Manfredi Gangi

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Summary

PhD student passionate about power electronics, electric mobility and storage technologies.

Education

Columbia University - *Ivy League* *Aug 2023 - Present*

PhD in Electrical Engineering

- Relevant modules: Power Electronics, Battery management.

Politecnico di Milano - *Ranked #1st in Italy and #19th in the world* *Sep 2020 - May 2023*

MSc in Electrical Engineering – Final grade: 110/110, GPA: 28.42/30

- Relevant modules: Electric Power Systems, Power Electronics, Measurements, Renewables, Trasportation.

Alta Scuola Politecnica - *10% accceptance rate* *Jan 2021 - Feb 2023*

Honors Program for high-level students of Politecnico di Milano and Politecnico di Torino

- Parallel path for talented students centered on innovation, design methods, complex decision-making and leadership.
- Multidisciplinary project in collaboration with companies and academia.

University of Catania *Sep 2016 - Apr 2020*

BSc in Industrial Engineering – Final Grade: 110/110 summa cum laude, GPA: 28.29/30

- Multidisclipinary major which covers both fields of Electrical, Mechanical and Automation Engineering.

Research Experience

MIT, Senseable City Lab *Dec 2022 - Apr 2023*

Visiting Student

Supervisors: Dr. Carlo Ratti and Dr. Paolo Santi

- Evaluation of feasibility and effectiveness of integrating thermal storage with a mix of renewable energies and the electrical grid applying data informed methodologies and models to urban case studies.
- Working with the MIT Energy Initiative group.

Politecnico di Milano *Nov 2022 - Apr 2023*

Master's Thesis: "Integration of Thermal Batteries and Renewables Energy Sources in Urban Applications"

Advisors: Prof. Sonia Leva

- Designing a model which demonstrates the effectiveness of the integration of thermal batteries with renewable energy source in a microgrid scale.

Politecnico di Milano *Jun 2021 - May 2023*

Research Scholar

Supervisor: Prof. Sonia Leva

- Developed a value-chain for Second-Life Battery (SLB) technology focusing on the economical feasibility and technical aspects.
- Battery State-Of-Health estimation using machine learning techniques for SLB applications.

Politecnico di Milano, PhysisPEB *Oct 2021 - Nov 2022*

Research Scholar - International Competition

Advisor: Prof. Roberto Perini

- Designed and built a zero emissions boat with a PoliMi team to compete in the Monaco Energy Boat Challenge.
- Responsible for the electrical safety of the boat, design and installation of the energy sources (fuel cell, battery and PV panels), selection of the electrical motor and inverter analysis.

University of Catania *Sep 2019 - Mar 2020*

Bachelor's Thesis: "Design strategies for control systems in the time domain"

Advisor: Prof. Luigi Fortuna

- Sate linear regulator.
- State observer estimator.
- SISO and MIMO systems numerical examples implemented on Matlab.

Publications

P. Eleftheriadis, S. Leva, M. Gangi, E. Groppo, A. Borgo, G. Coslop, A. V. Rey, L. Grande and M. Sedzik. **Second Life Batteries: Current Regulatory Framework, Evaluation Methods, and Economic Assessment**. *International Conference on Environment and Electrical Engineering (EEEIC)*, 2022. [DOI]

P. Eleftheriadis, S. Leva, M. Gangi, A. V. Rey, E. Groppo, and L. Grande. **Comparative study of machine learning techniques for the state of health estimation of Li-Ion batteries**. *Mediterranean Conference on Power Generation, Transmission, Distribution and Energy Conversion (MEDPOWER)*, 2022. [DOI]

P. Eleftheriadis, S. Leva, M. Gangi, E. Groppo, A. Borgo, G. Coslop, A. V. Rey, L. Grande and M. Sedzik. **Second Life Batteries: Current Regulatory Framework, Evaluation Methods, and Economic Assessment**. *IEEE Industry Applications Society (IAS)*, Journal, under review. []

Industry Experience

Free2move eSolutions, Milan *Jul 2021 - Nov 2022*

External Collaborator - Project Life2SLB

- Devloped a techno-economical model for the identification of the key parameters for the feasibility of second-life battery products.
- Identified machine learning methods in order to cut down the processing time required for the State of Health estimation of Li-Ion batteries.

GoStudent, Milan *Sep 2021 - Sep 2022*

Tutor

- Freelance tutor of Maths, Physics and English. Taught to students from different grades for medium-length periods.
- Selected through an entry-test and an interview.

Honors & Awards

Alta Scuola Politecnica Scholarship. 100 % University fee waive (around 10000€).

Eco Conception Prize, Monaco Energy Boat Challenge 2022. Awarded for the project with the best Life Cycle Assessment (2000€).

Bronze Medal, Monaco Energy Boat Challenge 2022. Ranked 3rd among 11 teams in the Energy Class of the competition (1000€).

IEEE Codes and Standards Committee Prize Paper Award. Paper selectet for the IEEE IAS prize.

Courses, Workshops, Conferences

Leadership Skills For Engineers, TU Delft, virtually.

Communication Skills For Engineering Scholars, Politecnico di Milano, virtually.

Basic Chinese, Politecnico di Milano, virtually.

Presented a co-authored paper at 22nd EEEIC International Conference on Environment and Electrical Engineering, Prague