor ■ **Matematica, fisica e informatica per le scienze della salute**,  
Università della Calabria, I semestre, AA 2023/24.
- **Matematica, fisica e informatica per le scienze della salute**,  
Università della Calabria, I semestre, AA 2022/23.

## Education

- 2021 – . . . . ■ **Ph.D. in Information and Communication Technologies (ICT), Università della Calabria**
- 2019 – 2021 ■ **LM in Ingegneria dell'Automazione, Università della Calabria**  
Voto finale 110/110 con lode  
Thesis title: *Un approccio distribuito basato su Deep Reinforcement Learning e Controllo Predittivo per la gestione del Routing nell'Internet of Vehicles.*
- 2016 – 2019 ■ **LT in Ingegneria Elettronica, Università della Calabria**  
Voto finale 110/110 con lode  
Thesis title: *Il Robotics Toolbox di MatLab per l'analisi del comportamento dinamico di un robot industriale.*
- 2011 – 2016 ■ **Maturità scientifica, Liceo Scientifico Statale A. Guarasci, Soverato**  
Voto finale 100/100 con lode.

## Abroad Education

- 2023 ■ **Visiting PhD student** at UPC Universitat Politècnica de Catalunya in Barcelona for four months.

## Research Publications

### Journal Articles

- 1 L. D'Alfonso, F. Giannini, G. Franzè, G. Fedele, F. Pupo, and G. Fortino, "Autonomous vehicle platoons in urban road networks: A joint distributed reinforcement learning and model predictive control approach," *IEEE/CAA Journal of Automatica Sinica*, vol. 11, no. 1, pp. 141–156, 2024.
- 2 D. Famularo, G. Fortino, F. Pupo, F. Giannini, and G. Franzè, "An intelligent multi-layer control architecture for logistics operations of autonomous vehicles in manufacturing systems," *IEEE Transactions on Automation Science and Engineering*, 2024.
- 3 G. Franzè, F. Giannini, V. Puig, and G. Fortino, "Embedding the state trajectories of nonlinear systems via multimodel linear descriptions: A data-driven-based algorithm," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 2024.
- 4 F. Giannini, G. Franzè, F. Pupo, and G. Fortino, "A sustainable multi-agent routing algorithm for vehicle platoons in urban networks," *IEEE Transactions on Intelligent Transportation Systems*, 2023.

### Conference Proceedings

- 1 D. Famularo, G. Franzè, F. Giannini, F. Pupo, G. Fortino, and F. Tedesco, "A multi-tiered control framework designed for managing the logistical activities of self-driving vehicles within manufacturing environments," in *IEEE 20th International Conference on Automation Science and Engineering*, IEEE, 2024.
- 2 D. Famularo, F. Giannini, G. Fortino, and G. Franzè, "A distributed control architecture for sustainable routing decisions of autonomous vehicle platoons subject to cyber attacks," in *2024 10th International Conference on Control, Decision and Information Technologies (CoDIT)*, IEEE, 2024.
- 3 L. D'Alfonso, G. Franzè, F. Giannini, and F. Tedesco, "A neural network and model predictive control based resilient architecture for constrained cyber-physical systems," in *2023 9th International Conference on Control, Decision and Information Technologies (CoDIT)*, IEEE, 2023, pp. 883–888.
- 4 G. Franzè, F. Giannini, D. Famularo, and F. Tedesco, "Output based resilient model predictive control of cyber-physical systems under cover attacks," in *IFAC-PapersOnLine*, vol. 56, Elsevier, 2023, pp. 7196–7201.
- 5 F. Giannini, G. Fortino, G. Franzè, and F. Pupo, "A distributed reinforcement learning and model predictive control architecture for routing decisions in urban road networks," in *IFAC-PapersOnLine*, vol. 56, Elsevier, 2023, pp. 2359–2364.
- 6 F. Giannini, G. Franzè, F. Pupo, and G. Fortino, "Set-theoretic receding horizon control for nonlinear systems: A data-driven approach," in *IEEE EUROCON 2023-20th International Conference on Smart Technologies*, IEEE, 2023, pp. 579–584.
- 7 F. Giannini, G. Fortino, G. Franzè, and F. Pupo, "A deep q learning-model predictive control approach to vehicle routing and control with platoon constraints," in *2022 IEEE 18th International Conference on Automation Science and Engineering (CASE)*, IEEE, 2022, pp. 563–568.
- 8 F. Giannini, G. Fortino, G. Franzè, and F. Pupo, "Path planning for vehicle platoons under routing decisions: A distributed approach combining deep reinforcement learning and model predictive control," in *2022 8th International Conference on Control, Decision and Information Technologies (CoDIT)*, IEEE, vol. 1, 2022, pp. 734–739.
- 9 F. Giannini, G. Franzè, F. Pupo, and G. Fortino, "Autonomous vehicles in smart cities: A deep reinforcement learning solution," in *2022 IEEE Intl Conf on Dependable, Autonomic and Secure Computing, Intl Conf on Pervasive Intelligence and Computing, Intl Conf on Cloud and Big Data Computing, Intl Conf on Cyber Science and Technology Congress (DASC/PiCom/CBDCom/CyberSciTech)*, IEEE, 2022, pp. 1–6.

## Books and Chapters


- 1 F. Giannini, G. Franzè, G. Fortino, and F. Pupo, "A deep reinforcement learning strategy for intelligent transportation systems," in *Device-Edge-Cloud Continuum: Paradigms, Architectures and Applications*, Springer, 2023, pp. 167–182.

## Skills



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### Languages

Reading, writing and speaking in **Italian, English and Spanish**

- 15/12/2022  The Language Centre at the University of Calabria certified my English level as C1 in "Listening, Reading, Language Focus, Writing and Speaking".


### Coding

-  MATLAB, C, Python, LabVIEW, VHDL, Wolfram Language
-   $\LaTeX$


## Professional Achievements

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### Awards

- 2024  **Best Paper Award** "A Distributed Control Architecture for Sustainable Routing Decisions of Autonomous Vehicle Platoons Subject to Cyber Attacks" in *10th International Conference on Control, Decision and Information Technologies (CoDIT)*.

### Workshop presentations





-  "Autonomous Vehicle Platoons in Urban Road Networks" in the workshop entitled "Constrained control of vehicle formations in industry and intelligent transportation systems: from model-based to data-driven solutions" in *20th IEEE International Conference on Automation Science and Engineering (CASE24)*.

### Professional Certifications

- 2022  **Esame di Stato** abilitazione professione di Ingegnere dell'Informazione, Università della Calabria, 02/09/2022.
- 2021  **Esame di Stato** abilitazione professione di Ingegnere Industriale, Università della Calabria, 14/12/2021.

## Attended Conferences

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- CASE24  **IEEE 20th International Conference on Automation Science and Engineering**, Bari, 2024.
- IFAC23  **IFAC World Congress**, Yokohama, 2023.
- CoDIT23  **IEEE 9th International conference on Control, Decision and Information Technologies**, Rome, 2023.
- DASC22  **IEEE Intl Conf on Dependable, Autonomic and Secure Computing, Intl Conf on Pervasive Intelligence and Computing, Intl Conf on Cloud and Big Data Computing, Intl Conf on Cyber Science and Technology Congress**, Falerna, 2022.