

# Md Liton Hossain

## **CONTACT INFORMATION**

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## **RESEARCH EXPERIENCES**

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**Title I:** Design Requirements VTOL Smart Battery Array

Level of Education: Post-Doctoral Research

Supervisor's Name: Associate Professor Dr. Sumedha Rajakaruna, Curtin University

Industry Supervisors: Paul Stockwell and Adam Kelly, Innovaero.

Duration: 31/01/2022 to 20/05/2022

Project Contributions: Design and implementation of smart battery array for VTOL system.

**Title II:** A Multilevel Inverter Topology and Controller for Wind Energy Conversion System with Energy Storage Management and Condition Monitoring

Level of Education: Doctor of Philosophy in Electrical and Computer Engineering

Supervisor's Name: Associate Professor Dr. Ahmed Abu-Siada

Name of University: Curtin University, Australia

Duration: 19/04/2017 to 07/12/2020

Project Contributions: A wind energy conversion system which includes wind turbine, generator, full-scale power electronic converter specially a novel multilevel inverter, and novel space vector controller has been designed and simulated. The novel multilevel inverter and controller have showed significant performances for controlling and monitoring the wind energy conversion system. A hardware prototype has been developed and tested in our laboratory which validated the simulation results. In addition, an industrial internet of things has been developed to monitor the condition of wind energy conversion system remotely over internet which showed excellent performances.

**Title III:** Multilevel Three Phase Voltage Source Inverter with Simple Space Vector Pulse Width Modulation

Level of Education: Master of Science in Electrical Engineering

Supervisor's Name: Associate Professor Dr. Zulkifilie Bin Ibrahim

Name of University: Universiti Teknikal Malaysia Melaka, Malaysia

Duration: 2013-2016

Project Contributions: A novel multilevel inverter system and control strategy have been designed and investigated which were excellently performing to convert any form of renewable energy. A hardware prototype of the multilevel inverter based on digital control board (eZdsp, TMS320F28335) which was very efficient to integrate renewable energy to the modern grid system.

**Title IV:** InGaN based Quantum Well & Quantum Dot Solar Cell

Level of Education: Bachelor of Science in Electrical and Electronic Engineering

Supervisor's Name: Assistant Professor Md. Jahirul Islam

Name of University: Khulna University of Engineering & Technology, Bangladesh

Duration: 2011-2012

Project Contributions: A quantum well is designed in InGaN layer which was simulated successfully and showed excellent performances. In later part of his thesis, a quantum dot system in replace of quantum well is designed in the InGaN layer which enhances the efficiency of the solar cell system.

**Collaborative Research with University Sarawak Malaysia:**

**Title V:** A battery management system based on SOC estimation using artificial network technique for PV-battery integration system

Institution: University Malaysia Sarawak

Research Contributions: Battery undergoes frequent charging and discharging cycles in a photovoltaic (PV)-battery integrated system that decreases its functioning life and affects its performance significantly. To fix the delinquencies, this project talks about the State of Charge (SOC) estimation for Battery Management System (BMS) where SOC is assessed using Backpropagation Neural Network (BPNN) technique by collecting the battery parameters such as voltage, current and temperature. Active cell balancing control strategy is employed in the proposed method headed for reducing the SOC divergence among the cells and improve the battery lifetime.

## **PROFESSIONAL EXPERIENCES**

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**Position I:** Research Associate ((<https://staffportal.curtin.edu.au/staff/profile/view/md-liton-hossain-540ce2a3/>))

Institution: Joint project of Innovaero and Curtin University

Duration: 31/01/2022 to 20/05/2022

.Roles and Responsibilities: Design and implementation of smart battery array for VTOL system

**Position II:** Casual Academic ((<https://staffportal.curtin.edu.au/staff/profile/view/md-liton-hossain-540ce2a3/>))

Institution: Curtin University, WA

Duration: 2018-Cont.

Roles and Responsibilities: I have been working as a Lab Supervisor under Professor Dr. Ngu-Ba Vo, Assoc. Prof. Ahmed Abu-Siada, Assoc. prof. Dr. SM Muyeen, Assoc. Prof. Sumedha Rajakaruna, Lecturer Dr. Hanieh Bakhshayesh, Dr. Ehsan Pashajavid and Lecturer Dr. Uzma Amin for Renewable Energy Principle (Solar, Wind, Hydro, and Hydrogen Energy), Smart Grid, Signal and System, Electrical Power System Analysis, Power Electronics, Electrical Machine, Electrical Circuits and Electromagnetic and Electromechanical Energy Conversion, Electrical Plant since 2018 until now. I am involved and helping students to solve critical problems of software simulation and hardware experiments in both of online and offline system. I am also doing standard marking for the submitted lab reports.

**Position III:** Casual Academic

Institution: Central Queensland University, WA

Duration: 9 March 2020 to 5 July 2020

Roles and Responsibilities: I have been working as a Tutor under Dr. Sanath Alahakoon and Dr. Narottam Das for the subject of Advanced Power System Analysis and Control; and Advanced Electrical Machines and Drives. I have been consulting students how to solve different types of critical and complex problems.

**Position IV:** Research Assistant

Institution: Curtin University

Duration: 19/04/2017 to 31/08/2020

Roles and Responsibilities: I have developed wind energy conversion system which include wind turbine, generator, full-scale power electronic converter specially a novel multilevel inverter, and novel space vector controller. The novel multilevel inverter and controller have showed significant performances for controlling and monitoring the wind energy conversion system. A hardware prototype has been developed and tested in our laboratory which validated the simulation results. In addition, an industrial internet of things has been developed to monitor the condition of wind energy conversion system remotely over internet which showed excellent performances.

**Position V:** Lecturer (On Leave)

Institution: Eastern University, Bangladesh

Duration: 1 Jan 2017 to 13 April 2017

**Position VI:** Lecturer

Institution: World University of Bangladesh

Duration: 1 Sep 2016 to 31 Dec 2016

**Position VII:** Assistant Professor

Institution: BCMC College of Engineering & Technology

Duration: 1 April 2016 to 30 Aug 2016

Roles and Responsibilities for position IV to VI: I was teaching the students for different subjects such as 1. Renewable Energy I 2. Electrical Machine 3. Electrical Circuit II 4. Control System Engineering 5. Electronic Devices and Circuits II 6. Electrical Circuits 7. Electrical Circuit II 8. Electronics I 9. Satellite and Telecommunication 10. Electromagnetic Field 11. Pneumatic and Actuator 12. Modern Electric Drives 13. Microwave Engineering 14. Digital Communication 15. Digital Electronics II 16. Power System Analysis 17. Electrical Machine I 18. Digital Signal Processing 19. Solid State Devices. I was also teaching students for different laboratories such as 1. PV energy I 2. Electronics II 3. Electrical Machine 4. Electrical Circuits 5. Control System I 6. PSPICE Simulation 7. Digital Electronics II 8. Power System Analysis 9. Electrical Machine I 10. Power Electronics. In addition, I was co-supervisor for few students for their undergraduate thesis.

**Position VIII:** Research Fellow

Institution: Universiti Teknikal Malaysia Melaka

Duration: 2014 to 2015

**Position IX:** Research Assistant

Institution: Universiti Teknikal Malaysia Melaka

Duration: October 2013 to Dec 2013

Roles and Responsibilities for position VII and VIII: A novel multilevel inverter system and control strategy have been designed and investigated which were excellently performing to convert any form of renewable energy. A hardware prototype of the multilevel inverter based on digital control board (eZdsp, TMS320F28335) which was very efficient to integrate renewable energy to the modern grid system. In addition, I was assisting students to solve critical problems in different subjects specially for power conversion system.

**Position X:** Maintenance Engineer

Institution: Khulna University of Engineering and Technology, Bangladesh

Duration: April 2013 to Sep 2013

Roles and Responsibilities: I was working with Professor Dr. Md Shahjahan for the establishment of a new high voltage laboratory at KUET.

## **ACADEMIC QUALIFICATIONS**

Certificate/ Degree	Board/University	Year of Passing	Results
Post-Doctoral	Curtin University & Innovaero	2022	TBA
PhD	Curtin University, Australia	2020	Pass
Master of Science in Electrical Engineering	Universiti Teknikal Malaysia Melaka, Malaysia.	2016	Pass
Bachelor of Science in Electrical and Electronic Engineering	Khulna University of Engineering & Technology, Khulna.	2012	CGPA 3.31 out of 4.0
Higher Secondary Certificate (H. S. C.)	Board of Intermediate and secondary Education, Rajshahi.	2007	GPA 5.0 out of 5.0
Secondary School Certificate (S. S. C)	Board of Intermediate and secondary Education, Rajshahi.	2005	GPA 5.0 out of 5.0

## **JOURNAL PUBLICATIONS**

1. Ahmed, Musse M., Md O. Qays, Ahmed Abu-Siada, S. M. Muyeen, and Md L. Hossain 2021. "Cost-Effective Design of IoT-Based Smart Household Distribution System" *Designs* 5, no. 3: 55. <https://doi.org/10.3390/designs5030055>.
2. **Md Liton Hossain**, A. Au-Siada, S. M. Muyeen, Md Mubashwar Hasan, Md Momtazur Rahman, "Industrial IoT based Condition Monitoring for Wind Energy Conversion System", *CSEE Journal*

- of Power and Energy Systems, Page. 1-12, 06 Oct 2020. (SCI Indexed, IF: 3.938). (<https://ieeexplore.ieee.org/document/9215159/>).
3. Qays, M.O.; Buswig, Y.; Basri, H.; Hossain, M.L.; Abu-Siada, A.; Rahman, M.M.; Muyeen, S.M. An Intelligent Controlling Method for Battery Lifetime Increment Using State of Charge Estimation in PV-Battery Hybrid System. *Appl. Sci.* **2020**, *10*, 8799. (Q2, SCIE Indexed, IF: 2.679). (<https://www.mdpi.com/2076-3417/10/24/8799>).
  4. Ohirul Qays, M.; Buswig, Y.; **Md Liton Hossain**; Abu-Siada, A., "Active Charge Balancing Strategy Using the State of Charge Estimation Technique for a PV-Battery Hybrid System", *Energies* **2020**, *13*, 3434 (Q2, SCIE Indexed, IF: 3.004). (<https://www.mdpi.com/1996-1073/13/13/3434>).
  5. Ohirul Qays, M.; Buswig, Y.; **Md Liton Hossain**; Abu-Siada, A.; "Recent Progress and Future Trends on State of Charge Estimation Methods to Improve Battery-Storage Efficiency: A Review", *CSEE Journal of Power and Energy Systems* (SCI Indexed, IF: 3.938), 06 July 2020. (<https://ieeexplore.ieee.org/document/9133621>).
  6. Ohirul Qays, M.; Buswig, Y.; **Md Liton Hossain**; Md Momtazur Rahman; Abu-Siada, A., "Active Cell Balancing Control Strategy for Parallel Connected LiFePO<sub>4</sub> Batteries", *CSEE Journal of Power and Energy Systems* (SCI Indexed, IF: 3.938), 19 August 2020. <https://ieeexplore.ieee.org/document/9171672>
  7. **Md Liton Hossain**, A. Au-Siada, S. M. Muyeen, Zulkifilie Ibrahim, Frede Blaabjerg "Design and Validation of a Generalized Multilevel Inverter with Simplified Switching Technique", *Electric Power Components and System*, Vol.0, No: 0, Page: 1-15, 07 April 2020 (Q2, SCIE Indexed, IF: 1.07). (<https://www.tandfonline.com/doi/abs/10.1080/15325008.2020.1734115>).
  8. **Md Liton Hossain**, Abu-Siada A, Muyeen SM. Methods for Advanced Wind Turbine Condition Monitoring and Early Diagnosis: A Literature Review. *Energies*. 2018; 11(5):1309. (Q1, SCIE Indexed, IF: 3.004). (<https://www.mdpi.com/1996-1073/11/5/1309>).
  9. Zulkifilie Bin Ibrahim, **Md. Liton Hossain**, Ismadi Bin Bugis, Jurifa Mat Lazi, Nurazlin Mohd Yaakop, "Comparative Analysis of PWM Techniques for Three Level Diode Clamped Voltage Source Inverter", *International Journal of Power Electronics and Drive System*, Vol. 5, No. 1, July 2014, pp. 15~23 (SCOPUS Indexed, Q2). (<http://ijpeds.iaescore.com/index.php/IJPEDS/article/view/5033/4712>).
  10. Zulkifilie Bin Ibrahim, **Md. Liton Hossain**, Ismadi Bin Bugis, Nik Munaji Nik Mahadi, Ahmad Shukri Abu Hasim, "Simulation Investigation of SPWM, THIPWM and SVPWM Techniques for Three Phase Voltage Source Inverter", *International Journal of Power Electronics and Drive System* (SCOPUS Indexed, Q2), Vol.6, No.2, June 2014. (<http://ijpeds.iaescore.com/index.php/IJPEDS/article/view/4994/4813>).
  11. Md. Abu Shahab Mollah, **Md. Liton Hossain**, Abu Farzan Mitul, "High Efficiency InGa<sub>N</sub> Based Quantum Well & Quantum Dot Solar Cell", *ELEKTRIKA-UTM Journal of Electrical Engineering*, Vol. 15, No. 2, Pages. 27-31, April 2014.
  12. Sohel Hossain, Md. Farid Uddin Khan, **Md. Liton Hossain**, Abu Farzan Mitul, "A Simulation Analysis of Dislocations Reduction in In<sub>x</sub>Ga<sub>1-x</sub>N/GaN Heterostructure Using Step-graded Interlayers", *American Journal of Engineering Research*, Vol. 02, No.12, Pages.110-116, 2014. ([http://www.ajer.org/papers/v2\(12\)/L0212110116.pdf](http://www.ajer.org/papers/v2(12)/L0212110116.pdf)).

## CONFERENCE PUBLICATIONS

1. **Md. Liton Hossain**, A. Abu-Siada and S. M. Muyeen, "A Hybrid Multilevel Power Electronic Inverter and Fault Location Identification of Switching Devices," *2018 Condition Monitoring and Diagnosis (CMD)*, Perth, WA, 2018, pp. 1-4 (IEEE Xplore indexed). (<https://ieeexplore.ieee.org/document/8535618>).
2. **Md. Liton Hossain**, "A Review on Wind Turbine Condition Monitoring and Fault Diagnosis", *Proceedings of One Curtin International Postgraduate Conference*, 2017/12.

3. Zulkifilie Bin Ibrahim, **Md. Liton Hossain**, Syamim Binti Sanusi, Nik Munaji Bin Nik Mahadi, Ahmad Shukri Abu Hasim, “Performance of Different Topologies for Three Level Inverter Based on Space Vector Pulse Width Modulation Technique”, 3rd IET International Conference on Clean Energy and Technology, 24th to 26th November, 2014 (**IEEE Xplore indexed**). (<https://ieeexplore.ieee.org/document/7151652>).
4. Zulkifilie Bin Ibrahim, **Md. Liton Hossain**, M.H.N Talib, Raihana Mustafa, “A Five Level Cascaded H-Bridge Inverter Based on Space Vector Pulse Width Modulation Technique”, 2014 IEEE Conference on Energy Conversion, page: 293-297, 13–15 October 2014 (**IEEE Xplore Indexed**). (<https://ieeexplore.ieee.org/document/6967518>).
5. Zulkifilie Bin Ibrahim, **Md. Liton Hossain**, Ismadi Bin Bugis, M.H.N Talib, Raihana Mustafa, “A Four Level Diode Clamped Voltage Source Inverter Based on Space Vector Pulse Width Modulation Technique”, 2<sup>nd</sup> Power and Energy Conversion Symposium”, 12 May, 2014.
6. **Md. Liton Hossain**, Md. Intiaz Islam, Abu Farzan Mitul, Md. Jahirul Islam, “Efficiency Enhancement of InGaN Based Quantum Well and Quantum Dot Solar Cell”, 2nd International Conference on Informatics, Electronics & Vision, May 17-18, 2013, Dhaka, Bangladesh (**included in IEEE Xplore**). (<https://ieeexplore.ieee.org/document/6572562>).
7. Md. Tajul Islam, **Md. Liton Hossain**, Md. Ahasan Kabir, Md. Tawabur Rahman, Shirazus Salekin, Sk. Shariful Alam, Mostafizur Rahman, “Vertical Handover Decision Using Fuzzy Logic in a Heterogeneous Environment”, 2nd International Conference on Informatics, Electronics & Vision (included in IEEE Xplore), May 17-18, 2013, Dhaka, Bangladesh (**included in IEEE Xplore**). (<https://ieeexplore.ieee.org/abstract/document/6572621>).
8. Md. Ahasan Kabir, M. A. Masud Khan, Md. Tajul Islam, **Md. Liton Hossain**, Abu Farzan Mitul, “Image Compression Using Lifting Based Wavelet Transform Coupled With SPIHT Algorithm”, 2nd International Conference on Informatics, Electronics & Vision, May 17-18, 2013, Dhaka, Bangladesh (**included in IEEE Xplore**). (<https://ieeexplore.ieee.org/document/6572638>).

#### **REVIEWER OF JOURNALS (MAJOR)**

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1. Journal of Modern Power Systems and Clean Energy (<https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=8685265>)
2. Mathematical Problems in Engineering (<https://www.hindawi.com/journals/mpe/>)
3. Energies (<https://www.mdpi.com/journal/energies>)
4. Journal of Electrical Engineering & Technology (<https://www.springer.com/journal/42835/>)
5. Applied Science ( <https://www.mdpi.com/journal/applsci>)

#### **REVIEWER/SPEAKER INVITATIONS for CONFERENCES (MAJOR)**

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1. International Conference on Condition Monitoring and Diagnosis (<http://www.cmd2018.com.au/>)
2. World of Multidisciplinary Research and Application Conference, America, 2018
3. Advancement on Mechanical and Manufacturing Engineering Technology, 2015, Malaysia.
4. 5th International Conference on Electrical Engineering, Computer Science and Informatics, 2018, Malang, Indonesia
5. 3rd Edition of International Conference on Materials Technology And Manufacturing Innovations
6. International Summit on Artificial Intelligence & Robotic surgeries conference.

#### **SCHOLARSHIPS AND AWARDS and TRAVEL GRANT**

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1. Curtin HDR Completion Scholarship for the period of 6 months from 17 April 2020 to 18 October 2020 (AUD 28092/year). (<https://scholarships.curtin.edu.au/hdr-scholarships-funding/>).
2. Curtin International Postgraduate Research Scholarship (CIPRS) and Curtin Strategic International Research Scholarship (CSIRS) for the period of 3 years from 2017-2020 (AUD 26,000/year). ([https://scholarships.curtin.edu.au/current/documents/TnC\\_CSIPRS\\_CSIRS2017.pdf](https://scholarships.curtin.edu.au/current/documents/TnC_CSIPRS_CSIRS2017.pdf)).
3. One Curtin Post Graduate Conference 2017, Curtin University, Miri, Malaysia (AUD 500). (<https://publons.com/journal/524231/one-curtin-international-postgraduate-conference-o/>)

4. UTeM Zamalah Fellowship Scheme and Research Assistantship from Universiti Teknikal Malaysia Melaka for the period of 2 years 2014-2015 (RM 21,600/year). (<https://pps.utm.edu.my/financial-assist/scholarship/zamalah.html>).
5. Medhabikas Scholarship from BRAC, EXIM Bank Scholarship, Imdad-Sitara Khan Foundation Scholarship (<http://www.iskcc.org/scolership.php>) for the period of 4 years from 2008-to 2011(BDT 62,400/year)
6. Rajshahi Board Scholarship in general grade and in talent pool for the period of 6 years from 2005-2011 (BDT 10,000/year).

### **PROFESSIONAL SKILLS**

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MATLAB/SIMULINK, Protius, Digital Signal Processing, Language C and C++, PCB Design and Fabrication, Windows XP, Windows 7, 8, Linux, C, C++, Fortran, Microsoft Word, Power Point and Excel, Intel 8085, 8086 Microprocessors, PSpice, Origin 6.1, Code Composer Studio.

### **PERSONAL INFORMATION**

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Father's Name	: Md. Jaynul Abedin	Religion	: Islam	Residency	: Australia
Mother's Name	: Hasina Begam	Gender	: Male	Passport No.	: PB4951995
Date of Birth	: 10 March, 1989	Nationality	: Australian	CRN	: 125388648A

### **LANGUAGE PROFICIENCIES**

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Excellent Reading, writing and speaking skills on English, Malay, Bangla, Arabic and Chinese.

### **REFERENCES**

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Dr. Ahmed Abu-Siada, Prof., School of Electrical and Computer Engineering, Curtin University, Australia, Phone:+610892667287, Email: [a.abusiada@curtin.edu.au](mailto:a.abusiada@curtin.edu.au).

(<https://research.curtin.edu.au/supervisor/dr-ahmed-abu-siada/>).

Dr. SM Muyeen, Assoc. Prof., School of Electrical and Computer Engineering, Curtin University, Australia, Phone:+610892661975, Email: [sm.muyeen@curtin.edu.au](mailto:sm.muyeen@curtin.edu.au).

(<https://research.curtin.edu.au/supervisor/aprof-s-m-muyeen/>)

Dr. Sumedha Rajakaruna, Assoc. Prof., School of Electrical and Computer Engineering, Curtin University, Australia, Phone: +61 08 9266 7887, Email: [S.Rajakaruna@curtin.edu.au](mailto:S.Rajakaruna@curtin.edu.au) (<https://staffportal.curtin.edu.au/staff/profile/view/sumedha-rajakaruna-a89735b4/>).

Professor Dr. Zulkifilie Bin Ibrahim, Faculty of Electrical Engineering, Universiti Teknikal Malaysia Melaka, Email: [drzulkifilie@utm.edu.my](mailto:drzulkifilie@utm.edu.my).

(<https://fke.utm.edu.my/en/faculty-staff/44-electrical-department/7-prof-dr-zulkifilie-bin-ibrahim.html>)

### **DECLARATION**

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I state that in accordance with my acquaintance and certainty this resume correctly describes my qualifications and me in the approved manner.

Date: 25/05/2022

