

Curriculum Vitae

Md Ismail Hossain

PhD (Expected 2020) and Lecturer B,
Electrical Engineering Department
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Research Interest

AC/DC microgrid design and control, Renewable energy and Battery based Voltage and Frequency regulation, Inertia emulation, Virtual power plant, Multiterminal MMC-HVDC transmission network, Motor drives, Electric vehicle design and control, Renewable energy integration, Linear and intelligent control, Optimization technique, Power electronics etc.

Publication

Journal Under Review: (Peer Reviewed Journal)

1. **Md Ismail Hossain** and M. A. Abido, “Positive-Negative Sequence Current Controller for LVRT Improvement of Wind Farms Integrated MMC-HVDC Network” in IEEE Access, Manuscript ID Access-2020-34856, ISI index, Q2, Impact Factor: 3.745.
2. **Md Ismail Hossain** and M. A. Abido, “Comprehensive Analysis of PV and Wind Energy Integration into MMC-HVDC Transmission Network” in International Journal of Electrical Power System Research. Manuscript ID EPSR-D-20-00930, ISI index, Q1, Impact Factor: 3.211.
3. **Md Ismail Hossain** and M. A. Abido, “Multiterminal MMC-HVDC Transmission Network Connected to DFIG Based Wind Energy” in Arabian Journal for Science and Engineering. Manuscript ID AJSE-D-20-02774, ISI index, Q2, Impact Factor: 1.711.
4. **Md Ismail Hossain** and M. A. Abido, “Active Power Control of PV-Battery Connected MMC-HVDC System for FRT Support” in Applied Sciences Manuscript ID: applsci-904876, ISI index, Q2, Impact Factor: 2.745.
5. **Md Ismail Hossain** and M. A. Abido, “FRT Improvement of PV-Wind Integrated Multiterminal HVDC Employing Sequence Based Current Control with Current Limiter” in IET Renewable Power Generation Manuscript ID: RPG-2020-0878, ISI index, Q1, Impact Factor: 3.605.
6. M. H. Arshad, Sami El-Ferik, Mati-Ur-Rasool, M. A. Abido, and **Md Ismail Hossain**, “GA based Adaptive Discrete-time Sliding Mode Controller for LCL Grid-Connected Inverter” in IEEE Access. Manuscript ID Access-2020-34657, ISI index, Q2, Impact Factor: 3.745.

Journal Publication: (Peer Reviewed Journal)

7. **Md Ismail Hossain**, Shafiullah, Mohammad Abido "VSC controllers for multiterminal HVDC transmission system: A Comparative Study", Arabian Journal for Science and Engineering, pp. 1-12, Springer, April, 2020, ISI index, Q2, Impact Factor: 1.711
8. **Md Ismail Hossain**, Mohammad Abido "SCIG based wind energy integrated multiterminal MMC-HVDC transmission network", Sustainability, MDPI, vol. 12, no. 9, pp. 1–27, April, 2020. ISI index, Q2, Impact Factor: 2.576
9. M. Shafiullah, **M. I. Hossain**, M. A. Abido, T. Abdel-Fattah, and A. H. Mantawy, "A modified optimal PMU placement problem formulation considering channel limits under various contingencies," Measurement, vol. 135, pp. 875–885, Mar. 2019, ISI index, Q2, Impact Factor: 3.364
10. M Shafiullah, M Abido, **M Hossain**, A Mantawy, "An Improved OPP Problem Formulation for Distribution Grid Observability," Energies, vol. 11, no. 11, p. 3069, Nov. 2018, ISI index, Q2, Impact Factor: 2.702
11. **Md. Ismail Hossain**, and Mohammad Jahangir Alam, "Single Stage Single Phase Active Power Factor Corrected Cuk Topology Based AC-DC Converter", IJPEDS, Vol.4, No.2, June 2014, pp. 156-164, Scopus index, Q2, SJR: 0.304, and SNIP: 1.088
12. Shakil Ahamed Khan, **Md. Ismail Hossain**, Mousumi Aktar "Single Phase PFC Converter for Plug-in Hybrid Electric Vehicle Battery Chargers", IJPEDS, Vol.2, No.3, September 2012, pp. 325-332. Scopus index, Q2, SJR: 0.304, and SNIP: 1.088

Conference Publication: (Peer Reviewed Conference)

13. **Md Ismail Hossain**, M. A. Abido, "SCIG based wind energy integration into MMC based HVDC transmission network in RTDS," in 18th International Conference on Renewable Energies and Power Quality (ICREPQ'20), Granada, Spain, 1st to 3rd April, 2020.
14. **Md Ismail Hossain**, Shafiullah, Mohammad Abido "Asynchronous Induction Motor Speed Control Employing LM-NN Based Adaptive PI Controller", in 18th International Conference on Renewable Energies and Power Quality (ICREPQ'20), Granada, Spain, 1st to 3rd April, 2020.
15. **Md Ismail Hossain**, Md Shafiul Alam, Md Shafiullah, Md Al Emran, "Asynchronous Induction Motor Speed Control Using Takagi-Sugeno Fuzzy Logic" in 10th International Conference on Electrical and Computer Engineering (ICECE), 2018, pp. 249-252.
16. **Md Ismail Hossain**, Md Shafiullah, Mohammad Abido, Md Al Emran, "Online Monitoring of Inter-Area Oscillations and damping of Power systems employing Prony Analysis" in 10th International Conference on Electrical and Computer Engineering (ICECE), 2018, pp. 269-272.
17. M Shafiul Alam, **Md Ismail Hossain**, Md Alamgir Hossain, Md Shamimul Haque Choudhury, Muhammad Athar Uddin, "Protection of Inverter-based Distributed Generation with Series Dynamic Braking Resistor: A Variable Duty Control Approach" in 10th International Conference on Electrical and Computer Engineering (ICECE), 2018, pp. 253-256.
18. **Md Ismail Hossain**, Mohammad Abido, Md Shafiul Alam, Md Shafiullah, Md Al Emran, Fakir Sharif Hossain, "Low-Frequency Inter-Area Mode Detection in Power System using Continuous Wavelet Transform" in International Conference on Innovations in Science, Engineering and Technology (ICISSET), 2018, pp. 299-304.
19. M Shafiul Alam, MA Abido, **Md Ismail Hossain**, Md Shamimul Haque Choudhury,

- Muhammad Athar Uddin, "Series Dynamic Braking Resistor Based Protection Scheme for Inverter Based Distributed Generation System" in International Conference on Innovations in Science, Engineering and Technology (ICISSET), 2018, pp. 231-235.
20. S. A. Khan and **M. I. Hossain**, "Intelligent control based maximum power extraction strategy for wind energy conversion systems," in 2011 24th Canadian Conference on Electrical and Computer Engineering (CCECE), 2011, pp. 001040–001043.
 21. **M. I. Hossain**, S. A. Khan, and M. Shafiullah, "Power maximization of a photovoltaic system using automatic solar panel tracking along with boost converter and charge controller," in 2012 7th International Conference on Electrical and Computer Engineering, 2012, pp. 900–903.
 22. **M. I. Hossain**, S. A. Khan, M. Shafiullah, and M. J. Hossain, "Design and implementation of MPPT controlled grid connected photovoltaic system," in 2011 IEEE Symposium on Computers & Informatics, 2011, pp. 284–289.
 23. S. A. Khan and **M. I. Hossain**, "Design and implementation of microcontroller based fuzzy logic control for maximum power point tracking of a photovoltaic system," in International Conference on Electrical & Computer Engineering (ICECE 2010), 2010, pp. 322–325.
 24. **M. I. Hossain** and M. J. Alam, "Cuk topology based power factor correction and output voltage regulation of AC-DC converter," in 2014 International Conference on Electrical Engineering and Information & Communication Technology, 2014, pp. 1–6
 25. M. Shafiullah, H. Rahman, **M. I. Hossain**, and M. Ahsan, "The study of dependency of power system stability on system inertia constant for various contingencies," in 2014 International Conference on Electrical Engineering and Information & Communication Technology, 2014, pp. 1–4.
 26. M. Shafiullah, B. S. Al Sharif, **M. I. Hossain**, and M. Q. Ahsan, "Impact study on a load rich island and development of frequency based auto load shedding scheme to improve service reliability of the island," in 2014 International Conference on Informatics, Electronics & Vision (ICIEV), 2014, pp. 1–6.
 27. M. Shafiullah, M. S. Alam, **M. I. Hossain**, and M. N. Hasan, "Transient performance improvement of power system by optimal design of SVC controller employing genetic algorithm," in 8th International Conference on Electrical and Computer Engineering, 2014, pp. 540–543.
 28. M. Shafiullah, **M. I. Hossain**, and M. Q. Ahsan, "Impact of sizes of islands on the stability of a faulted power system," in 2015 International Conference on Electrical Engineering and Information Communication Technology (ICEEICT), 2015, pp. 1–6.
 29. M. S. Alam, M. Shafiullah, **M. I. Hossain**, and M. N. Hasan, "Enhancement of power system damping employing TCSC with genetic algorithm based controller design," in 2015 International Conference on Electrical Engineering and Information Communication Technology (ICEEICT), 2015, pp. 1–5.
 30. **Md. Ismail Hossain**, Shakil Ahamed Khan and Md. Shafiullah, "Smart Room Control Unit using Standard RC5 Remote Code", in Conference on Engineering Research, Innovation and Education 2011 (CERIE-2011), SUST, ISBN: 978-984-33-2140-4, Page no. 691-696.
 31. Shakil Ahamed Khan, **Md. Ismail Hossain**, Saiful Islam, "Simulation of PV Array Characteristics and Fabrication of Maximum Power Point Tracker", in Journal of Dhaka International University, December 2010, Volume.2, no.1, ISSN: 2077-0111, page no.107-114.

32. **Md. Ismail Hossain**, Shakil Ahamed Khan, Md. Shafiullah and Md. Nazmus Sahadat, Ashraful Arefin, "Implementation of PID Control and PWM Technique in Embedded System for Ripple Free and Stabilized Sine Wave inverter" in Conference on Engineering Research, Innovation and Education 2011(CERIE-2011), SUST, ISBN: 978-984-33-2140-4, page no. 622-627
33. Shakil Ahamed Khan and **Md. Ismail Hossain** "Implementation of artificial intelligence in embedded system for automatic voltage regulator" in conference on CERIE 2011 (Conference on Engineering Research, Innovation and Education 2011) SUST, Bangladesh. ISBN: 978-984-33-2140-4 Page no. 612-616

Invited Poster presentation

- **M. I. Hossain**, M. Shafiullah and M. A. Abido, "Poster on DFIG based wind energy integration into MMC based multi-terminal HVDC transmission network," in 9th Saudi Arabia Smart Grid and Sustainable Energy Conference and Exhibition (SASG 2019). IEEE, Jeddah, Saudi Arabia, p. 1, 2019
- **M. I. Hossain** and M. A. Abido, "Fault ride through improvement of optimally PV-Wind integrated MMC based Multiterminal HVDC network," in National Grid Saudi Arabia (NG-SA) Scientific Council Visit at KFUPM, January 2019.

Google Scholar:

<https://scholar.google.com/citations?user=sGCpU4cAAAAJ&hl=en>

Funded Research Projects involvement

1. **Deanship of Scientific Research (DSR), KFUPM:** "Advanced controller design of solar energy integrated modular multilevel converter based VSC-HVDC system" Funded by DSR of KFUPM (**Project Number:** DF191004, **Project Duration:** 30 months, **Project Value:** 300,000 SR).
Position: Research assistant. **Contribution:** Proposal writing, Literature survey, Model analysis, development and simulation, Hardware prototype development, Report writing. **Status:** Awarded and ongoing.
2. **Deanship of Scientific Research (DSR), KFUPM:** "Controller Design and Implementation of DFIG Wind Integrated VSC-HVDC System with Bridge Type Fault Current Limiters" Funded by DSR of KFUPM (**Project Number:** RG17002, **Project Duration:** 30 months, **Project Value:** 299,730 SR).
Position: Research assistant. **Contribution:** Model analysis, development and simulation, Hardware prototype development, Report writing. **Status:** Awarded and completed.
3. **King Abdullah City for Atomic and Renewable Energy (KACARE):** "Design Modelling and Control of multiterminal DC transmission for renewable energy integration" Funded by KACARE (**Project Number:** KACARE182-GSGP-03, **Project Duration:** 12 months, **Project Value:** 12000 SR).
Position: Principle Investigator. **Contribution:** Proposal writing, Literature survey, Model analysis, development and simulation, Hardware prototype development, Report writing. **Status:** Awarded and Completed

4. **National Science, Technology and Innovation Plan:** “Adaptive Fault Location in Electrical Networks Using Synchronized Phasor Measurements” Funded by King Abdulaziz City for Science and Technology (KACST) through the Science and Technology Unit (STU) at KFUPM (**Project Number:** 14-ENE265-04, **Project Duration:** 2016-2018, **Project Value:** 1,991,912 SAR).
Position: Research assistant. **Contribution:** Model development and simulation, Report writing. **Status:** Awarded and completed

Submitted Research Projects

King Abdullah City for Atomic and Renewable Energy (KACARE): “Development of DG Performance Assessment Tool” Consultation proposal submitted to KACARE (**Project Duration:** 6 months, **Project Value:** 281,076 SR).
Position: Research Assistant. **Contribution:** Proposal writing, Literature survey, **Status:** Pending

Invited talk and workshop

- **‘Promising technologies in energy transmission field considering renewable energy integration and beyond’** Talk to National Grid Saudi Arabia (NG-SA) Scientific Council Visit at KFUPM, January 2019.
- **‘Fault ride through improvement of optimally PV-Wind integrated MMC based Multiterminal HVDC network’** Talk to KACARE seminar, February 2020.
- **‘Matlab and Simulink’** Workshop presented to KFUPM Undergraduate Students, October 2018
- **‘Fundamental of reliable robotics design’** Workshop presented to IIUC students organized by EE Club of IIUC, January 2014.
- **‘PCB design’** Workshop presented to IIUC students organized by EE Club of IIUC, January 2015.
- **‘Wireless hardware control’** Workshop presented to IIUC students organized by EE Club of IIUC, June 2015.
- **‘Converter design’** Workshop presented to IIUC students organized by EE Club of IIUC, February 2016.
- **‘Learn Power World Simulator’** Workshop presented to IIUC students organized by EE Club of IIUC, January 2014.

Honors and Awards

Research scholarship to pursue a Ph.D. in EE, KFUPM, Dhahran, KFUPM, 2016-2020.

Technical scholarship to pursue M.Sc. in EEE, BUET, Dhaka, Bangladesh, 2011-2013.

Technical scholarship to pursue B.Sc. in EEE, RUET, Rajshahi, Bangladesh, 2004-2009.

Best paper award, ICEEICT 2014 (an IEEE Conference), Dhaka, Bangladesh, April 2014.

Project Works:

http://www.ismail-hossain.com/gallery.php?param=gallery_1

- Brushless DC motor control
- Android, Bluetooth based AC power control
- Bidirectional Speed control of DC motor
- RFID tag based Gate control
- Quad-copter
- Automatic Solar tracking system of Photovoltaic panel for power maximization
- RF based car control
- RF based load control
- Moving Digital clock on Dot matrix
- Password based door control
- AC power meter
- Smart room control
- Password based door control through IR link
- RC5 coding based AC power control
- RC5 coding based load control
- DC-DC converter using Buck topology
- DC-DC converter using Boost topology
- Design and implementation of a real time clock with calendar
- PC as an Oscilloscope Using Microcontroller
- Computer Controlled Traffic System.
- Maximum power Point Tracker for Solar System
- Fuzzy logic based Speed control of an industrial DC Motor
- Automatic room temperature control and saving power in air-conditioner.
- Designing Multimeter
- DC motor speed control using PWM technique
- Sinusoidal Inverter using PWM technique
- Voltage Regulator
- Serial port communication between PC and controller
- Contactless feedback based Automatic speed control of DC motor using PWM technique, Optical tachometer and PID control.
- Design and implementation of an AC Energy meter.
- Design and implementation of a real time clock with calendar
- Radio frequency control car for Surveillance application
- Industrial Temperature, pressure, Humidity observation using GSM Modem
- Computer and RF IC.
- Dual and single axis tracker control module for PV panel.
- Automatic train crossing traffic control.
- Temperature sensor
- PIR sensor based security system
- Voting machine
- Solar based intelligent street light control
- Electric Auto-Rickshaw

Academic Qualifications

Doctor of Philosophy

Department of Electrical Engineering

King Fahd University of Petroleum and Minerals (KFUPM)

Grade: 3.58 out of 4 (Course work)

Percentage of marks: More than 80%

Courses: Power System Operations, Intelligence Control, Analytical Control of Electrical Machines, HVDC Transmission System, Linear Control Systems, Power System Dynamic Analysis, Solar Energy Utilization, Power System Steady State Analysis, Math Methods for Engineers.

Passing year: 2020 (Expected)

PhD Dissertation: "Modelling and control of multiterminal DC grid for renewable energy integration"

Master of Science

Department of Electrical and Electronic Engineering

Bangladesh University of Engineering and Technology (BUET)

Grade: 3.67 out of 4

Percentage of marks: Approximately 87%

Courses: Power system stability, Advanced protective relay, Semiconductor gate drives, Laser theory, Broadband wireless communication, Multimedia communication.

Passing year: 2013

M.Sc Thesis: "Closed loop \hat{C} uk topology based single phase high performance AC- DC converter"

Bachelor of Science

Department of Electrical and Electronic Engineering

Rajshahi University of Engineering and Technology (RUET)

Passing year: 2009

CGPA: 3.73 out of 4

Percentage of marks: Approximately 78.9%

B. Sc Thesis: "Smart Room Control using standard RC5 code"

GRE

Quantitative Reasoning: 160 out of 170

Programming & Embedded Skill

Programming Languages: C, Matlab, Assembly, Visual Basic, and Ladder Language.

Circuit simulator: Orcad, MATLAB Simulink, Pspice, Multisim, Proteus.

Embedded controller: PLC, PIC, AVR, 8051, DsPIC, Arduino.

Embedded Software: AVR studio, BASCOM AVR, MPLAB, Keil, PICBASCOM, Arduino, PIC-Micro-C, MikroC Pro etc

Power system simulator: PSCAD, RSCAD, PSIM, MATLAB Simulink and Power World etc.

Real time hardware simulator: RTDS, dSPACE, NI Grid Automation System (PMU); SEMIKRON Power Inverter; Chroma Programmable AC/DC

loads, and Sources; Chroma Solar Array Simulator (SAS);
Induction/Synchronous Machines.

Website Development Language: Html and CSS.

Optimization algorithms and intelligent control skill:

Backtracking Search Algorithm; Lightning Search Algorithm; Particle Swarm Optimization; Differential Evolution; Genetic Algorithm; Multi-objective optimization; Mixed integer linear programming; Artificial neural network; Fuzzy logic etc.

Teaching Experience

September. 2016 – Ongoing: Lecturer-B, EE Dept., KFUPM, Saudi Arabia

January 2014 – September 2016: Assistant Professor, EEE Dept., IIUC, Chittagong, Bangladesh.

September 2009 – January 2014: Lecturer, EEE Dept., IIUC, Chittagong, Bangladesh.

Teaching Lab

KFUPM: Electrical Machine, Control and Electrical Circuit

IIUC: Electrical Machine, Control, Electrical Circuit, Power Electronics, Electronics, Microprocessor and interfacing, Power system Switchgear and Protection, Digital logic design, Circuit simulation, Measurement & Instrumentation, Matlab and C programming etc.

Teaching Courses at IIUC

Electrical Machine, Control, Electrical Circuit, Power system, Power system Switchgear and Protection, Power Electronics, Electronics, Microprocessor, Measurement & Instrumentation etc.

Non-Teaching Work at IIUC

Course Supervisor, Lab instrument purchase committee member, Convener of Hardware competition committee, Farewell committee member, Supervisor of undergraduate projects, Seminar organizing committee member, Course and lab development etc.

Undergraduate thesis/ project supervision at IIUC

Supervised more than 100 undergraduate students through ‘Theses/Projects at IIUC’ (January 2010- June 2016).

Professional Master course development in KFUPM

Flyer design and Benchmark development

Professional Membership

The Institution of Engineers, Bangladesh: Member (M-29213)

Reviewing Activities

Conferences ICISSET 2016 (IEEE)

References:

Dr. M. A. Abido, University Distinguished Professor, Electrical Engineering Department, King Fahd University of Petroleum & Minerals (KFUPM), Mobile: +966 50 8757838, **Email:** mabido@kfupm.edu.sa

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