PERSONAL DETAILS

Massimiliano Passalacqua

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massimiliano.passalacqua@unige.it

Gender Maschio | Date of birth 05/09/1993 | Nationality Italiana

QUALIFICATION

PhD in Electrical Engineering

EDUCATION AND WORK ACTIVITIES

December 2023

National Scientific Qualification 09/E2, II level

February 2022- today

Research fellow (RTD-A)

University of Genova
Department of Naval, Electrical, Electronics and Telecommunications Engineering

January 2021 – January 2022

Research fellow

University of Genova
Department of Naval, Electrical, Electronics and Telecommunications Engineering

October 2017 – December 2020

PhD in Electrical Engineering

University of Genova
Tutors: Prof. Mario Marchesoni, Prof. Mauro Carpita
Thesis defence 19/7/21: Sensorless Passive Control Algorithms for Medium to High Power Synchronous Motor Drives

February 2019

Member of Engineers Order

January 2019

Qualification for Professional Recognition as Engineer

October 2015 – October 2017

Master's degree in Electrical Engineering

University of Genoa

Date of degree: 27 October 2017

Final Mark: 110/110 cum laude

Thesis title: Benefits of using supercapacitors and silicon carbide on hybrid vehicle series architecture

Supervisor: Prof. Ing. Mario Marchesoni

September 2012 - October 2015

Bachelor's degree in Electrical Engineering

University of Genoa

Date of degree: 30 October 2015

Final Mark: 110/110 cum laude

Thesis title: Supercapacitors application on hybrid powertrains

Supervisor: Prof. Ing. Alessandro Pini Prato

September 2007 - July 2012

Scientific High School

Nicoloso da Recco Scientific High School

Final Mark: 100/100

Date of certificate: 7 July 201 2

PERSONAL SKILLS

Mother tongue: Italiana

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	C1	C1	C1
Franch	B2	B2	B2	B2	B2
	University of Cambridge ESOL: First Certificate of English				

Experience abroad

During my PhD I worked six months at the Haute Ecole d'Ingénierie et de Gestion du Canton de Vaud, In Switzerland. During this period, I increased my knowledge in power electronics and I achieved a good level in French language.

Teaching

2022/2023
- ELECTRICAL DRIVES (cod. 72307) – Mechanical Engineering

2023/2024
- ELECTRICAL DRIVES (cod. 72307) – Mechanical Engineering
- ELECTRICAL MACHINES AND POWER ELECTRONICS (cod. 107822) –Industrial Technologies

Professional skills

MATLAB/Simulink Plecs: excellent software knowledge, with particular focus on power electronics modelling.

PCB design: excellent knowledge of Allegro PCB Designer.

Real time control: excellent knowledge of dSpace 1103 and dSpace MicrolabBox.

DSP programming: good knowledge of C programming and Texas Instruments DSP.

Laboratory activities: excellent mastering of laboratory materials and techniques.

Working experiences

I collaborated with Phase Motion Control S.p.A, dealing with sensorless algorithms for permanent magnet synchronous motors, including the firmware implementation in the company drive.

I collaborated with Physis New Energy Technology S.r.l., dealing with the implementation of a sensorless control for permanent magnet synchronous motor in the company drive.

I collaborated with Nidec ASI S.p.A, dealing with the definition of a sensorless algorithm for high power independently excited synchronous motors.

I worked on innovative DC-DC converters, regarding both innovative architectures and innovative controls, dealing with the realization of the prototypes and the implementation of the control algorithms.

During my stay at the Haute Ecole d'Ingéniere et de Gestion du Canton de Vaud I collaborated with Romande Energy, dealing with the implementation of control algorithms on grid-connected inverters.

I worked on hybrid powertrain simulation, with the aim of defining architectures and energy management algorithm characterized by high efficiency. Particular attention was given to series hybrid vehicles based on supercapacitor storage.

PUBBLICATIONS and CONFERENCES

Publications

I am author or co-author of 40 articles publish of international journals or presented at international conferences. Scopus parameters: 23 journal papers, 249 citations, h-index 10. Main publications:

L. Carbone, M. Marchesoni, M. Passalacqua, L. Vaccaro and A. Formentini, "H2-LMI-Based High Performance Control for Matrix Converter," in *IEEE Transactions on Industrial Electronics*, doi: 10.1109/TIE.2023.3333014.

A. Benevieri, A. Formentini, M. Marchesoni, M. Passalacqua and L. Vaccaro, "Sensorless Control With Switching Frequency Square Wave Voltage Injection for SPMSM With Low Rotor Magnetic Anisotropy," in *IEEE Transactions on Power Electronics*, vol. 38, no. 8, pp. 10060-10072, Aug. 2023, doi: 10.1109/TPEL.2023.3270357.

S. Cosso, K. Kumar, M. Marchesoni, M. Passalacqua and L. Vaccaro, "Stability Issues in V/f Controlled Medium Voltage Induction Motor Drives Considering Magnetizing Inductance Variation," in *IEEE Transactions on Energy Conversion*, vol. 38, no. 4, pp. 2909-2918, Dec. 2023, doi: 10.1109/TEC.2023.3288673.

A. Benevieri, M. Marchesoni, M. Passalacqua and L. Vaccaro, "Experimental Low-Speed Performance Evaluation and Comparison of Sensorless Passive Algorithms for SPMSM," in *IEEE Transactions on Energy Conversion*, vol. 37, no. 1, pp. 654-664, March 2022, doi: 10.1109/TEC.2021.3101583.

M. Passalacqua, G. Grosjean, S. Kissling, M. Bozorg, M. Marchesoni, and M. Carpita, "A State-Space Approach to the Modelling and Control of the Neutral Leg of a Four Legs, Three-Phase Inverter," *IEEE Transactions on Industrial Electronics*, pp. 1-1, 2021.

M. Marchesoni, M. Passalacqua, L. Vaccaro, M. Calvini, and M. Venturini, "Performance improvement in a sensorless surface-mounted PMSM drive based on rotor flux observer," *Control Engineering Practice*, Article vol. 96, 2020, Art. no. 104276.

M. Passalacqua, M. Marchesoni, and L. Vaccaro, "A New Modulation Strategy for Exploiting Discontinuous Conduction Mode in a Double-Input Three-Switch Bidirectional DC-DC Converter," *IEEE Transactions on Industrial Electronics*, pp. 1-1, 2020.

M. Passalacqua, D. Lanzarotto, M. Repetto, L. Vaccaro, A. Bonfiglio, and M. Marchesoni, "Fuel Economy and EMS for a Series Hybrid Vehicle Based on Supercapacitor Storage," *IEEE Transactions on Power Electronics*, vol. 34, no. 10, pp. 9966-9977, 2019.

Conferences

- 26th SPEEDAM, Sorrento, 2022.
- 22th European Conference on Power Electronics and Applications (EPE 2021), Virtual meeting.
- 25th SPEEDAM, Virtual meeting, 2020.
- 10th IEEE International Symposium on Sensorless Control for Electrical Drives (SLED 2019), Torino.
- 21th European Conference on Power Electronics and Applications (EPE 2019), Genova.
- 20th European Conference on Power Electronics and Applications (EPE 2018), Riga.
- 15th IFAC Symposium on Control in Transportation Systems (CTS 2018), Savona.
- Energy and sustainability 2017, Seville.
- Urban Transport 2016, Crete.

FURTHER INFORMATIONS

Awards

In September 2019 I received the “Best Young Researcher Award” during the CMAEL annual meeting, presenting the poster titled: ”Performance improvement in a sensorless PMSM drive based on rotor flux observer”.

Autorizzo il trattamento dei miei dati personali, ai sensi del D.lgs. 196 del 30 giugno 2003”