

Filippo Gemma, Electrical Engineering Graduate

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🌐 Filippo Gemma



Education

- 2022 – **Ph.D. Student in Power Electronics.** University of Pavia, PeLab Laboratory.
Thesis title: *Control algorithms for Reconfigurable and Multilevel Converters in Powertrain applications.*
- 2020 – 2022 **M.Sc. in Electrical Engineering.** University of Pavia.
Thesis title: *SOC governed algorithm for EV Cascade H-Bridge.*
- 2017 – 2020 **B.Sc. in Industrial Engineering.** University of Pavia.
Thesis title: *Modello e simulazione di una comunità energetica denominata condominio elettrico.*

Research Publications

Journal Articles

- 1 J. Riccio, **F. Gemma**, L. Rovere, *et al.*, “Effects of the floating capacitor voltage on the torque-speed characteristic of an open-end winding synchronous reluctance motor drive,” *IEEE Transactions on Industry Applications*, pp. 1–10, 2025. 🌐 DOI: 10.1109/TIA.2025.3528879.
- 2 A. Volpini, S. Rokocakau, G. Tresca, **F. Gemma**, and P. Zanchetta, “Ann-enhanced modulated model predictive control for ac-dc converters in grid-connected battery systems,” *Energies*, vol. 18, no. 15, 2025, ISSN: 1996-1073. 🌐 DOI: 10.3390/en18153996.
- 3 **F. Gemma**, G. Tresca, A. Formentini, and P. Zanchetta, “Balanced charging algorithm for chb in an ev powertrain,” *Energies*, vol. 16, no. 14, 2023, ISSN: 1996-1073. 🌐 DOI: 10.3390/en16145565.

Conference Articles

- 1 **F. Gemma**, J. Riccio, G. Tresca, O. Benfatto, and P. Zanchetta, “Finite-control-set model-predictive control of open-end winding synchronous reluctance motor drives,” in *2025 IEEE Workshop on Electrical Machines Design, Control and Diagnosis (WEMDCD)*, 2025, pp. 1–6. 🌐 DOI: 10.1109/WEMDCD61816.2025.11014183.
- 2 A. Volpini, G. Tresca, **F. Gemma**, and P. Zanchetta, “Performance assessment of isop llc with buck-boost post-regulator and isop llc-dab,” in *2025 International Conference on Clean Electrical Power (ICCEP)*, 2025, pp. 20–27. 🌐 DOI: 10.1109/ICCEP65222.2025.11143669.
- 3 **F. Gemma**, J. Riccio, G. Tresca, S. R. Di Salvo, A. Volpini, and P. Zanchetta, “Finite-control-set model predictive control with reduced computational burden in cascaded h-bridge permanent magnet synchronous motor drives for ev applications,” in *2024 IEEE Energy Conversion Congress and Exposition (ECCE)*, 2024, pp. 2706–2712.
- 4 **F. Gemma**, G. Tresca, S. R. Di Salvo, A. Formentini, and P. Zanchetta, “A novel charging approach to temperature and state of charge management in bev,” in *2023 IEEE Energy Conversion Congress and Exposition (ECCE)*, 2023, pp. 2706–2712. 🌐 DOI: 10.1109/ECCE53617.2023.10362079.

- 5 G. Tresca, A. Formentini, **F. Gemma**, F. Lusardi, R. Leuzzi, and P. Zanchetta, "Soc governed algorithm for an ev cascaded h-bridge connected to a dc charger," in *2022 24th European Conference on Power Electronics and Applications (EPE'22 ECCE Europe)*, 2022, pp. 1–9.

Academic Activities

- 2024 –  **Plecs Course Teaching** for Master Course of Power Electronics at University of Pavia.
- 2024 – 2025  **Consultant** for the ABB company. Project title: Apollo Split Power Electronics; AC/DC parallel connection; Analysis Control and Stability.
- 2024 –  **Researcher** on DORNA Project (Project no. 872001).
- 2024 – 2024  **Visiting Ph.D. Student**, PEMC University of Nottingham.
- 2023 – 2024  **Consultant** for the YAKO company. Project title: High performance AC drives control.
- 2022 –  **Tutor** for Master and Bachelor student thesis.
- 2021 – 2022  **Experimental Thesis**, PeLab University of Pavia.

Skills

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|-------------------|--|
| Languages |  Strong reading, writing and speaking competencies for Italian (Mother tongue) and English. |
| Coding |  C, C++, VHDL, LaTeX. |
| Micrososft Office |  Word, Excel, PowerPoint. |
| Software |  MatLab, Simulink, Plecs, Magnet, ElecNet, LabView, Autodesk Inventor and RT-LAB. |
| Practice |  PCB soldering, Electric Motor Drives and Batteries Management. |
| Misc. |  Academic research, teaching, training and publishing. |

Miscellaneous Experience

Other Activities

- 2024 –  **Social Media Manager** of IEEE Open Journal of Industrial Applications.
- 2023 –  **Reviewer** of IEEE Journal and Conferences.
-  **Social Media Manager** of Power Electronics Laboratory (PeLab) of University of Pavia.

Awards and Achievements

- 2012  **Archimede's Game**, Lombardia District.

Certification

- 2016  **First B2 Level**. Cambridge Insitute.

Miscellaneous Experience (continued)

2014  **Trinity Level 5.** Trinity College.

Extra-University Courses

2024  **Wine Sommelier,** FISAR Delegation of Pavia (Level 2).

References

Prof. Pericle Zanchetta, Dr. Giulia Tresca and Dr. Jacopo Riccio.

Authorization

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