

# Fabio Bernardi

Curriculum Vitae et Studiorum



## Contact

-  Nationality: Italian
-  Birth date and place: 18/02/1992 in Pavullo nel Frignano, Modena, Italy
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## Soft Skills and Strengths

- Creativity
- Curiosity
- Flexibility
- Autonomy
- Ability to Plan and Organize
- Adaptability
- Eye for Details
- Problem Solving
- Team Working
- Love Learning New Things
- Good Communication
- Good Listener
- Managing Information
- Patience

## EDUCATION

- 01/11/2020-20/03/2024**  
**Doctorate of Philosophy in Industrial Innovation Engineering**  Reggio Emilia, Italy  
*University of Modena and Reggio Emilia*  
Department of Sciences and Methods for Engineering
- 03/04/2023-31/07/2023**  
**Collaboration Unimore-UPC in the framework of the research project "SCAPE"**  Barcelona, Spain  
*Universitat Politècnica de Catalunya*  
Department of Electronic Engineering
- 09/2017-21/04/2020**  
**Master Degree**  Reggio Emilia, Italy  
*University of Modena and Reggio Emilia*  
Department of Sciences and Methods for Engineering  
**Title:** High dynamic switching amplifier for piezoelectric print-head applications.
- 13/08/2018-21/12/2018**  
**Erasmus program**  Trondheim, Norway  
*Norwegian University of Science and Technology*  
Department of Electronic Engineering
- 09/2012-07/12/2016**  
**Bachelor Degree**  Modena, Italy  
*University of Modena and Reggio Emilia*  
Department of Engineering "Enzo Ferrari"  
**Title:** Field oriented control of reluctance electric machines: experimental validation of the drive with MTPA techniques.








## WORK EXPERIENCE

- 01/09/2024-Present**  
**Senior Research Fellowship:**  
**WBG based power converters for improved efficiency and reliability in electric transportation, within the project "SCAPE"**  Barcelona, Spain  
*Universitat Politècnica de Catalunya*  
Scientific Director: Prof. D. Barater
- 16/10/2023-31/08/2024**  
**Senior Research Fellowship:**  
**Development of Wireless Power Transfer systems for power and data transmission in aerospace applications.**  Reggio Emilia, Italy  
*University of Modena and Reggio Emilia*  
Scientific Director: Prof. F. Immovilli
- 16/10/2021-15/10/2023**  
**Junior Research Fellowship:**  
**Development of electric drives for the electrification of agricultural machines, Green Seed Project.**  Modena, Italy  
*University of Modena and Reggio Emilia*  
Scientific Director: Prof. D. Barater
- 01/12/2020-15/10/2021**  
**Junior Research Fellowship:**  
**Development of high speed fault-tolerant electric drives.**  Reggio Emilia, Italy  
*University of Modena and Reggio Emilia*  
Scientific Director: Prof. E. Lorenzani





## SPECIFIC TRAINING

- 17/10/2022-20/10/2022**  
**48th Annual Conference of the IEEE Industrial Electronics Society IECON 2022**  Brussels, Belgium  
*Principal Speaker of the paper: Output Voltage Overshoot Suppression Control for Multilevel Inverter Architectures*

## Professional Skills

-  **MATLAB:** *Highly Specialised*
-  **Simulink:** *Highly Specialised*
-  **MAPLE:** *Highly Specialised*
-  **PLECS:** *Highly Specialised*
-  **LTSpice:** *Highly Specialised*
-  **Altium Designer:** *Highly Specialised*
-  **Microsoft Office:** *Highly Specialised*
-  **LabView:** *Advanced*
-  **Vivado:** *Advanced*
-  **Solidworks:** *Intermediate*
-  **Cimatron:** *Intermediate*
-  **TwinCAT 3:** *Intermediate*
-  **Amesim:** *Intermediate*

## Languages

-  Italian - Native Language
-  English - Professional Knowledge  
C1 - OLS Erasmus Test, 31/12/2018
-  Spanish - Professional Knowledge
-  Catalan - Basic Knowledge

## Other Interests

- Bass Guitar 
- Movies 
- Climbing 
- Alpine Ski 
- Windsurf 
- Cooking 

## PUBLICATIONS

- |  |   |
|--|---|
| <p><b>Journal Paper</b><br/>06/2022</p>    | <p><b>Performance Analysis of Current Control Strategies for Hybrid Stepper Motors</b>, IEEE Open Journal of the Industrial Electronics Society, vol. 3, pp. 460-472, <i>F. Bernardi, E. Carfagna, G. Migliazza, G. Buticchi, F. Immovilli and E. Lorenzani</i>, <a href="#">doi</a> 10.1109/OJIES.2022.3185659</p>   |
| <p><b>Journal Paper</b><br/>04/2022</p>    | <p><b>Optimized Parallel Hybrid Amplifier for Print-Head Piezoelectric Actuators With Trapezoidal Waveforms</b>, IEEE Journal of Emerging and Selected Topics in Power Electronics, vol. 10, no. 2, pp. 2330-2338, <i>G. Migliazza, E. Carfagna, F. Bernardi and E. Lorenzani</i>, <a href="#">doi</a> 10.1109/JESTPE.2021.3138585</p>  |
| <p><b>Conference Paper</b><br/>05/2023</p> | <p><b>Injectionless Full Range Speed Sensorless Control for Synchronous Reluctance Motors based on PWM Current Ripple</b>, 2023 IEEE Workshop on Electrical Machines Design, Control and Diagnosis (WEMDCD), Newcastle upon Tyne, United Kingdom, 2023, pp. 1-6, <i>L. Ortombina, F. Bernardi, L. Alberti and D. Barater</i>, <a href="#">doi</a> 10.1109/WEMDCD55819.2023.10110945</p> |
| <p><b>Conference Paper</b><br/>05/2023</p> | <p><b>Optimal Sizing of Hairpin Conductors in highway operation with PWM power supply</b>, 2023 IEEE Workshop on Electrical Machines Design, Control and Diagnosis (WEMDCD), Newcastle upon Tyne, United Kingdom, 2023, pp. 1-6, <i>R. Notari, G. Devito, F. Bernardi, M. Pastura, D. Barater and S. Nuzzo</i>, <a href="#">doi</a> 10.1109/WEMDCD55819.2023.10110896</p>               |
| <p><b>Conference Paper</b><br/>12/2022</p> | <p><b>Output Voltage Overshoot Suppression Control for Multilevel Inverter Architectures</b>, IECON 2022–48th Annual Conference of the IEEE Industrial Electronics Society, Brussels, Belgium, 2022, pp.1-6, <i>F. Bernardi, E. Lorenzani, F. Savi, S. Nuzzo and D. Barater</i>, <a href="#">doi</a> 10.1109/IECON49645.2022.9968919</p>  |
| <p><b>Conference Paper</b><br/>12/2022</p> | <p><b>Stator Flux Observer for the Sensorless Speed Control of Synchronous Machines with Uncertain Torque Constant</b>, 2022 IEEE Energy Conversion Congress and Exposition (ECCE), Detroit, MI, USA, 2022, pp.1-8, <i>E. Carfagna, G. Migliazza, F. Bernardi, C. M. Verrelli and E. Lorenzani</i>, <a href="#">doi</a> 10.1109/ECCE50734.2022.9948132</p>                              |
| <p><b>Conference Paper</b><br/>10/2020</p> | <p><b>Ground Leakage Current in Three-Phase Current Source Inverters Depending on Power Semiconductors Parasitic Capacitances</b>, 2020 IEEE Energy Conversion Congress and Exposition (ECCE), Detroit, MI, USA, 2020, pp. 2125-2130, <i>G. Migliazza, E. Carfagna, F. Bernardi, E. Lorenzani</i>, <a href="#">doi</a> 10.1109/ECCE44975.2020.9235947</p>                               |

## </> PROGRAMMING LANGUAGES

- |                                  |                             |
|----------------------------------|-----------------------------|
| • <b>C:</b> Highly Specialised   | • <b>Python:</b> Advanced   |
| • <b>C++:</b> Highly Specialised | • <b>Verilog:</b> Advanced  |
| • <b>TeX:</b> Highly Specialised | • <b>VHDL:</b> Intermediate |