

Dr. Pranjal Barman

Curriculum Vitae

Education

- 2014-2021 **Ph.D.** (*E-Mobility Research Laboratory and Power Electronics Laboratory*), Tezpur University, Tezpur, Assam
- 2011-2013 **M. Tech.** (Electronics Design & Technology), Tezpur University, Tezpur, Assam
- 2006-2008 **M. Sc.** (Electronic Science), Gauhati University, Guwahati, Assam
- 2003-2006 **B. Sc.** (Physics), Nalbari College, affiliated by Gauhati University, Assam
- 2001-2003 **Intermediate Studies** (Science), Nalbari College, affiliated by Assam Higher Secondary Education Council, Assam
- 2001 **Xth standard**, Secondary Education Board of Assam, Belsor Higher Secondary School, Nalbari, Assam

Work Experience

- December 2022-
till date **Post-Doctoral Fellow (ECE)** in IIT Guwahati Technology Innovation and Development Foundation
- October 2021-
November 2022 **Associate Project Engineer** in Electronics & ICT Academy, IIT Guwahati, Guwahati Assam
- February 2021-
September 2021 **Teaching Associate** in the Department of Electronics & Communication Technology, Gauhati University
- July 2013-
December 2013
and February
2011- July 2011 **Guest Teacher** in the Department of Electronics & Communication Technology, Gauhati University
- November 2008-
July 2011 **Senior/Junior Research Fellow** in the project entitled “Special manpower Development Program in VLSI Design & Related Software-II”, IIT Guwahati

Research Interest

Areas	Electric Vehicle Power Electronics Motor Drives Semiconductor Device Modeling Circuit and Sensors
Ph.D. Topic	Modelling and Design of Electronic Differential and Traction Control for Neighbourhood Electric Vehicle
Supervisor	Prof. Santanu Sharma, Department of ECE, Tezpur University, Assam

Teaching Experience

Spring 2021	Postgraduate course in Gauhati University , Applied Quantum Mechanics & Mathematical Methods (1 st Sem)
Autumn 2021	Postgraduate course in Gauhati University , Power Electronics (1 st Sem) & Electrical Machines (4 th Sem)
January 2014- February 2020	Laboratory classes as a Teaching Assistant in Tezpur University , Data Communication (B.Tech 3 rd year), Design and Technology of Electronic Devices (M.Tech 1 st year), Advanced Electronic Devices (M.Tech 1 st year), Modelling and Simulation using FPGA (M.Tech 1 st year), Basic Electronics (B.Tech 2 nd year), Basic Bioelectronics (M.Tech 1 st year)
Autumn 2013	Postgraduate course in Gauhati University , Material Science (1 st Sem)
Spring 2011	Postgraduate course in Gauhati University , Optoelectronics (1st Sem), Fiber Optical Communication Systems (4 th Sem)

International Collaboration

Dr. Brian Azzopardi,
Senior Lecturer II at Malta College of Arts, Science
and Technology (MCAST), Malta
Ph: +356 79008897
Email: Brian.Azzopardi@fir.mt
Link: <https://www.brianazzopardi.eu/>

I have been associated with Dr. Azzopardi from 2018 to till date as an active collaborator. We have been working in various research fields of Electric Vehicle Technology and published/communicated a few peer reviewed journals, conferences and book chapter articles.

National Collaboration

Dr. Lachit Dutta
Assistant Professor, Electronics and Communication
Engineering, Gauhati University, India
Ph: +91 9706647581
Email: lachitdutta@gmail.com
Link: <https://gauhati.ac.in/member/lachit-dutta?aid=NA==&did=Mzk=>

I have been in collaboration with Dr. Lachit Dutta and carried our various research in the field of sensor, actuator, IOT, vehicular and energy technology.

Publications

Peer Reviewed Journals

- 2024 Dutta, L., Bharali, S., **Barman, P.** & Singh, A. “An IoT Enabled Smart pH Monitoring and Dispensing System for Precision Agriculture Application.” **Agricultural Research**, (2024) (IF: 1.4)
- Barman, P.** Electronic differential: A vital component of electric vehicles. **IEEE Potentials**, 43(1), 4-7. (2024)
- Barman, P.**, & Dutta, L. “Charging infrastructure planning for transportation electrification in India: A review.” **Renewable and Sustainable Energy Reviews**, 192, 114265. (2024) (IF: 15.9)
- 2023 Sarma, M. P., Sarma, K. K., & **Barman, P.** “An Optimized and Highly Efficient Low Power RF Energy Harvesting System with Current Boost Technique Designed using 45 nm Technology.” **Applied Energy**, 350, 121756. (2023) (IF: 11.2)
- Barman, P.**, Dutta, L., Bordoloi, S., Kalita, A., Buragohain, P., Bharali, S. and Azzopardi, B. "Renewable Energy Integration with Electric Vehicle Technology: A Review of the Existing Smart Charging Approaches." **Renewable and Sustainable Energy Review**, 183:113518 (2023). (IF: 15.9)
- Hridoy Jyoti Bora, Reetesh Borpatra Gohain, **Pranjal Barman**, Subir Biswas, Neelotpal Sen Sarma, and Anamika Kalita "Assessing CO₂ Adsorption Behavior onto Free-Standing, Flexible Organic Framework-PVDF Composite Membrane: An Empirical Modeling and Validation of an Experimental Data Set." **ACS Omega**, (2023). (IF: 4.1)
- Barman, P.**, Dutta, L. and Azzopardi, B. "Electric Vehicle Battery Supply Chain and Critical Materials: A Brief Survey of State of the Art." **Energies** 16.8 (2023): 3369. (IF: 3.2)
- 2022 Bordoloi, S., Ray, A., **Barman, P.** and Trivedi, G.; “*Investigation of Electric Field Profile and associated parameters with Embedded Metal Layer in Field Plate AlGa_N/Ga_N HEMTs*”, **Journal of Physics: Conference Series, IOP Science**, 2236 012005, 2022.
- 2021 **Barman, P.** and Azzopardi, B.; “*Energy Efficient Torque Allocation Design Emphasis on Payload in a Light-Duty Distributed Drive Electric Vehicle.*”, **IEEE Access**, 9, 118684-118695, 2021. (IF: 3.9)
- Bora, H. J., **Barman, P.**, Sen Sarma, N., and Kalita, A.; “*Film-Based Electronic Volatile Acid Vapor Sensor with Ultrahigh Sensitivity for Real-Time Analysis.*”, **ACS Applied Electronic Materials**, 3(6), 2720–2728, 2021. (IF: 4.7)
- Bora, H. J., **Barman, P.**, Bordoloi, S., Gogoi, G., Gogoi, B., Sen Sarma, N., and Kalita, A.; “*Realization of Multi-configurable Logic Gate Behaviour on Fluorescence Switching Signalling of Naphthalene Diimide Congeners.*”, **RSC Advances** 11 (58), 36781-36781, 2021. (IF: 4.036)
- Sarma, M., **Barman, P.** and Sarma, K. K.; “*Implementation of a Low Power Boost Converter in-line with a Rectifier for RF Energy Harvesting Application*”, **WSEAS Transactions on Circuits and Systems**, DOI: 10.37394/23201.2021.20.23, August, 2021.

- 2020 **Barman, P.**, Gogoi, D., Paul, S., Saikia, N. and Sharma, S., “*Steering Independent Electronic Differential Based Traction Control System for Independent Wheel Drive Neighborhood Electric Vehicle.*”, **Journal of Electrical Systems**, 16(4), 498-514, 2020.
- Barman, P.**, and Sharma, S., “*Electronic Differential Control of Independent Wheel Drive NEV using Drive Current Balancing Strategy.*”, **International Journal of Engineering and Advanced Technology**, 9(3), 1159-1166, 2020.
- 2019 Hazarika, A., **Barman, P.**, Talukdar, C., Dutta, L., Subasi, A., and Bhuyan, M., “*Real-Time Implementation of a Multidomain Feature Fusion Model Using Inherently Available Large Sensor Data.*”, **IEEE Transactions on Industrial Informatics**, 15(12), 6231-6239, 2019. (IF: 12.3)
- 2012 **Barman, P.**, and Paily, R., “*A PZT Based Capacitor for Direct Solar Energy Harvesting and Storing.*”, **International Journal of Emerging Technology and Advanced Engineering**, 2(3), 77-82, 2012.

Book Chapters

- 2022(acc epted) **Barman, P.**, Bordoloi, S. and Azzopardi, B.; “*A Review on Electronic Differential and Traction Control System for Distributed Drive-train Configuration of Electric Vehicle.*”, **Power Electronics for Electric Vehicles and Energy Storage: Emerging Technologies and Developments. Taylor & Francis, CRC press.**
- Kalita, A., Hazarika, I., **Barman, P.**, and Gogoi, B.; “*Metal-Organic Framework based Membranes in Energy Application.*”, **Environmental Sustainability and Industries: Technologies for Solid Waste, Wastewater, and Air Treatment. Elsevier, ISBN: 9780323900348, June, 2022.**
- Barman, P.** and Bordoloi, S.; “*Modelling and Analysis of an Electronic Differential Based Traction Control System for Distributed Drive Electric Vehicle.*”, **Sustainable Energy and Technological Advancements. Springer Nature, Proceedings of ISSETA 2021, ISBN 978-981-16-9033-4, 2022.**
- 2019 Kalita, A. and **Barman, P.**; “*Natural Polymer-based Bionanocomposites as Smart Adsorbents for Removal of Metal Contaminants from Water.*”, **Hybrid Nanocomposites: Fundamentals, Synthesis, and Applications. CRC press, page-343. ISBN: 978-981-4800-34-1, 2019.**

Conferences

- 2022 **Barman, P.**, Dutta, L. and Azzopardi, B., “*Electric Vehicle Battery Supply Chain and Critical Materials: A Brief Survey of State of The Art.*”, The 13th Mediterranean Conference on Power Generation, Transmission, Distribution and Energy Conversion (**MEDPOWER2022**), Malta, 2022.

- 2022 **Barman, P.**, Bordoloi, S. and Hazarika, C., “*On-board Health Prognosis of Lithium-Ion Battery Based on the Estimation of Internal Resistance Under Resistive and Inductive Loading Conditions.*”, International Conference on Advances in Electrical, Computing Communications and Sustainable Technologies (**ICAECT 2022**), Chhattisgarh, 2022.
- 2021 Phukan, H., **Barman, P.**, Saikia, N. and Sharma, S., “*Design and Development of Resonant Gate Drive Circuit for High Power Drive Applications.*”, 1st International Conference on Advances in Electrical, Computing Communications and Sustainable Technologies (**ICAECT 2021**), Chhattisgarh, 2021.
- Barman, P.**, Baruah, P. and Sharma. S., “*An Optoisolator Based Gate Driver Design for Reliable Operation in High Power Motor Control Applications.*”, 1st International Conference on Advances in Electrical, Computing, Communications and Sustainable Technologies (**ICAECT 2021**), Chhattisgarh, 2021.
- 2019 Das, K., Borah, C., Agarwal, S., **Barman, P.** and Sharma. S., “*Road load model analysis for eco-routing navigation systems in electric vehicles.*”, IEEE 89th Vehicular Technology Conference (**VTC2019-Spring**), Kuala Lumpur, Malaysia 2019.
- 2017 Neroula, S., **Barman, P.**, Das, K., Saikia, N. and Sharma, S., “*Design of Electronic Brake Force Distribution in light weight vehicles based on passenger occupancy.*”, International Conference on Computational Strategies for Next Generation Technologies (**NEXTCOM-2017**), Jalandhar, 25th – 26th November 2017.
- Podder, P., Das, K., Neroula, S., **Barman, P.** and Sharma, S., “*Development of an Automated Setup for Dynamic Evaluation of DC Motor Characteristics.*”, International IEEE Calcutta Conference (**CALCON-2017**), Kolkata, 2nd – 3rd December 2017. ISBN: 978-1-5386-3746-3, 2017.
- 2016 **Barman, P.**, and Sharma, S., “*Electronic Vehicle Differential: A review.*”, 3rd International IEEE Conference on Electronics and Communication Systems (**ICECS–2016**), Coimbatore, 25th – 26th February 2016.
- Barman, P.**, Neroula, S. and Sharma, S., “*Modelling and Analysis of Vehicle Occupancy based Torque Distribution in Two Wheel Driving Electric Vehicle.*”, 3rd International IEEE Conference on Electronics and Communication Systems (**ICECS–2016**), Coimbatore, 25th – 26th February 2016.
- 2015 Sarma, S., Pegu, R. and **Barman, P.**, “*Electronic Differential for Electric Vehicle with Single Wheel Reference.*”, Power, Dielectric and Energy Management at NERIST (**ICPDEN**), 2015 1st Conference on IEEE. ISBN:978-1-4799-6458-1, 2015.
- Sharma, S., Sarma, P, Bordoloi, S. and **Barman, P.**, “*Estimation of Coulombic Efficiency of Lead Acid Battery for Range Determination of Electric Vehicle.*”, Power, Dielectric and Energy Management at NERIST (**ICPDEN**), 2015 1st Conference on IEEE. ISBN: 978-1-4799-6458-1, 2015.

Attended Workshops/Training Programs

- November 2023 Invited to participate and attend “*PROMISE (Photovoltaics Reliability Operations and Maintenance Innovative Solutions for Energy Alliance) Advanced School 2023*” organised by the Foundation for Innovation and Research – Malta in conjunction with PROMISE project partners between 6th and 10th November 2023 in Malta. Project under European Union.
- November 2022 Invited to participate and attend “*The 13th Mediterranean Conference on Power Generation, Transmission, Distribution and Energy Conversion (MEDPOWER2022.org) and NEEMO Project School Three (3)*” between the 7th - 12th November 2022 in Malta (funded under Networking for Excellence in Electric Mobility Operations (NEEMO), Project under European Union.
- February 2018. Workshop on “*Global Initiative of Academic Network (GIAN) in Electric Vehicle Design, Modelling & Simulation*”, GB Pant University and Technology, Uttarakhand.
- April 2014 Workshop on “*Recent Advances in Power, Control and Energy*”, NIT Meghalaya, April 2014, Shillong.
- March 2013 Workshop on “*Embedded System Design*”, Calcutta University.
- August 2012 Workshop on “*DST-CSIR Sensor Hub (Kolkata) Workshop*”, CSIR-CGCRI, Kolkata.
- March 2010 Workshop on “*MEMS Technology and Applications*”, NPMASS & NEHU, Shillong.
- June 2009 Workshop on “*Instructor Enhancement Program*”, organized by IIT-Delhi under SMDP-II, Delhi.

Awards and Honors

- 2023 Received a travel support of €500 and stay expenses and subsistence to be fully covered to participate and attend “*PROMISE (Photovoltaics Reliability Operations and Maintenance Innovative Solutions for Energy Alliance) Advanced School 2023* organized by the Foundation for Innovation and Research – Malta in conjunction with PROMISE project partners between 6th and 10th November 2023 in Malta.” Project under European Union.
- 2022 Received a travel support of €500 and a daily allowance of €205 per day to participate and attend “*The 13th Mediterranean Conference on Power Generation, Transmission, Distribution and Energy Conversion (MEDPOWER2022.org) and NEEMO Project School Three (3)*” between the 7th - 12th November 2022 in Malta (funded under Networking for Excellence in Electric Mobility Operations (NEEMO), Project **under European Union**).
- 2015-2020 UGC – Basic Scientific Research Fellowship (**BSR**) for Ph.D.
- 2018-present **Reviewer-** IEEE Transactions on Transportation Electrification, IET Electric Power Applications, IEEE Transactions on Vehicular Technology, Design, Sustainability
- 2016 **IEEE Member** (Membership no : 93966277)

- 2012-2013 UGC – Networking Resource Centre in Physical Sciences (**NRCPS**) Student Fellowship at Institute of Radiophysics and Electronics, University of Calcutta in 2012-2013.
- 2011 Graduate Aptitude Test (**GATE**) in Electronics and Communication Engineering *by* Ministry of Human Resources Development (**MHRD**), Government of India
- 2010 National Eligibility Test (**NET**) in Electronic Science by University Grants Commission (**UGC**), India.

Program Conducted/Involved

- 2022 *“Higher Education of 21st Century”* under E&ICT Academy IIT Guwahati and in association with Nilambazar College, Assam
“Application of ICT Tool for Online Classroom Delivery” under E&ICT Academy IIT Guwahati and in association with Nonoi College, Assam
“Higher Education of 21st Century in Light of National Education Policy-2020” under E&ICT Academy IIT Guwahati and in association with B. Borooah College, Assam
- 2021 *“Research Methodology and Classroom Management Skills”* under E&ICT Academy IIT Guwahati and in association with Nalbari College, Assam
- 2018-2019 Joint Secretary in Tezpur University Alumni Association

Personal Details & Interest

- Date of Birth 3rd December, 1985
- Nationality Indian
- Marital Status Married
- Sports Cricket
- Hobby Reading Book
- Contact pranjalele@gmail.com, pranjalb77@rnd.iitg.ac.in, Ph: +91-8876437012

References

- 1 Prof. Santanu Sharma, Head of the Department of Electronics & Communication Engineering, Tezpur University, Assam, Ph:+91-8876342920, Email: sss@tezu.ernet.in.
- 2 Dr. Brian Azzopardi, Senior Lecturere-II, Malta College of Arts, Science and Technology (MCAST), MCAST Energy, Institute of Engineering & Transport, MCAST Main Campus, Corradino Hill, Paola, Malta, Ph:+35679008897, Email: brian.azzopardi@ieee.org.

- 3 Prof. Kandarpa Kumar Sarma, Head of the Department of Electronics & Communication Engineering, Gauhati University, Assam, Ph:+91-9401454994, Email: kandarpaks@gauhati.ac.in.