

JU CHENGQUAN

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in [chengquan-ju](https://chengquan-ju.github.io)

SUMMARY

I am working as post-doc research fellow in Energy Research Institute, Nanyang Technological University (ERI@N). My research interest includes energy management, renewable & energy storage planning, hybrid energy storage system, distributed optimization and hierarchical control in microgrids & power systems.

EDUCATION

Ph.D. in Sustainable Earth GPA: 4.83/5
Nanyang Technological University
2013 – 2018 | Singapore, Singapore

M.Sc. in Power Engineering GPA: 4.88/5
Nanyang Technological University
2012 – 2013 | Singapore, Singapore

B.Eng. in Electrical Engineering GPA: 3.44/4
Wuhan University
2008 – 2012 | Wuhan, China

AWARDS

Best Conference Paper Award

2017 | IEEE-EI

Student Travel Grant

2016 | POWERCON

Professional Engineers Board Gold Medal

2013 | Nanyang Technological University

Student Awards

2010 | Wuhan University

SKILLS

Computer Programming

Proficient MATLAB, Simulink, \LaTeX

Intermediate Python, C#, LabVIEW,
PLECS

Elementary Julia, HTML5, CSS,
PHP, MySQL

Language

Proficient Chinese, English

Elementary Japanese

DOCTORAL RESEARCH

My doctoral research aims to develop a novel infrastructure of energy management system for microgrids to assess and optimize the operation involving renewables and energy storages. Several main objectives include:

- Reliability reinforcement with economic evaluation;
- Analysis on costs of energy storage systems;
- Assessment on interactions of hybrid energy storage systems;
- Hierarchical energy management for single microgrids; and
- Development on power flow management for interconnected microgrids.

EXPERIENCE

Nanyang Technological University, Singapore

Current | **Grid-wide intermittency management by aggregation of distributed energy storage systems (DESS)**
Sep 2017

- ▶ To develop a scale-down DESS in HDB blocks for intermittency management and frequency support;
- ▶ To integrate hierarchical controllers with latest algorithms including ramp rate control, frequency regulation and SoC regulation.

May 2017 | **Energy management for microgrids (doctoral)**

- Jan 2014
- ▶ Proposal on optimal power flow (OPF) with worst-case scenarios under uncertainties of loads and renewables & dynamic OPF including energy storages;
 - ▶ Research on energy management system for microgrids with storage degradation costs;
 - ▶ Energy coordination on regional residential community with multiple microgrids.

May 2013 | **Wireless network communication in intelligent trading/metering/billing system (ITMBS)**
Aug 2012

- ▶ Development on network communication and related protocols;
- ▶ Data acquisition & collection in line with Zigbee coordinator by C⁺⁺ & MySQL;
- ▶ Web portal design for ITMBS by using PHP & HTML.

May 2012 | **Design & realization of battery protection & balancing via LabVIEW**

- Jan 2012
- ▶ Battery protection system design focusing on factors that affect battery performance on balancing schemes;
 - ▶ Hardware-in-loop experimental platform with LabVIEW.

PUBLICATIONS

Journal

C. Ju, P. Wang, L. Goel, and Y. Xu, "A two-layer energy management system for microgrids with hybrid energy storage considering degradation costs," *IEEE Trans. on Smart Grid*, vol. 9, no. 6, pp. 6047–6057, 2018.

Conference

C. Ju, Y. Tang, and Y. Wang, "Robust frequency regulation with hybrid energy storage systems in islanded microgrids," in *Asian Conference on Energy, Power and Transportation Electrification (ACEPT 2018)*, Oct. 2018, pp. 1–6.

C. Ju, S. Yao, and P. Wang, "Resilient post-disaster system reconfiguration for multiple energy service restoration," in *1st IEEE Conference on Energy Internet and Energy System Integration*, Nov. 2017, pp. 1–6.

C. Ju and P. Wang, "Two-stage energy management of residential microgrid community using pairing strategy," in *2017 IEEE PES General Meeting*, Jul. 2017, pp. 1–5.

C. Ju and P. Wang, "Optimal power flow with worst-case scenarios considering uncertainties of loads and renewables," in *2016 International Conference on Probabilistic Methods Applied to Power Systems (PMAPS)*, Oct. 2016, pp. 1–7.

C. Ju and P. Wang, "Energy management system for microgrids including batteries with degradation costs," in *2016 IEEE International Conference on Power System Technology (POWERCON)*, Sep. 2016, pp. 1–6.

C. Ju and P. Wang, "Dynamic optimal power flow including energy storage with adaptive operation costs," in *IECON 2015 - 41st Annual Conference of the IEEE Industrial Electronics Society*, Nov. 2015, pp. 561–566.