

THI HA NGUYEN

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RESEARCH INTERESTS

- Power system simulation, Power system stability, Power system operation and control
- Renewable energy modeling, integration and control (wind, Solar), FACTS devices
- Geographically distributed real-time simulation (RTDS)
- Power and control hardware-in-the-loop tests
- Frequency characteristics and control for low inertia systems
- Small-signal analysis

EDUCATIONS

Feb. 2021 – Present	Assistant Research Professor Eversource Energy Center, University of Connecticut (Uconn), Connecticut, USA
Aug. 2018 – Jan. 2021	Postdoctoral Researcher in Power System Department of Electrical Engineering, Technical University of Denmark (DTU), Lyngby, Denmark
Aug. 2015 – Aug. 2018	PhD degree in Power System Department of Electrical Engineering, Technical University of Denmark (DTU), Lyngby, Denmark
Jul. 2012 – Jul. 2014	Master degree in Power System Department of Electrical Engineering, National Cheng Kung University, Taiwan
Jul. 2005 – Jul. 2010	Engineer degree in Power System Department of Electrical Engineering, University of Science and Technology, the University of Danang, Danang, Vietnam

WORK EXPERIENCES

Feb. 2021 – Present	Assistant Research Professor at Eversource Energy Center, University of Connecticut (Uconn), Connecticut, USA <ul style="list-style-type: none">• Leading Real time digital simulator (RTDS) lab for conducting Hardware in the loop simulation, characterizing, validating and verifying renewable-based components before integrating into the power systems• Supervising students• Giving lectures for 2 courses• Developing a training program for Eversource Rotational engineers using real-time digital simulation testbed
Aug. 2018 – Jan. 2021	Postdoctoral Researcher at the Center for Electric Power and Energy (CEE), Department of Electrical Engineering, Technical University of Denmark <ul style="list-style-type: none">• Working on Transnational Access (TA) - ERIGrid project (https://erigrd.eu/transnational-access/): Implementing virtual interconnection of laboratories for large-scale power systems using real-time simulation (RTDS), and

proposing an energy-based metric to evaluate the fidelity of geographically distributed real-time simulation.

- Working on FUTURE project: Developing a hospital smart energy system analysis, design and operation tool using Bornholm Hospital as a testcase. The tool is analyzing the potential technical and economic benefits of smart design and operating of selected energy components in a hospital's energy system, which is connected to public energy grids (electricity, thermal, gas) with dynamic prices for the energy exchanges between the hospital and the public grids.

Aug. 2015 – Aug. 2018

PhD candidate at CEE, Department of Electrical Engineering, Technical University of Denmark, working on SCAAP project (<http://www.scapp.dk/>):

- Developing the future Danish renewable-based power system, which includes wind generators (DFIG, PMSG), LCC-HVDC, VSC-HVDC links and electric components in Real time digital simulator (RTDS).
- Validation of the Danish power system in RTDS from the data of local power system company (TSO Energinet.dk).
- Designing synthetic inertia controller for wind power plant to enhance frequency stability.
- Identifying synchronous condensers for frequency stability enhancement in renewable-based systems.
- Implementing hardware-in-the-loop for the automatic voltage regulator (AVR), protection system of synchronous condensers (SC) in PLC interface with the Danish system in RTDS.
- Verification AVR hardware controller of SC in dynamics and steady-state conditions.
- Designing a power oscillation-damping controller incorporating SC to enhance power oscillation and frequency stability for renewable-based systems.
- Implementing software-in-the-loop simulation for parameter optimization of power oscillation damping controller of SC.
- Writing and presenting technical work in international journals and conferences.
- Being teaching assistant for courses and supervising master students.

Nov. 2017 – Mar. 2018

Visiting Scholar at Centre Energy Research, University of California San Diego (UCSD), California, USA

- Working on installation/commissioning of Synchronous condenser project with Siemens company and San Diego Gas and Electric company.
- Validation the synchronous condenser benefit at Talega substation in Southern California where first two units equipped with advanced control technology were commissioned by Siemens company.
- Working with a research team at UCSD for solar forecasting.

Aug. 2014 – now

Lecturer at University of Science and Technology, the University of Danang, Danang, Vietnam

- Giving lectures (Electrical engineering and Electromagnetic theory).
- Supervising bachelor students.
- Collaborating with local power System Company for different projects.

Jul. 2012 – Jul. 2014

Master degree at Department of Electrical Engineering, National Cheng Kung University, Taiwan

- Modeling wind power generators (DFIG, PMSG) integrated into a power system.
- Analysis the impact of wind power generation on the system stability.
- Designing a power oscillation damping controller incorporating generalized unified power flow controller (GUPFC) to improve the oscillation of the system connected with wind farm (Using PID and fuzzy logic control).
- Programming in Matlab/Simulink.

Aug. 2010 – Jul. 2012

Teaching assistant at University of Science and Technology, the University of Danang, Danang, Vietnam

Teaching assistant for courses (Electrical engineering, power electronics, and Electromagnetic theory)

SKILLS

- Self-motivated, hard-working, able to work independently or as a part of team
- Intimate experience in Real-Time Digital Simulator (RTDS) (Professional with 4 years working for power system simulation, wind and HVDC converter control, and hardware-in-the-loop simulation, software-in-the-loop for control parameter optimization, geographically distributed real-time simulation).
- Good at Matlab/Simulink for power system simulation, design and control.
- Experience in PSCAD and DIgSILENT Power Factory.
- Familiar with many basic and advanced electrical/electronic components and devices required for power system design and testing (such as AC and DC power supplies, multimeters, amplifier, oscilloscope...).
- Hand-on experience with installation/commissioning of power components.
- Working with PLC for hardware-in-the-loop tests for control systems.
- Latex and Microsoft Office (Word, Excel, PowerPoint).

PUBLICATIONS

- [1] H. T. Nguyen, M. N. Chleirigh and G. Yang, "A Technical & Economic Evaluation of Inertial Response from Wind Generators and Synchronous Condensers," **IEEE Access**, 2021. Doi: 10.1109/ACCESS.2021.3049197.
- [2] S. Vogel, H. T. Nguyen, M. Stevic, T. V. Jensen, K. Heussen, V. S. Rajkumar, and A. Monti, "Distributed Power Hardware-in-the-Loop Testings using a Grid-forming Converter as Power Interface," **Energies**, 2020.
- [3] H. T. Nguyen, G. Y. Yang, A. H. Nielsen, P. H. Jensen and B. Pal, "Applying Synchronous Condensers for Damping Provision in Converter-Dominated Power Systems," **Journal of Modern Power Systems and Clean Energy**, 2020.
- [4] H. T. Nguyen, G. Y. Yang, A. H. Nielsen, and P. H. Jensen, "Combination of Synchronous Condenser and Synthetic Inertia for Frequency Stability Enhancement in Low Inertia Systems," **IEEE Transactions on Sustainable Energy**, vol. 10, no. 3, pp. 997-1005, July 2019.
- [5] H. T. Nguyen, G. Y. Yang, A. H. Nielsen, and P. H. Jensen, "Hardware- and Software-in-the-loop Simulation for Parameterizing the Model and Control of Synchronous Condenser," **IEEE Transactions on Sustainable Energy**, vol. 10, no. 3, pp. 1593-1602, July 2019.
- [6] H. T. Nguyen, G. Y. Yang, A. H. Nielsen, P. H. Jensen, and C. F. M. Coimbra, "Control parameterization for power oscillation damping via software-in-the-loop simulation," **IET - The Journal of Engineering**, vol. 2019, no. 18, pp. 4864-4869, Jul. 2019.
- [7] S. Vogel, V. S. Rajkumar, H. T. Nguyen, M. Stevic, R. Bhandia, K. Heussen, P. Palensky, and A. Monti, "Improvements to the co-simulation interface for geographically distributed real-time simulation," in **Proc. the 45th Annual Conference of the IEEE Industrial Electronics Society (IECON'2019)**, 14-17 Oct. 2019, pp. 1–8.
- [8] H. T. Nguyen G. Y. Yang, A. H. Nielsen, and P. H. Jensen, "Challenges and Research Opportunities of Frequency Control in Low Inertia Systems," in **Proc. the 2nd International Conference on Electrical Engineering and Green Energy**, Roma, Italy, Jun. 28-30, 2018, pp. 1-8.

- [9] H. T. Nguyen, C. Guerriero, G. Y. Yang, C. J. Bolton, T. Rahman, and P. H. Jensen, " Talega SynCon - Power Grid Support for Renewable-based Systems," in **Proc. the Western Protective Relay Conference**, WA, USA, Oct. 15-18, 2018, pp. 1-6.
- [10] H. T. Nguyen, G. Y. Yang, A. H. Nielsen, and P. H. Jensen, "Hardware-in-the-Loop Test for Automatic Voltage Regulator of Synchronous Condenser," in **Proc. 20th International Conference on Power Systems and Energy Conversion**, Tokyo, Japan, Mar. 27-28, 2018, pp. 1-6.
- [11] H. T. Nguyen, G. Y. Yang, A. H. Nielsen, and P. H. Jensen, "Frequency stability enhancement for low inertia systems using synthetic inertia of wind power," **2017 IEEE Power & Energy Society General Meeting**, Chicago, IL, 2017, pp. 1-5.
- [12] H. T. Nguyen, G. Y. Yang, A. H. Nielsen, and P. H. Jensen, "Frequency stability improvement of low inertia systems using synchronous condensers," **2016 IEEE International Conference on Smart Grid Communications (SmartGridComm)**, Sydney, NSW, 2016, pp. 650-655.
- [13] L. Wang and H. T. Nguyen, "Stability Enhancement of a Multi-machine System using a Generalized Unified Power Flow Controller (GUPFC)," in **Proc. 2nd International Conference on Green Technology and Sustainable Development**, Hochiminh, Vietnam, 2014, pp. 1-6.
- [14] L. Wang, H. T. Nguyen, C-H. Yan, C. H-Y. Chang, and C-L. Chen, "Impact Analysis of Peng-Hu Power System Connected with a Photovoltaic System," in **Proc. 2nd International Conference on Green Technology and Sustainable Development**, Hochiminh, Vietnam, 2014, pp. 1-5.
- [15] L. Wang and H. T. Nguyen, "Damping improvement of a DFIG-based wind turbine generator connected to an infinite bus using a fuzzy logic controller," **2013 1st International Future Energy Electronics Conference (IFEEC)**, Tainan, 2013, pp. 542-547.

AWARDS

Mar. 2018

Best paper award at the ICPSEC 2018: 20th International Conference on Power Systems and Energy Conversion in Tokyo, Japan, March 27-28, 2018

[Best Paper Award 18JP030067](#)

LANGUAGE SKILLS AND NATIONALITY

- English: Fluent (Speaking, writing, reading, listening)
- Vietnamese: Native
- Nationality: Vietnamese

HOBBIES

- Playing badminton and volleyball
- Travelling
- Photographing

REFERENCES

Guangya Yang **Associate Professor** at the Center for Electric Power and Energy, Department of Electrical Engineering, Technical University of Denmark, Kgs. Lyngby, Denmark. Telephone no: +4553273699. Email: gyy@elektro.dtu.dk

Peter Hojgaard Jensen **Senior Engineer** at Energy Automation, Siemens A/S, 2750 Ballerup, Denmark. Telephone no: +4520268023. Email: peter_hoejgaard.jensen@siemens.com