

# Professor Udaya Kumara Madawala

**BE (Hons), PhD**

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**Professor**

**In:** [Department of Electrical, Computer and Software Engineering](#) » [Faculty of Engineering](#)

## Research | Current

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Power electronics is my main field of research. Within this discipline, I have been working on various development and research projects in relation to bidirectional wireless power transfer (WPT), grid integration of renewable energy sources, permanent magnet motor/generator design and control and power converters. At present, I am focusing on bi-directional wireless charging of electric vehicles (EVs) for V2G applications, wired and wireless rapid charging of electric ferries (EFs), high power converters, energy management and mitigating the impacts of EV charging on the grid.

Google Scholar: [Index and Citations](#)

ResearchGate: [Index and Citations](#)

*Research opportunities:*

- *Funding is available for a number of interesting industry projects, related to wireless EV charging, impact of EVs and V2G applications on the grid and PMS motor drives. Priority will be given to applicants who have research experience and own funding.*
- *You may contact me directly*

## Teaching | Current

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Over the years, I have taught numerous courses, covering a wide range of topics. These include electronic design, fundamentals of electricity, electro-magnetics, electric machines, power systems, advanced power systems, power electronics and heavy current electronics. At present, I teach power electronics and energy systems.

## Postgraduate supervision

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1. Bingkun Song
2. Meilin Hu
3. Jayani Karunarathna
4. Gayani Zoyza
5. Dong Weihao
6. Hameed Reza
7. Yuan Song
8. Steven Ruddel
9. Patrin Illenberger
10. Zhijia Wang
11. Su Zhang
12. Bing Li

## Distinctions/Honours

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- Fellow IEEE
- Distinguished Lecturer, IEEE Power Electronics Society

## Responsibilities

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In the past, I have served as the Director of Teaching & Learning in the Department, Member of the Faculty of Engineering Staffing Committee, and as the Associate Dean (International) for Faculty of Engineering. I now serve as Deputy Head of Department ( Research) and Member of the University Disciplinary Committee.

## Areas of expertise

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Power Electronics, Renewable Energy, Wireless (Inductive) Power Transfer, Permanent Magnet Motor Drives, High Power Converters, Battery Charging, V2G Systems

## Committees/Professional groups/Services

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### Professional affiliations

- Associate Editor, IEEE Transactions on Power Electronics
- Member at Large, Administrative Committee, IEEE Power Electronics Society
- Chair, Steering Committee, IEEE Southern Power Electronics Conference (SPEC)

*Keynote Speaker, 5th IEEE Southern Power Electronics Conference SPEC 2019, Santos, Brazil*

*Keynote Speaker, 8th IEEE International Vehicle Power and Propulsion Conference, VPPC 2019, Hanoi, Vietnam*

*Keynote Speaker, 8th IEEE International Conference on Power & Energy, ICPES 2018, Sri Lanka*

*Keynote Speaker, 4th IEEE Southern Power Electronics Conference SPEC 2018, Singapore*

*Keynote Speaker, International Conference on Sustainable Energy Engineering Perth, Australia, 2017*

*Keynote Speaker, The 3rd International Conference on Renewable Energy Technologies (ICRET), Thailand, 2017*

*General Chairman, IEEE Southern Power Electronics Conference SPEC 2018 & 2016, Singapore & New Zealand*

*Keynote Speaker, IEEE International Conference on Power and Renewable Energy, China, 2016*

## Selected publications and creative works (Research Outputs)

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- Liu, Y., Madawala, U. K., Mai, R., & He, Z. (2020). Zero-Phase-Angle Controlled Bidirectional Wireless EV Charging Systems for Large Coil Misalignments. *IEEE TRANSACTIONS ON POWER ELECTRONICS*, 35 (5), 5343-5353. [10.1109/TPEL.2019.2941709](https://doi.org/10.1109/TPEL.2019.2941709)
- Zhao, L., Thrimawithana, D. J., Madawala, U. K., & Hu, A. P. (2020). A Push-Pull Parallel Resonant Converter-Based Bidirectional IPT System. *IEEE TRANSACTIONS ON POWER ELECTRONICS*, 35 (3), 2659-2667. [10.1109/TPEL.2019.2930283](https://doi.org/10.1109/TPEL.2019.2930283)  
Other University of Auckland co-authors: [Lei Zhao](#), [Duleepa Thrimawithana](#), [Aiguo Patrick Hu](#)
- Madawala, U., Thrimawithana, D., Zhao, L., Hu, A., & Song, Y.. Polyphase Hybrid IPT System. 20190348866 [Related URL](#).  
Other University of Auckland co-authors: [Aiguo Patrick Hu](#), [Duleepa Thrimawithana](#)
- Wang, Y., Mi, C. C., Madawala, U. K., Tse, C. K. M., & Marcos Alonso, J. (2019). Guest Editorial: Advanced Technologies Utilised in Wireless Power Transfer Systems. *IET POWER ELECTRONICS*, 12 (10), 2433-2435. [10.1049/iet-pel.2019.0824](https://doi.org/10.1049/iet-pel.2019.0824)
- Song, Y., Madawala, U. K., Thrimawithana, D. J., & Vilathgamuwa, M. (2019). Three-phase bi-directional wireless EV charging system with high tolerance to pad misalignment. *IET POWER ELECTRONICS*, 12 (10), 2697-2705. [10.1049/iet-pel.2018.6279](https://doi.org/10.1049/iet-pel.2018.6279)
- Ruddell, S., Madawala, U. K., & Thrimawithana, D. J. (2019). Dynamic WPT system for EV charging with integrated energy storage. *IET POWER ELECTRONICS*, 12 (10), 2660-2668. [10.1049/iet-pel.2018.5848](https://doi.org/10.1049/iet-pel.2018.5848)

- Zhang, S., & Madawala, U. K. (2019). A Hybrid Model Predictive Multilayer Control Strategy for Modular Multilevel Converters. *IEEE JOURNAL OF EMERGING AND SELECTED TOPICS IN POWER ELECTRONICS*, 7 (2), 1002-1014. [10.1109/JESTPE.2019.2903348](https://doi.org/10.1109/JESTPE.2019.2903348)
- Liu, Y., Madawala, U. K., Mai, R., & He, Z. (2019). *A New Bi-directional Wireless EV Charging Controller Tolerant to Large Pad Misalignments*. Paper presented at 11th Annual IEEE Energy Conversion Congress and Exposition (ECCE), Baltimore, MD. 29 September - 3 October 2019. 2019 IEEE ENERGY CONVERSION CONGRESS AND EXPOSITION (ECCE). (pp. 5).

## Identifiers

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[Save to contacts](#)

[Save to smartphone](#)

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AUCKLAND 1023  
New Zealand



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## Web links

<http://homepages.engineering.auckland.ac.nz/~umad001/>

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