Behrouz Mohammadzadeh

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Personal Profile

Research interests:

- Multilevel converter, including PCB design and software architecture definition.
- Battery system storage control: definition of optimization algorithm to exploit battery functionalities through multilevel converters.
- Motor drive control: definition of position and speed control in different load applications.
- Neural network for fault diagnosis in power converters.

Education

University of Pavia *Pavia, Italy*

PhD in Power Electronics *Oct 2023 - Present*

- **PhD Thesis:** "The project called IMPACT(Intelligent, Modular, and Adaptive Power Conversion Technology) for Battery Energy Storage Systems. The total nominal power of a 20 kW Reconfigurable Cascaded Multilevel Converter is considered for this project."

University of Pavia *Pavia, Italy*

MSc in Industrial Automation Engineering *Oct 2020 - Sep 2023*

- **Master Thesis:**"Design and implementation of two interface boards utilizing the National Instruments sbRIO-9651 system-on-module. One is designed for Solid-State Transformer converters and the other is based on optical fiber transceivers in grid-forming inverters."

Shomal University *Amol, Iran*

BSc in Electronics Engineering *Sept 2009 - July 2013*

Work Experience

Solico Group(Kalleh Dairy) *Amol, Iran*

Electronics Engineer *Nov 2017 - Sep 2020*

- As a team, we designed, developed, and tested electronic systems and components for various applications, troubleshooting issues, and ensuring compliance with industry standards. Our collaborative efforts included simulation, prototyping, and performance analysis to enhance system efficiency and reliability.

App Store *Amol, Iran*

Electronics Engineer *Aug 2015 - Nov 2017*

- I was responsible for troubleshooting hardware and software issues, replacing faulty components, and ensuring optimal device functionality. My background in electronics engineering provided a strong foundation for understanding complex circuitry, microelectronics, and advanced repair techniques.

Publications

Journal Articles

Computationally Efficient MPC with Embedded Adaptive Battery Balancing for CHB Inverters. (Under review)
Filippo Gemma, Giulia Tresca, Jacopo Riccio, Behrouz Mohammadzadeh, Andrea Volpini, Pericle Zanchetta
IEEE Transactions on Industry Applications. 2025

High Voltage Gain DC-DC Converter with Wide Range of Soft Switching and Continuous Input Current for Renewable Energy Applications.
Hamed Moradmand Jazi, Behrouz Mohammadzadeh, Ramin Rahimzadeh Khorasani, Pericle Zanchetta, Ehsan Adib, Guillermo Velasco-Quesada, Herminio Martínez-García
IEEE Access. 2025

A Novel Compact Hierarchical Deep Convolution Neural Network Architecture for Faulty Switch Detection and Localization in Power Converters. (Under review)
Samuela Rokocakau, Giulia Tresca, Behrouz Mohammadzadeh, Kumar Rahul R, Giansalvo Cirrincione, Pericle Zanchetta, Maurizio Cirrincione
IEEE Transactions on Industry Applications. 2025

Conference Papers

A Novel Use of 1-D Convolutional Transformer Hybrid Model for Switch Open-Circuit Fault Detection and Localization in Cascaded H-Bridge Converters.

Samuela Rokocakau, Giulia Tresca, Behrouz Mohammadzadeh, Giansalvo Cirrincione, Pericle Zanchetta, Maurizio Cirrincione
2024 IEEE Energy Conversion Congress and Exposition (ECCE). 2024

Fault Diagnosis using 1-D Convolutional Transformer Hybrid Neural Network for Cascaded H-Bridge Converters
Samuela Rokocakau, Giulia Tresca, Behrouz Mohammadzadeh, Giansalvo Cirrincione, Pericle Zanchetta, Maurizio Cirrincione
2024 IEEE Energy Conversion Congress and Exposition (ECCE). 2024

Software Skills

Programming C, C++, Verilog
Design Altium Designer
Simulation Simulink, Matlab, Plecs, LTSpice, PSpice

Languages

English Professional proficiency
Italian Basic
Persian Native proficiency

References are available upon request.