Dr. Shantanu Chatterjee

CONTACT INFORMATION

Department of Electrical Engineering
NIT, Arunachal Pradesh
Yupia, Arunachal Pradesh
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Arunachal Pradesh, India

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CITIZENSHIP

Indian

RESEARCH INTERESTS

I am primarily interested in the field of Power Electronics & Drives, Multi-Phase Induction Generators, Pulse Width Modulation Techniques and Fractional Order PID controller.

EDUCATION

North Eastern Regional Institute of Science and Technology, Arunachal Pradesh, India

Ph.D., Power Electronics & Electric Drives, January 2019

- Thesis Title: *Study of Grid Connected Distributed Generation Systems*
- Adviser: Professor Saibal Chatterjee
- Area of Study: SRF-PLL, Vector Control of DSIG, Space Vector based Hybrid PWM techniques
- Grade: *7.62 CGPA in Ph.D course work*

Vellore Institute of Technology, Vellore, Tamil Nadu, India

M.Tech., Power Electronics & Drives, August 2012

- Thesis Title: *Study of Space Vector PWM on different Multilevel Inverter topologies & its experimental validation using TMS-28335 DSC controller*
- Adviser: Professor Kowsalya M
- Area of Study: Generalized Theory of Machine, Power Electronics, Electric Drives, PWM techniques & DSP based Electro-mechanical Motion control of Electric Machines
- Grade: *7.66 CGPA on a scale of 10.*

Maulana Abul Kalam Azad University of Technology (formerly known as W.B.U.T), West Bengal, India

B.Tech., Electronics & Instrumentation Engineering, July 2010

- Thesis Title: *Induction Machine Control using Power Converters*
- Adviser: Professor S N Bhadra & Dr. Sabitabrata Dey
- Area of Study: Control Systems, Power Electronics, Analog Electronics, Electrical Measurement etc.
- Grade: *7.43 CGPA on a scale of 10.*

ACADEMIC APPOINTMENTS

Assistant Professor — September 2013 to present
Department of Electrical Engineering, National Institute of Technology, Arunachal Pradesh

Senior Research Fellow — August 2012 - August 2013
Central Mechanical Research Institute, Council for Scientific & Industrial Research, Durgapur, West Bengal, India

SCI/ESCI Journal Publications

Chatterjee, Shantanu, Prashant Kumar. & Saibal Chatterjee. (2018),**Renewable and Sustainable Energy Reviews 81, 2371-2397**: *"A Techno-Commercial review on grid connected photovoltaic system"*. doi:10.1016/j.rser.2017.06.045

Chatterjee, Shantanu & Saibal Chatterjee. (2018),**Electric Power Systems Research 163, 174-195**: *"A novel speed sensor-less vector control of Dual Stator Induction machine with space vector based advanced 9-zone hybrid PWM for grid connected wind energy generation system"*. doi:10.1016/j.epsr.2018.02.021

Chatterjee, Shantanu & Saibal Chatterjee.(2018),**IET Renewable Power Generation 12, no. 14, 1581-1608**: *"Review on the Techno-Commercial aspects of wind energy conversion system"*. doi:10.1049/iet-rpg.2018.5197

Chatterjee, Shantanu & Saibal Chatterjee. (2018),**IET Electric Power Application XX, no. XX, XXXX-XXXX**: *"Stator flux-oriented vector control of dual stator induction generator with time optimised 11-zone hybrid PWM for grid connected wind energy generation system"*. doi:10.1049/iet-epa.2018.5311

Kumar, Prashant, Shantanu Chatterjee, Devnath Shah, U. K. Saha. & Saibal Chatterjee. (2017),**Cogent Engineering 4, no. 1, 1357875**: *"On comparison of tuning method of FOPID controller for controlling field controlled DC servo motor"*. doi:10.1080/23311916.2017.1357875

Scopus Journal Publications

Chatterjee, Shantanu. (2013),**International Journal of Power Electronics and Drive Systems (IJPEDS) 3, no. 1, 62-73.**: *"A Multilevel Inverter Based on SVPWM Technique for Photovoltaic Application"*. doi:10.11591/ijpeds.v2i4.403

Chatterjee, Shantanu.& Mallika, S (2012),**International Journal of Electronics and Electrical Engineering 2, no. 2, 1-15**: *"Cascaded Multilevel Inverter for Photovoltaic Systems With PI Control"*.

Chatterjee, Shantanu. & Kumar, Prashant (2016),**International Research Journal of Engineering & Technology (IRJET) 3, no. 4, 2541-2547**: *"A Techno-Economic Overview of DC-DC Converter used in Photovoltaic System"*.

Paper submitted in SCI Journals

Chatterjee, Shantanu. (2019). *"A bus clamping PWM based improved control of grid tied PV inverter with LCL filter under varying grid frequency condition"*. Submitted to ***IETE Journal of Research***.

Chatterjee, Shantanu. (2019) & Chatterjee, Saibal. *"A Review Pulse Width Modulation techniques"*. Submitted to ***IET Power Electronics***.

Conference Publications

Chatterjee, Shantanu. & Saibal Chatterjee.. (2015): *"Simulation of synchronous reference frame PLL based grid connected inverter for photovoltaic application."*, **In Power, Dielectric and Energy Management at NERIST (ICPDEN), 2015 1st Conference on, pp. 1-6. IEEE.** doi:10.1109/ICPDEN.2015.7084493

D Shah, Chatterjee, Shantanu,K Bharati & Saibal Chatterjee.(2016): *"Tuning of FO-PID controller-A review."*, **Proceedings of the 3^{rd} International Conference C2E2, Mankundu, West Bengal, India,** 15^{th}**-**16^{th} **January. CRC Press.**

Kumar, Prashant, Ujjal Das & Shantanu Chatterjee.(2016): *"A brief study on control structure of grid connected PV inverter."*, **In Energy Efficient Technologies for Sustainability (ICEETS), 2016 International Conference on, pp. 577-582. IEEE.** doi:10.1109/ICEETS.2016.7583820

Chatterjee, Shantanu, Ankit Kumar Garg, Krishanu Chatterjee & Himesh Kumar.(2015): *"Chaotic PWM spread spectrum scheme for conducted noise mitigation in DC-DC converters."*, **In Energy, Power and Environment: Towards Sustainable Growth (ICEPE), 2015 International Conference on, pp. 1-6. IEEE.** doi:10.1109/EPETSG.2015.7510171

Shantanu Chatterjee, Saikat Ghosh, Niraj Kumar Mahato & Vrind Paswan.(2018): *"Speed sensor less Field Oriented Control of a Three-phase induction motor drive used in Electric Vehicles using SVPWM."*, **In International Conference on Intelligent Computing and Control Systems - ICCS 2018, IEEE.**

Shantanu Chatterjee, Saikat Ghosh, & Vrind Paswan.(2018): *"A Novel Hybrid Multi level Inverter for Photovoltaic Application Using Dual Reference Modulation Scheme."*, **In International Conference on Intelligent Computing and Control Systems - ICCS 2018, IEEE.**

Shantanu Chatterjee & Saikat Ghosh. (2018): *"A Technological Review on Space Vector PWM."*, **In International Conference on Intelligent Computing and Control Systems - ICCS 2018, IEEE.**

Book Chapter Published

- **Book Title:-** Foundations and Frontiers in Computer, Communication and Electrical Engineering
  Authors Shantanu Chatterjee, D Shaw & K Bharati.
  Title of Chapter Tuning of fractional-order PID controller-a review
  ISSN No 987-1-138-02877-7.
  Publisher CRC Press
  Year of Publication 2016.

Profile Web Links

- **Google Scholar Profile** Click on this link
- **Publons Profile** Click on this link

Students Guided

PG Dissertation Guided

- Pallab Bhera **"Speed sensor-less Field Oriented Control of a 3-phase induction motor drive used in Electric Vehicles using SVPWM."** *May 2016*
- Prashant Kumar **"Modelling and Simulation of Proportional Resonant Contro ller based Grid Connected Photovoltaic System."** *May 2016*
- Saikat Ghosh **"Novel speed sensor-less vector control of Dual Stator Induction Machine drive used in electric vehicles by using SVPWM."** *May 2017*
- Tapashi Hazarika **"Simulation of Grid Connected P-V System using Fractional Order Phase Shaper"** *May 2017*
- Soumya Ranjan Meher **"Stator Flux Oriented vector of a Dual Stator Induction Generator used in WECS"** *May 2017*
- Ravi Kumar Sinha**"A Multi–Objective optimization based Selective Harmonic Elimination PWM used in grid tied Micro Inverter application"** *May 2018*

UG Project Guided

- 10 UG Projects group have been guided.

Awards

Latest GATE qualification

- Qualified GATE-2013 in Instrumentation Engineering.

Other Achievements

- Served as external examiner for evaluation of M. Tech Dissertation of the 2012 batch of PG Program of Department of Electrical Engineering at NERIST, Nirjuli, 30^{th} May, 2014.
- Served as external subject expert/examiner of the Selection Board of **Arunachal Pradesh Public service Commission** for the post of Lecturer, Govt. Polytechnic of Arunachal Pradesh, 20^{th} August, 2014.
- Received Best Oral Presentation Award of SET Conference of VIT, University, 2011.
- Received School topper Award of securing highest marks in Madhyamik (10^{th}) examination of Durgapur Boys High School, 2006.

Service

Referee for peer-review journals:

- IET Generation,Transmission & Distribution.
- IET Power Electronics.
- IET Electric Power Applications.
- Cogent Engineering (Taylor & Francis).
- IEEE Consumer Electronics Magazine.
- Asian Journal of Control (Wiley).

Projects Granted

Project Details

- **Project Title:***New Simulated Annealing based optimal tunning of Fractional Order Proportional-Integral-Derivative (FO-PID) Controller.*
  Role:*Principle Investigator*
  Funding Organization:*NIT Arunachal Pradesh*
  Funding Amount:*5 Lakhs*
  Period:it 1 Year (2014-2015)

Workshop/FDP offered as Convener or Coordinator

Workshop Details

- **FDP Title:***Advanced Renewable Energy systems and its implications on Electrical Insulation (ARESIEI-2018).*
  Role:*Convener*
  Funding Organization:*TEQIP-III*
  Technical Sponsor*IEEE DEIS Kolkata Chapter*
  Industry Partner*Typhoon HIL*
  Funding Amount:*5 Lakhs*
  Period:*5 days (*19^{th} *to* 23^{rd} *February,2018)*

Major Workshop/FDP attended

- 5 days TEQIP sponsored FDP programme at IIT Kharagpur titled "Faculty develop ment programme on active learning " from 16^{th} to 23^{rd} February, 2018.
- One month MHRD sponsored FDP programme conducted by IIT Kharagpur titled "Electric Power System" from 12^{th} June to 15^{th} June, 2017.
- Two days Lovraj Kumar Memorial Trust (LKMT) sponsored Industry-Academia workshop conducted by Indian Oil, Digboi Refinery, Assam from 19^{th} to 20^{th} February, 2015.
- 5 days UGC sponsored FDP programme at NIT Arunachal Pradesh titled "Advances in Semiconductors, Communication, Electronics & Nano-technology " from 26^{th} to 30^{rd} May, 2014.

Administrative Responsibilities

- M.Tech Course Coordinator of M.Tech REEM in NIT Arunachal Pradesh **(1/07/15 to Till Date)**

- Canteen In-charge in NIT Arunachal Pradesh (**19/01/2018 to Till Date**)
- NBA Departmental In-charge **(Jan 2019 to Till Date)**
- Member of Routine Committee **(2014–2016)**

Departmental activities

- Power Electronics Lab In-charge **(01/01/2015 to Till Date)**
- Energy Lab Lab In-charge **(01/01/2016 to Till Date)**

New Lab Established

- Wind Energy Lab (For M.Tech)
- Electric Drives Lab

Subjects Taught

- Power Electronics-I
- Power Electronics-II
- Applied Power Electronics & Drives
- Wind Energy Conversion System
- Electric Drives
- Control Systems
- Electrical & Electronics Measurement

Professional Membership

- Member IEEE (Membership Id:- 93014269)

Hardware and Software Skills

Simulation Software:

- Matlab, Simulink, PSCAD/EMTP, PSIM

Experimental Data Acquisition System(DAC) handling experience :

- dSPACE (DS-1104), DSC board (eZdsp F28335), LabVIEW

References Available to Contact

Dr. Saibal Chatterjee (e-mail: saibalda@ieee.org; phone: +91-9862035879)

- Professor at the Department of Electrical Engineering
  - ◇ National Institute of Technology, Mizoram, Chaltlang, Aizawl, Mizoram, India
    - ⋆ *Dr. Saibal Chatterjee is Dean (P & D) at NIT Mizoram.*

Dr. Debashis Chatterjee (e-mail: debashisju@yahoo.com; phone: +91-7980324845)

- Professor at the Department of Electrical Engineering
  - ◇ Jadavpur University, West Bengal, 238, M.N.Roy Road,Rajpur, Kolkata, India
    - ⋆ *Dr. Debashis Chatterjee is Senior Member of IEEE.*

Last updated: March 31, 2019