

Dr Zohaib Akhtar

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PROFILE:

An experienced academic with research and teaching experience of seven years as a Lecturer/Assistant Professor and four years as a Research Post-graduate/Graduate Teaching Assistant.

MEMBERSHIPS:

Senior Member IEEE (SMIEEE), Fellow of The Higher Education Academy (FHEA), Member IET (MIET), Chartered Engineer (CEng) Engineering Council UK

EDUCATION:

- Sep 2020 -to- Aug 2021 POST-GRADUATE DIPLOMA (PG-DIP ULT), UNIVERSITY LEARNING AND TEACHING, IMPERIAL COLLEGE LONDON, UNITED KINGDOM
- Sep 2019 -to- Aug 2020 POST-GRADUATE CERTIFICATE (PG-CERT ULT), UNIVERSITY LEARNING AND TEACHING, IMPERIAL COLLEGE LONDON, UNITED KINGDOM
- MODULES: How Students Learn, Educational Supervision, Digital Learning, Assessment and Feedback
- Sep 2013 -to- Nov 2017 DOCTOR OF PHILOSOPHY (PHD) AND DIPLOMA OF IMPERIAL COLLEGE (DIC), ELECTRICAL AND ELECTRONIC ENGINEERING, IMPERIAL COLLEGE LONDON, UNITED KINGDOM
- RESEARCH GROUP: Control and Power
 - THESIS TITLE: Distributed Voltage Control and Demand Response
 - SUPERVISOR: Dr Balarko Chaudhuri
- Nov 2008 -to- Oct 2011 MASTER OF SCIENCE (MSc), ELECTRICAL ENGINEERING, UNIVERSITY OF ENGINEERING AND TECHNOLOGY (UET), LAHORE, PAKISTAN, AND UNIVERSITY OF PADERBORN, GERMANY (SPLIT RESEARCH)
UET Lahore is the oldest, biggest and top-ranked public sector engineering university in Pakistan
- SPECIALIZATION: Power Systems
 - THESIS TITLE: Design of Protection Scheme for Microgrids with Multiple Distributed Generation Units
 - SUPERVISOR: Prof M.A. Saqib
 - PERCENTAGE MARKS: 90.20 %
- Sep 2004 -to- Aug 2008 BACHELOR OF SCIENCE WITH HONOURS (BSC HONS), ELECTRICAL ENGINEERING, UNIVERSITY OF ENGINEERING AND TECHNOLOGY (UET), LAHORE, PAKISTAN
- SPECIALIZATION: Power Systems
 - PERCENTAGE MARKS: 88.98 % (Ranked 1st out of 130 students)
 - Awarded a **Gold Medal** by the Prime Minister of Pakistan for securing 1st position in Electrical Engineering specialization in Power Systems on the 19th Convocation of University of Engineering and Technology (UET), Lahore, Pakistan

REFEREED JOURNAL PUBLICATIONS:

GOOGLE SCHOLAR PROFILE: <https://scholar.google.com/citations?hl=en&user=LQJVXVQAAAAJ>

1. **Z. Akhtar**, "Reduction in Energy Storage Requirements for DC/AC Microgrids by Using Power Electronic Compensators," IEEE Transactions on Smart Grid, (Manuscript under-review, 2020).
2. **Z. Akhtar**, M. Opatovsky, B. Chaudhuri, and S. Y. R. Hui, "Comparison of Point-of-Load vs. Mid Feeder Compensation in LV Distribution Networks with High Penetration of Solar Photovoltaic Generation and Electric Vehicle Charging Stations," IET Smart Grid, vol. 2, issue 2, pp. 283-292, 2019. DOI: [10.1049/iet-stg.2018.0193](https://doi.org/10.1049/iet-stg.2018.0193)
3. **Z. Akhtar**, B. Chaudhuri, and S. Y. R. Hui, "Smart Loads for Voltage Control in Distribution Networks," IEEE Transactions on Smart Grid, vol. 8, issue 2, pp. 937-946, 2017. DOI: [10.1109/TSG.2015.2486139](https://doi.org/10.1109/TSG.2015.2486139)
4. **Z. Akhtar**, and M. A. Saqib, "Microgrids Formed by Renewable Energy Integration into Power Grids Pose Electrical Protection Challenges," Renewable Energy, vol. 99, pp. 148-157, 2016. DOI: [10.1016/j.renene.2016.06.053](https://doi.org/10.1016/j.renene.2016.06.053)
5. **Z. Akhtar**, B. Chaudhuri, and S. Y. R. Hui, "Primary Frequency Control Contribution from Smart Loads Using Reactive Compensation," IEEE Transactions on Smart Grid, vol. 6, issue 5, pp. 2356-2365, 2015. DOI: [10.1109/TSG.2015.2402637](https://doi.org/10.1109/TSG.2015.2402637)

- X. Luo, **Z. Akhtar**, C. K. Lee, B. Chaudhuri, S. C. Tan, and S. Y. R. Hui, "Distributed Voltage Control with Electric Springs: Comparison with STATCOM," IEEE Transactions on Smart Grid, vol. 6, issue 1, pp. 209-219, 2015. DOI: [10.1109/TSG.2014.2345072](https://doi.org/10.1109/TSG.2014.2345072)

CONFERENCE PUBLICATIONS:

- Z. Akhtar**, S. Alavi, and K. Mehran, "Voltage Control in LV Networks Using Electric Springs with Coordination," in 31st Annual IEEE Canadian Conference on Electrical and Computer Engineering (CCECE), Québec City, Canada, 13-16 May 2018. DOI: [10.1109/CCECE.2018.8447586](https://doi.org/10.1109/CCECE.2018.8447586)
- Z. Akhtar**, B. Chaudhuri, and S. Y. R. Hui, "Smart Loads for Voltage Control in Distribution Networks," in 2016 IEEE Power and Energy Society General Meeting (PESGM), Boston MA, USA, 17-20 July 2016. DOI: [10.1109/PESGM.2016.7741958](https://doi.org/10.1109/PESGM.2016.7741958)
- L. Xiao, **Z. Akhtar**, L. Chi Kwan, B. Chaudhuri, T. Siew-Chong, and S. Y. R. Hui, "Distributed Voltage Control with Electric Springs: Comparison with STATCOM," in 2016 IEEE Power and Energy Society General Meeting (PESGM), Boston MA, USA, 17-20 July 2016. DOI: [10.1109/PESGM.2016.7741963](https://doi.org/10.1109/PESGM.2016.7741963)
- D. Chakravorty, **Z. Akhtar**, B. Chaudhuri, and S. Y. R. Hui, "Comparison of Primary Frequency Control Using Two Smart Load Types," in 2016 IEEE Power and Energy Society General Meeting (PESGM), Boston MA, USA, 17-20 July 2016. DOI: [10.1109/PESGM.2016.7742050](https://doi.org/10.1109/PESGM.2016.7742050)
- Z. Akhtar**, B. Chaudhuri, and S. Y. R. Hui, "Poster: Smart Loads for Voltage Control in Distribution Networks," in 2015 IEEE Power and Energy Society General Meeting (PESGM), Denver CO, USA, 26-30 July 2015. [Web-Link](#)
- Z. Akhtar**, B. Chaudhuri, and S. Y. R. Hui, "Poster: Distributed Voltage and Frequency Control Using Electric Springs," in 2014 IEEE Power and Energy Society General Meeting (PESGM), National Harbor MD, USA, 27-31 July 2014. [Web-Link](#)

WORK EXPERIENCE:

A. TEACHING EXPERIENCE:

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|------------------------|--|
| Aug 2020 -to- Present | <p>SENIOR TEACHING FELLOW, IMPERIAL COLLEGE LONDON, UNITED KINGDOM</p> <ul style="list-style-type: none"> • Teaching theory classes and laboratory sessions • Leading remote teaching committee during the Covid-19 pandemic • Designing remote and virtual laboratories • Analyzing data to evaluate the impact of pedagogic transformation on teaching and learning to report to the College, the accreditation bodies and the student representatives • Managing teaching evaluations such as SOLE, NSS, and other criteria that directly or indirectly relate to the requirements for the Teaching Excellence Framework (TEF) • Working with the department's IT and the educational team to contribute to the development of the departmental IT strategy and policy |
| Oct 2017 -to- Aug 2020 | <p>STRATEGIC TEACHING FELLOW, IMPERIAL COLLEGE LONDON, UNITED KINGDOM</p> <ul style="list-style-type: none"> • Taught theory classes and laboratory sessions • Managed 2nd-year electronics laboratory • Supervised MSc / MEng theses and industrial placements • Conducted personal tutorials focused on pastoral care • Reviewed curriculum for the department by determining the learning outcomes of all modules • Highlighted the links between different modules based on their learning outcomes which were vital for revising the curriculum • Managed Blackboard (VLE) for the department |
| Sep 2013 -to- Aug 2017 | <p>GRADUATE TEACHING ASSISTANT, IMPERIAL COLLEGE LONDON, UNITED KINGDOM</p> <ul style="list-style-type: none"> • Demonstrated laboratory sessions for Switch Mode Power Supply experiment • Conducted individual interviews with students as part of their final assessment • Taught individual 1st and 2nd-year Mathematics tutorials • Evaluated Professional Engineering course presentations and reports |
| Sep 2008 -to- Sep 2013 | <p>LECTURER / ASSISTANT PROFESSOR, UNIVERSITY OF ENGINEERING AND TECHNOLOGY (UET), LAHORE, PAKISTAN</p> <ul style="list-style-type: none"> • UET is the biggest, oldest, and top-ranked public sector engineering university in Pakistan • Started as a Lecturer in Sep 2008 and was promoted to an Assistant Professor in Dec 2012 • Taught theory classes and laboratory sessions for the following electrical engineering courses: <ul style="list-style-type: none"> • 1st Year: Circuit Analysis and Design • 2nd Year: AC and DC Machines • 3rd Year: Power Transmission and Distribution |

- 4th Year: Electric Machine Design, Power System Protection, Power Systems Operation and Control, and High Voltage Engineering
- Supervised 4th-year projects
- Conducted insulation tests in the department high voltage laboratory
- Organized department timetable

B. RESEARCH EXPERIENCE:

- Aug 2018 -to- Dec 2018 POST-DOCTORAL RESEARCH ASSOCIATE (PART-TIME), **QUEEN MARY UNIVERSITY LONDON, UNITED KINGDOM**
- Worked on development of multi-physics sensor array for power electronic converter prognostics for electric vehicles
 - Created a sensing platform to quantify the health status of power electronic modules within electric vehicle drive systems, using an array of multi-physical sensors to generate a spatially sparse IMAGE of measurements. This IMAGE consists of temperature, electrical quantities (V, I, Z), mechanical displacement (wire bond movement/device deformity) at different time scales
 - Collaborated with four universities and two industrial partners
- Nov 2017 -to- Apr 2018 POST-DOCTORAL RESEARCH ASSOCIATE (PART-TIME), **QUEEN MARY UNIVERSITY LONDON, UNITED KINGDOM**
- Developed control strategies for autonomous control of AC/DC microgrids with energy storage and power electronic compensators for voltage and/or frequency control
 - Completed the project on the co-ordination of power electronic compensators in a distribution system.
 - Provided guidance and supervision to PhD students working in the research group
- Sep 2013 -to- Sep 2017 RESEARCH POSTGRADUATE, **IMPERIAL COLLEGE LONDON, UNITED KINGDOM**
- Developed an integrated approach to voltage and/or frequency control, and demand response in distribution networks by autonomous control of power electronic compensators to increase the number of renewable energy units and electric vehicle charging stations in a power system.
 - Reviewed papers for IEEE Transactions on Smart Grids, IEEE Transactions on Power Delivery and IEEE Transactions on Sustainable Energy
 - Co-supervised MSc/MEng theses
- Sep 2009 -to- Feb 2010 RESEARCH ASSISTANT, **UNIVERSITY OF PADERBORN, GERMANY**
- Worked in LEA Laboratory (Power Electronics and Electrical Drives lab)
 - Participated in the research for the development of a Linear Rail Cab System using linear induction motor technology, and supercapacitors/batteries hybrid energy systems
- Jun 2008 -to- Sep 2008 RESEARCH ENGINEER, **PAK ELEKTRON LIMITED (PEL), PAKISTAN**
- Developed an empirical formula for calculation of stray losses in power transformers
 - Worked on high-frequency modelling of power transformers for optimal insulation calculations

AWARDS AND HONOURS:

- Sep 2013 -to- Sep 2016 COMMONWEALTH SCHOLARSHIP AWARD
- Received Commonwealth Scholarship for pursuing a PhD in Electrical Engineering at Imperial College London.
 - Only 5 PhD scholars were selected for the award out of more than 800 applicants from Pakistan.
- Jul 2014, Jul 2015, Jul 2016 TRAVEL GRANTS
- 2016 IEEE Power and Energy Society General Meeting, Washington, DC, USA
 - 2015 IEEE Power and Energy Society General Meeting, Denver, CO, USA
 - 2014 IEEE Power and Energy Society General Meeting, Boston, MA, USA
- Sep 2012 SOCIAL SECRETARY, TEACHING (ACADEMIC) STAFF ASSOCIATION
- Elected as Social Secretary for the University of Engineering and Technology (UET) Teaching (Academic) Staff Association by securing 308 out of 450 votes from academic staff members of the university
 - Arranged various social events and represented the university on many national and international forums

- Jul 2012 BEST TEACHER
- Ranked 1st out of 43 teachers of the Department of Electrical Engineering based on the teacher evaluation feedback from undergraduate students at University of Engineering and Technology (UET), Lahore, Pakistan
- Dec 2010 GOLD MEDAL
- Awarded a Gold Medal by the Prime Minister of Pakistan for securing 1st position in Electrical Engineering specialization in Power Systems on the 19th Convocation of University of Engineering and Technology (UET), Lahore, Pakistan
- Sep 2009 -to- Feb 2010 EURECA – (EUROPEAN RESEARCH AND EDUCATIONAL COLLABORATION WITH ASIA)
- Research grant to carry out postgraduate research at University of Paderborn, Germany

REFERENCES:

1. Dr Balarko Chaudhuri
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3. Mrs Esther Perea
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