

# Mohammad Bagheri Hashkavayi

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## PERSONAL DETAILS

<b>Address:</b>	Faculty of Electrical and Computer Engineering, University of Sistan and Baluchestan, Zahedan, Iran
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<b>YouTube:</b>	youtube.com
<b>LinkedIn:</b>	linkedin.com
<b>Scholar:</b>	scholar.google.com

## EDUCATION BACKGROUND

### M.Sc in Power Electronics Engineering

09.2018 - 10.2020

University of Sistan and Baluchestan, Iran (Tuition-free admission)

(Scientific center of southeastern Iran)

CGPA: 3.65/4.00 (17.18/20.00)

Thesis Title: An Improved Method to Reduce the Number of Sensors in Modular Multilevel Converters (MMCs) (grade: 19.5/20)

Supervisor: Dr. S. Masoud Barakati

### B.Ss in Electrical Power Engineering

09.2010 - 08.2015

University of Guilan, Iran (Tuition-free admission)

(One of the best scientific centers in northern Iran)

CGPA (Last 2 years): 2.85/4.00 (14.95/20.00)

Thesis Title: Application of time series in predicting the status of the power system (grade: 19/20)

Supervisor: Dr. S. Saeed Mohtavipour

## RESEARCH INTERESTS

- Power Electronics (Multilevel Converters, Modelling, and Control)
- Power System (DG integrated with EVs)
- Renewable Energy (PV, Wind Turbine)
- Control (Robust Control, SMC)
- Mechatronics (Control, Stability)

## JOURNAL PUBLICATIONS

Vahid Barahouei, S. Masoud Barakati, M. Rahmani Haredasht, **M. Bagheri Hashkavayi**: *Capacitance Monitoring and Fast Open-circuit Fault Detection in a Nested Neutral Point-clamped Converter with Reduced Number of Voltage Sensors. (Submitted)*

M. Rahmani Haredasht, S. Masoud Barakati, S. Yousofi Darmiyan, Vahid Barahouei, **M. Bagheri Hashkavayi**: *Group Measurement of Capacitor Voltages with an Optimized Algorithm for Open-Circuit Fault Detection of Switches in the Modular Multilevel Converter. (Submitted)*

**M. Bagheri Hashkavayi**, S. Masoud Barakati, S. Hamed Torabi, Vahid Barahouei: *An Improved Method to Sub-Module Voltage Balancing in Modular Multilevel Converters with Two Voltage Sensors*. International Journal of Circuit Theory and Applications; 02/2023, DOI:10.1002/cta.3588.

**M. Bagheri Hashkavayi**, S. Masoud Barakati, S. Yousofi Darmiyan, Vahid Barahouei: *Improved Sensor Reduction Method in Modular Multilevel Converters with Open-Loop Controller Based on Arms Energy Estimation*. IEEE Transactions on Power Delivery; 04/2022, DOI:10.1109/TPWRD.2022.3165474.

## CONFERENCE PROCEEDINGS

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**M. Bagheri Hashkavayi**, S. Masoud Barakati, M. Rahmani Haredasht, Vahid Barahouie, S. Hamed Torabi: *Balancing of Capacitor Voltages with A Reduced Number of Voltage and Current Sensors in Alternate Arm Multilevel Converter (AAMC)*. The 14th Power Electronics & Drives: Systems and Technologies (Virtual) Conference (PEDSTC 2023), Mazandaran, Iran; 02/2023, DOI: 10.1109/PEDSTC57673.2023.10087151.

Vahid Barahouie, S. Masoud Barakati, M. Rahmani Haredasht, **M. Bagheri Hashkavayi**, Mahsa Zoraghi Jedi: *Fault-Tolerant Operation Approach for Nested Neutral Point Clamp (NNPC) Converter*. The 14th Power Electronics & Drives: Systems and Technologies (Virtual) Conference (PEDSTC 2023), Mazandaran, Iran; 02/2023, DOI: 10.1109/PEDSTC57673.2023.10087114.

M. Rahmani Haredasht, S. Masoud Barakati, S. Yousofi Darmian, **M. Bagheri Hashkavayi**, Vahid Barahouie: *Open-Circuit Fault Diagnosis Strategy for Modular Multilevel Converter Semiconductor Power Switches*. The 13th Power Electronics & Drives: Systems and Technologies (Virtual) Conference (PEDSTC 2022), Tehran, Iran; 02/2022, DOI: 10.1109/PEDSTC53976.2022.9767349.

Vahid Barahouei, S. Masoud Barakati, M. Rahmani Haredasht, **M. Bagheri Hashkavayi**: *Fast Open-Circuit Fault Detection Method for Defective Switches in Nested Neutral Point Clamped (NNPC) Converter*. The 13th Power Electronics, Drives: Systems and Technologies (Virtual) Conference (PEDSTC 2022), Tehran, Iran; 02/2022, DOI: 10.1109/PEDSTC53976.2022.9767307.

**M. Bagheri Hashkavayi**, S. Masoud Barakati, S. Yousofi Darmian, Vahid Barahouie: *Voltage Balancing of Capacitors Using Kalman Filter in Modular Multilevel Converters without Current Sensors*. The 12th Power Electronics, Drive Systems, and Technologies Conference (PEDSTC 2021), Tabriz, Iran; 02/2021, DOI: 10.1109/PEDSTC52094.2021.9405891.

**M. Bagheri Hashkavayi**, S. Yousofi Darmiyan, S. Masoud Barakati, Vahid Barahouie: *An Improved Method to Reduce the Number of Sensors in the Modular Multilevel Converters*. The 28th Iranian Conference on Electrical Engineering (ICEE 2020), Tabriz, Iran; 08/2020.

## TEACHING EXPERIENCE

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### 'DSP Microcontroller' Lecturer

04.2021 - 06.2021

University of Sistan and Baluchestan, Sistan and Baluchestan, Iran

Presentation of 'DSP microcontroller' course for the B.Sc and M.Sc students with the support of Technology and Innovation Center in Sistan and Baluchestan University under the management of Dr. Barakati

### 'Mathematics' Lecturer

05.2018 - Present

Piroozan Scientific Institute, Mazandaran, Iran

Lecturer of 'Mathematics' courses at the level of high school and university at Piroozan Scientific-Educational Institute with official license from the regional education located in Babolsar, Mazandaran

### 'Physics' Lecturer

08.2016 - Present

*Ofogh Scientific Institute, Gilan, Iran*

Lecturer of 'Physics' courses at the level of high school and university as a main member of Ofogh Scientific-Educational Institute with official license from the regional education located in Kucheshfahan, Gilan

### 'Mathematics' Lecturer

08.2016 - Present

*Ofogh Scientific Institute, Gilan, Iran*

Lecturer of 'Mathematics' courses at the level of high school and university as a main member of Ofogh Scientific-Educational Institute with official license from the regional education located in Kucheshfahan, Gilan

### 'Electronics' Lecturer

04.2016 - Present

*Ofogh Scientific Institute, Gilan, Iran*

Lecturer of 'Electronics' course at the level of high school and university at Ofogh Scientific-Educational Institute with official license from the regional education located in Kucheshfahan, Gilan

## WORK EXPERIENCE

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### Technical assistant on the solar power plant and researcher

10.2020 - 02.2021

*Sistan and Baluchestan University Solar Power Plant, Sistan and Baluchestan, Iran*

Assisting with the solar power plant's internal activities, doing new practical research, and advising incoming master's students.

### Founder of office to sell and repair laptop and computer parts

04.2018 - Present

*"Pishro Rayaneh" Technical Office, Gilan, Iran*

Computer, laptop, and All-in-one PC hardware and software services, repairs of smartphones (Android and iPhone), and design of various store, corporate and personal websites.

### Managing Director of Limited Liability Engineering Company

12.2016 - Present

*"Faramin Sanat Caspin" Engineering Company with registration number 80, Gilan, Iran*

Technical engineering company active in the field of Smart Homes, installation, and commissioning of protection and surveillance systems such as home alarms and CCTV cameras, as well as commissioning and installation of Industrial PLCs.

### Undergraduate Internship in Electrical Power Engineering

06.2013 - 09.2013

*Shahid Siadati Power Transmission Substation, Gilan, Iran*

Training and working in the power substations as well as on the transmission lines with the repair department of high-power substations in the Gilan province center.

## RESEARCH EXPERIENCE

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- Research on optimized structures of the flying capacitor, cascade H-bridge, and diode clamp converters and extensive simulations on these structures with MATLAB Simulink software, (12.2020 - Present).
- Simulation, assembling, and preparation of an article for a Nested Neutral Point Clamped Converter (NNPC) including new estimation methods, (09.2020 - 12.2020).
- Circulating current control in multilevel converters, especially in modular multilevel converters with open-loop and closed-loop controllers, (06.2019 - 09.2019).
- Study of the latest research on short-term load prediction in power systems by time series and the use of MATLAB software for implementation, (04.2015 - 08.2015).
- Research and study for the design of the area and components of power transmission substation and familiarity with 'Docwin' software, (06.2013 - 09.2013).

## SELECTED PROJECTS

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- Extensive optimizations on the DSP microcontroller codes with different libraries in the code composer software, (12.2020 - 02.2021).
- Design, consulting, and implementation of buck-buck and buck-boost converters as well as improved 8-switch converter using Proteus and Altium Designer Softwares, double-sided copper board, and FeCl<sub>3</sub> dilution, (10.2020 - 12.2020).
- Simulation and analysis of power grid optimization projects by FACTS devices such as SVC, STATCOM, TCSC, SSSC, and UPFC, (12.2018 - 05.2019).
- Simulation and analysis of a power system consisting of wind turbines and PV arrays as well as investigation of various faults in this system by PSAT toolbox, (10.2018 - 12.2018).
- Consulting and implementation of CCTV, Security systems, LED panels projects for industrial centers and home consumers, as well as optimization of office and commercial centers computers, (09.2015 - Present).
- Simulation and investigation of a 10-bus power system with Power World software as well as examining the types of common faults in it, (04.2015 - 06.2015).
- Launching and implementing various projects such as LED panels, flashing LEDs, thermometer, and calculator with ARM and AVR microcontrollers, (04.2014 - 07.2014).

## SKILLS

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<b>Languages:</b>	English (Fluent) (Preparing for the TOEFL iBT) Persian (Native) Arabic (Basic)
<b>Programming Language:</b>	MATLAB, C, C++, PLC S7.
<b>Web Programming:</b>	WORDPRESS, DRUPAL, JOOMLA, PHP, BOOTSTRAP, JAVASCRIPT, HTML5, CSS.
<b>Engineering Software:</b>	SIMULINK, L <sup>A</sup> T <sub>E</sub> X, CODEVISION, PROTEUS, ALTIUM DESIGNER, HSPICE, PSpice, PSIM, SIMATIC MANAGER, BASCOM, MAPLE, AUTOCAD ELECTRICAL, CODE COMPOSER STUDIO v5.3.
<b>Additional Software:</b>	MICROSOFT OFFICE, ADOBE PHOTOSHOP, ADOBE PREMIERE, ADOBE DREAMWEAVER, ADOBE AFTER EFFECTS, MATHTYPE, PHPSTORM.
<b>Operating System:</b>	WINDOWS (XP, ..., 11), LINUX (UBUNTU), MACOS.
<b>Device Repairing:</b>	LAPTOP, PC, SMARTPHONE, LED PANEL, HARD DRIVE, CCTV, SECURITY SYSTEM, SWITCHING POWER SUPPLY.
<b>Microcontroller Programming:</b>	ARM, AVR, ARDUINO UNO, DSP (F2812, F28335), and FPGA.
<b>Design and Assembling:</b>	TWO LAYER PCB BOARD, DIFFERENT TYPES OF PC, CCTV AND SECURITY SYSTEMS, LED PANELS, and SMART HOME SYSTEM.

## NOTABLE COURSES

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**Graduate:** Seminar (Presentation of M.Sc Thesis Research topic), Dr. Barakati, 20/20  
M.Sc Thesis, Dr. Barakati, (Dr. Oukati, Dr. Torabi), 19.5/20 (Ranked **1<sup>st</sup>**)  
Flexible AC Transmission Systems, Dr. Barakati, 19.5/20 (Top Class Score)  
Special Topics in Control, Dr. Torabi, 19.25/20 (Top Class Score)  
Power Systems Operation, Dr. Oukati Sadegh, 18/20 (Top Class Score)  
Power Electronics II, Dr. Barakati, 17/20  
Drive Control, Dr. Khajeh, 17/20

**Undergraduate:** Basic Physics I, Dr. Babaei, 20/20 (Top Class Score)  
Special Machines, Dr. Fallah, 19.5/20 (Top Class Score)  
Internship, Dr. Afrakhte, 19.5/20  
Electronics I Lab, Dr. Heidari, 19.25/20  
Power Systems Lab, Dr. Karami, 19.1/20  
Electrical Workshop, Dr. Mohtavipour, 19/20  
Application of Computer in Electrical Engineering I, Dr. Afrakhte, 19/20  
Electric Machines I Lab, Dr. Mohtavipour, 19/20  
Bachelor Project, Dr. Mohtavipour, 19/20  
Measurement and Circuit I lab, Dr. Afrakhte, 18/20  
Logical Circuits Lab, Dr. Niaraki, 18/20  
Mathematics I, Dr. Sahleh, 18/20  
Principles of Microcomputers, Dr. Aminnejad, 17.4/20  
Linear Control Systems Lab, Dr. Shahnazi, 17.2/20

## HONORS AND AWARDS

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- 1. Ranked 2<sup>nd</sup> GPA** among M.Sc Students of Power Electronics Engineering, University of Sistan and Baluchestan, Sistan and Baluchestan, Iran, 2020.
- 2. Ranked 1<sup>st</sup> Thesis Score** among M.Sc Students of Power Electronics Engineering, University of Sistan and Baluchestan, Sistan and Baluchestan, Iran, 2020.
- 3. Ranked Within the Top 6%** among approximately 300,000 participants in the Iranian University Entrance Exam for bachelor's degree, Iran, 2010.

## CERTIFICATES

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- Contribution for reviewing manuscripts at the 27th International Conference of Mashhad Power Distribution Networks, (05.2023)
- Laptop and Computer Repairman certificate with **very good** level from Iran Technical and Vocational Training Organization, (12.2021).

- Business license in Sales and Repair of Computers, Office Machinery, and Related Parts from the Union of Electronics and Computer Technicians (County Union), (07.2021).
- DSP Microcontroller lecturer certificate from the Technology and Innovation Center of Sistan and Baluchestan University, (06.2021).
- Computer and Laptop Specialized Repairs certificate from Poul Gilan Training Complex, (09.2020).
- PLC Technician Grade II certificate with an **excellent** level from Iran Technical and Vocational Training Organization, (01.2016).
- Membership in the Iranian Association of Electrical and Electronics Engineers (IAEEE), (07.2015).

## HOBBIES

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- Working on software, programming, and web design
- Repairing of outdated electrical devices
- Listening to podcasts
- Going to gym

## REFERENCES

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1. Dr. S. Masoud Barakati, Associated Professor, Department of Electrical Engineering, University of Sistan and Baluchestan, Zahedan, Iran. Email: smbaraka@ece.usb.ac.ir.
2. Dr. S. Saeed Mohtavipour, Assistant Professor, Department of Electrical Engineering, University of Guilan, Rasht, Iran. Email: mohtavipour@guilan.ac.ir.
3. Dr. Mahmoud Oukati Sadegh, Associated Professor, Department of Electrical Engineering, University of Sistan and Baluchestan, Zahedan, Iran. Email: oukati@ece.usb.ac.ir.
4. Dr. S. Hamed Torabi, Assistant Professor, Department of Electrical Engineering, University of Sistan and Baluchestan, Zahedan, Iran. Email: hamed.torabi@ece.usb.ac.ir.
5. Dr. Mojgan Mollahassanipour, Assistant Professor, Department of Electrical Engineering, University of Sistan and Baluchestan, Zahedan, Iran. Email: m.mollahassani@ece.usb.ac.ir.
6. Dr. Saeed Yousofi Darmian, Planning and System Study Expert, Regional Electricity Company of Sistan and Baluchestan, Zahedan, Iran. Email: s.yusefi@sbrec.co.ir.