Spyros (Spyridon) Chatzivasileiadis

Office: Technical University of Denmark, Elektrovej, Building 325, 2800 Kgs. Lyngby, Denmark
spchatz@dtu.dk | +45-53-83-9658 | ORCID: 0000-0003-4698-8694

Education

2013	**ETH Zurich**, Switzerland PhD in Electrical Engineering (Power Systems Laboratory) Advisor: Prof. Göran Andersson Dissertation: "Power system planning and operation methods integrating the controllability of HVDC"
2007	**National Technical University of Athens** (NTUA), Greece Diploma in Electrical and Computer Engineering Advisor: Prof. Nikos Hatziargyriou Thesis: "Development of a Control System for Islanded Power Systems based on Intelligent Agents Technology"
2005	**Technische Universität München**, Germany Exchange Semester
2002	Geitonas High School, Greece Apolytirion

Further Education

2017 – 2018	**Harvard Business School**, MA, USA Executive Leadership Program Selected to attend executive leadership program at Harvard Business School, supported by Innovation Fund Denmark. Learned about leadership, strategy and execution, negotiation, and management of innovation.
2016 – 2017	**Technical University of Denmark**, Denmark Education in University Teaching at DTU Didactics and pedagogics for university teaching. Graduated with the citation: "dedicated and competent teacher able to understand the important factors in teaching which support student learning in an effective way"
2022 – 2023	DTU Leadership Program Leadership Program tailored for DTU managers.

Research Experience

2016 – Current	**Technical University of Denmark**, Denmark **Professor; Head of Section** for Power Systems Previous positions: Group Leader Electric Power Systems (May 2021-Apr 2022); Acting Group Leader Energy Analytics and Markets (Jan-May 2021); Associate Professor (2018 – 2024); Assistant Professor (2016 – 2018). Leader of a group of 33 full-time researchers, including 5 faculty members. Since 2016, research leader of over 15 full-time researchers and PhD students. Have been managing research projects of a total budget of 7 million USD since 2016. *Recipient of the ERC Starting Grant in 2020*. PI of the MULTI-DC project (3.5 million USD) and PI or partner in a number of other research projects. Focus is on machine learning for power systems, zero-inertia grids (North Sea Energy Hub), and combined AC and HVDC grids.
2015 – 2016	**Massachusetts Institute of Technology**, MA, USA Postdoctoral Researcher Worked on the construction of convex stability certificates through semidefinite programming. Focus was on the incorporation of remedial actions which are offered through synthetic inertia, FACTS, and HVDC.

2014 – 2015 | **Lawrence Berkeley National Laboratory**, CA, USA
Postdoctoral Researcher
Technical lead of a research project with 10 scientists to develop a cosimulation platform, called VirGIL, that integrates power system simulation, building modeling and controls for demand response, and communications systems. Awarded a US $5 million grant from the US Department of Energy (DOE) to develop VirGIL to a tool for utilities. Actively participated in the US DOE Scoping Study for DC microgrids. Participated in the ARPA-E project for the development and deployment of micro-synchrophasors in distribution grids. Member of the CIGRE WG C6.22: Microgrids Evolution Roadmap.

2008 – 2014 | **ETH Zurich**, Switzerland
Member of the Scientific Staff
Worked on EU-sponsored IRENE-40 Project. Proposed the first Security-Constrained Optimal Power Flow formulation which takes into account the post-contingency control capabilities of VSC-HVDC lines. Offered network consulting services to TenneT GmbH, Deutschland.

2011 | **University of Liège**, Belgium
Visiting Researcher
Developed two concepts. The Global Grid puts forward the vision of a global electricity grid which will harverst far remote renewable energy sources. The second concept, Towards a Fully Controllable Power System, proposes analytical approaches for the placement of controllable devices, in order to decouple market operations from security considerations.

2007 – 2008 | **NTUA Power Systems Laboratory**, Greece
Research Assistant
Worked on EU-sponsored More Microgrids and EU-DEEP projects. Carried out one of the first field tests worldwide of Multi-agent technology in Microgrids (Kythnos island). Participated in the development of a Virtual Power Plant (VPP).

Teaching Experience

2022 – Current | **46040 - Introduction to Energy Analytics**
Co-course Responsible, Technical University of Denmark
Redesigned and offering the course.

2016 – Current | **46700 - Introduction to Electric Power Systems**
Course Responsible, Technical University of Denmark
Teaching about half of the course material.

2016 – 2020 | **31765 - Optimization in modern power systems**
Course Responsible, Technical University of Denmark
Designed and offered the course. Wrote the lecture notes and the assignments.

2008 – 2012 | **Electric Power Systems**
Teaching Assistant, ETH Zurich
Offered the exercise sessions. Held office hours. Prepared and graded the exams.

Awards

ERC Starting Grant 2020, European Research Council

Best Teacher of the Semester Award, DTU Electical Engineering, Fall Semester 2019/2020

Best Paper Award, Hawaii International Conference on System Sciences (HICSS) 2024

Best Student Paper Award, IEEE Smartgridcomm 2020

Main Supervisor of one of the **Top 7 PhD Theses of DTU in 2021**, *DTU Young Researchers Award 2021*, PhD Student: Andreas Venzke

Languages

English:	Fluent	French, Danish:	Basic knowledge
German:	Fluent	Greek:	Mother tongue

Computer Skills

Programming Languages:	C, Python, Matlab, Java
Power Systems Software:	Powerfactory, PSS/E, Neplan, Powerworld

Professional Activities

2022 – 2023	Associate Editor of IEEE Transactions on Power Systems
since January 2019	Member of the Technical Program Committee of Power Systems Computation Conference
since July 2017	Vice-chair (previously Secretary) of the Basil Papadias Best Paper Award Committee, and member of the International Advisory Committee of IEEE Powertech
2019 – 2020	Guest Editor of the IET Generation, Transmission, Distribution Special Issue on "Advanced data-analytics for power system operation, control, and enhanced situational awareness"
2017-2018	Member of the Technical Program Committee of IET RPG 2018
2017-2018	Member of the Scientific Program Committee of Medpower 2018
2017	Member of the Technical Program Committee of GlobalSIP 2017 (Signal and Information Processing for Smart Grid Infrastructure)
since 2017	CIGRE WG C1.35: Global electricity network feasibility study
2014-2016	CIGRE WG C6.22: Microgrids Evolution Roadmap

Other Activities

2006-2007 Organizing Committee — *1st National Student Conference of Electrical and Computer Engineers, Athens, Greece, 2007*

Had the initiative and formed the Organizing Committee (12 members). The conference created a forum where Greek engineering students present their work, connect, exchange ideas, and listen to distinguished invited speakers (e.g., from UC Berkeley, MIT, GeorgiaTech, EPFL, Merill Lynch, IBM, ABB). The 1st Conference was attended by 860 participants. Since 2007 it is organized by ECE students almost every year [Athens (2008), Thessaloniki (2009), Patras (2010), Xanthi (2012), Athens (2013), ...] with a peak of 1800 attendees in 2009.

Summer 2004 *Volunteerism*

Spectator Assistant, Athens 2004 Olympic Games

1998-2001 *Hellenic Mathematical Society*

Succeeded in 4 Mathematical Contests and was selected as one of the top 25 students in Greece for the year 2000

Memberships

since July 2004 *Senior Member (since 2018)*
Institute of Electrical and Electronic Engineers (IEEE)
Power and Energy Society (PES)

since July 2009 Technical Chamber of Greece

Last updated: April 11, 2024

Publications

PhD Thesis

[1] Spyridon (Spyros) Chatzivasileiadis. *Power System Planning and Operation Methods Integrating the Controllability of HVDC*. PhD thesis, No. 21460, ETH Zurich, Switzerland, 2013.

Journals

[2] Sarthak Gupta, Vassilis Kekatos, and Spyros Chatzivasileiadis. Optimal design of Volt/VAR control rules of inverters using deep learning. *IEEE Transactions on Smart Grid*, pages 1–1, 2024.

[3] Eléa Prat, Irena Dukovska, Rahul Nellikkath, Malte Thoma, Lars Herre, and Spyros Chatzivasileiadis. Network-aware flexibility requests for distribution-level flexibility markets. *IEEE Transactions on Power Systems*, 39(2):2641–2652, 2024.

[4] Jochen Stiasny and Spyros Chatzivasileiadis. Physics-informed neural networks for time-domain simulations: Accuracy, computational cost, and flexibility. *Electric Power Systems Research*, 224:109748, 2023.

[5] Ilgiz Murzakhanov and Spyros Chatzivasileiadis. Decentralized model-free loss minimization in distribution grids with the use of inverters. *Sustainable Energy, Grids and Networks*, 35:101076, 2023.

[6] Ilgiz Murzakhanov, Gururaj Mirle Vishwanath, Kasi Vemalaiah, Garima Prashal, Spyros Chatzivasileiadis, and Narayana Prasad Padhy. A novel decentralized inverter control algorithm for loss minimization and lvrt improvement. *Electric Power Systems Research*, 221:109433, 2023.

[7] Ilgiz Murzakhanov, Sarthak Gupta, Spyros Chatzivasileiadis, and Vassilis Kekatos. Optimal design of volt/var control rules for inverter-interfaced distributed energy resources. *IEEE Transactions on Smart Grid*, 15(1):312–323, 2024.

[8] Sarthak Gupta, Ali Mehrizi-Sani, Spyros Chatzivasileiadis, and Vassilis Kekatos. Deep learning for scalable optimal design of incremental volt/var control rules. *IEEE Control Systems Letters*, 7:1957–1962, 2023.

[9] Spyros Chatzivasileiadis, Petros Aristidou, Ioannis Dassios, Tomislav Dragicevic, Daniel Gebbran, Federico Milano, Claudia Rahmann, and Deepak Ramasubramanian. Micro-flexibility: Challenges for power system modeling and control. *Electric Power Systems Research*, 216:109002, 2023.

[10] Jiawei Wang, Pierre Pinson, Spyros Chatzivasileiadis, Mathaios Panteli, Goran Strbac, and Vladimir Terzija. On machine learning-based techniques for future sustainable and resilient energy systems. *IEEE Transactions on Sustainable Energy*, 14(2):1230–1243, 2023.

[11] Eléa Prat and Spyros Chatzivasileiadis. Learning active constraints to efficiently solve linear bilevel problems: Application to the generator strategic bidding problem. *IEEE Transactions on Power Systems*, 38(3):2376–2387, 2023.

[12] Alyssa Kody, Samuel Chevalier, Spyros Chatzivasileiadis, and Daniel Molzahn. Modeling the AC power flow equations with optimally compact neural networks: Application to unit commitment. *Electric Power Systems Research*, 213:108282, 2022.

[13] Lars Herre, Pierre Pinson, and Spyros Chatzivasileiadis. Reliability-aware probabilistic reserve procurement. *Electric Power Systems Research*, 212:108345, 2022.

[14] Rahul Nellikkath and Spyros Chatzivasileiadis. Physics-informed neural networks for AC optimal power flow. *Electric Power Systems Research*, 212:108412, 2022.

[15] Spyros Chatzivasileiadis, Andreas Venzke, Jochen Stiasny, and Georgios Misyris. Machine learning in power systems: Is it time to trust it? *IEEE Power and Energy Magazine*, 20(3):32–41, 2022.

[16] Andrea Tosatto, Xavier Martínez Beseler, Jacob Østergaard, Pierre Pinson, and Spyros Chatzivasileiadis. North sea energy islands: Impact on national markets and grids. *Energy Policy*, 167:112907, 2022.

[17] Georgios S. Misyris, Andrea Tosatto, Spyros Chatzivasileiadis, and Tilman Weckesser. Zero-inertia offshore grids: N-1 security and active power sharing. *IEEE Transactions on Power Systems*, 37(3):2052–2062, 2022.

[18] Andrea Tosatto, Georgios S. Misyris, Adrià Junyent-Ferré, Fei Teng, and Spyros Chatzivasileiadis. Towards optimal coordination between regional groups: HVDC supplementary power control. *IEEE Transactions on Power Systems*, 37(1):402–415, 2022.

[19] Alessandro Singlitico, Jacob Østergaard, and Spyros Chatzivasileiadis. Onshore, offshore or in-turbine electrolysis? Techno-economic overview of alternative integration designs for green hydrogen production into offshore wind power hubs. *Renewable and Sustainable Energy Transition*, 1:100005, 2021.

[20] George S. Misyris, Spyros Chatzivasileiadis, and Tilman Weckesser. Grid-forming converters: Sufficient conditions for RMS modeling. *Electric Power Systems Research*, 197:107324, 2021.

[21] Vaibhav Nougain, Sukumar Mishra, George S. Misyris, and Spyros Chatzivasileiadis. Multiterminal dc fault identification for mmc-hvdc systems based on modal analysis—a localized protection scheme. *IEEE Journal of Emerging and Selected Topics in Power Electronics*, 9(6):6650–6661, 2021.

[22] Lucien Bobo, Andreas Venzke, and Spyros Chatzivasileiadis. Second-order cone relaxations of the optimal power flow for active distribution grids. *International Journal of Electrical Power and Energy Systems*, 127(106625), 2021.

[23] Andrea Tosatto, Matas Dijokas, Tilman Weckesser, Spyros Chatzivasileiadis, and Robert Eriksson. Sharing reserves through hvdc: potential cost savings in the nordic countries. *IET Generation, Transmission, Distribution*, 15:480– 494, 2021.

[24] Andreas Venzke and Spyros Chatzivasileiadis. Verification of neural network behaviour: Formal guarantees for power system applications. *IEEE Transactions on Smartgrid*, 12(1):383–397, 2021.

[25] Andreas Venzke, Daniel K. Molzahn, and Spyros Chatzivasileiadis. Efficient creation of datasets for data-driven power system applications. *Electric Power Systems Research*, 190:106614, 2021.

[26] Andrea Tosatto and Spyros Chatzivasileiadis. Hvdc loss factors in the nordic power market. *Electric Power Systems Research*, 190:106710, 2021.

[27] Andreas Venzke, Spyros Chatzivasileiadis, and Daniel Molzahn. Inexact convex relaxations for AC optimal power flow: Towards AC feasibility. *Electric Power Systems Research*, 187(106480), October 2020.

[28] Andreas Venzke, Lejla Halilbašić, Adélie Barré, Line Roald, and Spyros Chatzivasileiadis. Chance-constrained AC optimal power flow integrating hvdc lines and controllability. *International Journal of Electrical Power & Energy Systems*, 116(105522), March 2020.

[29] Andrea Tosatto, Tilman Weckesser, and Spyros Chatzivasileiadis. Market integration of hvdc lines: internalizing hvdc losses in market clearing. *IEEE Transactions on Power Systems*, 35(1):451–461, Jan. 2020.

[30] Florian Thams, Andreas Venzke, Robert Eriksson, and Spyros Chatzivasileiadis. Efficient database generation for data-driven security assessment of power systems. *IEEE Transactions on Power Systems*, 35(1):30–41, Jan. 2020.

[31] Lejla Halilbašić, Pierre Pinson, and Spyros Chatzivasileiadis. Convex relaxations and approximations of chance-constrained ac-opf problems. *IEEE Transactions on Power Systems*, 34(2):1459–1470, March 2019.

[32] Andreas Venzke and Spyros Chatzivasileiadis. Convex relaxations of probabilistic ac optimal power flow for interconnected ac and hvdc grids. *IEEE Transactions on Power Systems*, 34(4):2706–2718, July 2019.

[33] Andreas Venzke, Lejla Halilbasic, Uros Markovic, Gabriela Hug, and Spyros Chatzivasileiadis. Convex relaxations of chance constrained AC optimal power flow. *IEEE Transactions on Power Systems*, 33(3):2829–2841, 2018.

[34] Thanh Long Vu, Spyros Chatzivasileiadis, Hsiao-Dong Chiang, and Konstantin Turitsyn. Structural emergency control paradigm. *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, 7(3):371–382, Sep. 2017.

[35] Spyros Chatzivasileiadis, Javier. Matanza, Marco Bonvini, Rongxin Yin, Thierry. Nouidui, Zhenhua Liu, Emre Can Kara, Rajiv Parmar, David Lorenzetti, Michael Wetter, and Sila Kiliccote.

VirGIL: A co-simulation platform for cyber-physical modeling of distributed resources for distribution system operations. *Proceedings of the IEEE*, 104(4):789–806, 2016.

[36] Matthias Bucher, Spyros Chatzivasileiadis, and Göran Andersson. Managing Flexibility in Multi-Area Power Systems. *IEEE Transactions on Power Systems*, 31(2):1218–1226, 2016.

[37] Emil Iggland, Roger Wiget, Spyros Chatzivasileiadis, and Göran Anderson. Multi-Area DC-OPF for HVAC and HVDC grids. *IEEE Transactions on Power Systems*, 30(5):2450–2459, 2015.

[38] Spyros Chatzivasileiadis, Damien Ernst, and Göran Andersson. The Global Grid. *Renewable Energy*, 57:372–383, September 2013.

Peer-Reviewed Conferences

[39] P. Ellinas, S. Chevalier, and S. Chatzivasileiadis. A hybrid quantum-classical algorithm for mixed-integer optimization in power systems. In *Accepted to 23rd Power Systems Computation Conference (PSCC), Paris, France*, pages 1–6, June 2024.

[40] Jochen Stiasny, Baosen Zhang, and Spyros Chatzivasileiadis. Pinnsim: A simulator for power system dynamics based on physics-informed neural networks. In *Accepted to 23rd Power Systems Computation Conference (PSCC), Paris, France*, pages 1–6, June 2024.

[41] R. Nellikkath, A. Venzke, M. K. Bakhshizadeh, I. Murzakhanov, and S. Chatzivasileiadis. Physics informed neural networks for phase locked loop transient stability assessment. In *Accepted to 23rd Power Systems Computation Conference (PSCC), Paris, France*, pages 1–6, June 2024.

[42] Vladimir Dvorkin, Samuel Chevalier, and Spyros Chatzivasileiadis. Emission-constrained optimization of gas networks: Input-convex neural network approach. In *2023 62nd IEEE Conference on Decision and Control (CDC)*, pages 1575–1579, 2023.

[43] S. Chevalier, I. Murzakhanov, and S. Chatzivasileiadis. Gpu-accelerated verification of machine learning models for power systems. In *57th Hawaii International Conference on System Sciences (HICSS)*, pages 1–6, January 2024. **Best Paper Award**.

[44] R. Nellikkath and S. Chatzivasileiadis. Enriching neural network training dataset to improve worst-case performance guarantees. In *IEEE Powertech 2023, Belgrade, Serbia*, pages 1–6, June 2023.

[45] S. Stock, J. Stiasny, D. Babazadeh, C. Becker, and S. Chatzivasileiadis. Bayesian physics-informed neural networks for robust system identification of power systems. In *IEEE Powertech 2023, Belgrade, Serbia*, pages 1–6, June 2023.

[46] V. Dvorkin, S. Chevalier, and S. Chatzivasileiadis. Emission-aware optimization of gas networks: Input-convex neural network approach. In *Climate Change AI Workshop, 11th International Conference on Learning Representations (ICLR)*, pages 1–8, May 2023. **Spotlight Talk at the Climate Change AI Workshop**.

[47] B. Sævarsson, S. Chatzivasileiadis, H. Johannsson, and J. Østergaard. Quantum computing for power flow algorithms: Testing on real quantum computers. In *2022 iREP Symposium - Bulk Power System Dynamics and Control - XI (iREP), Banff, Canada*, 2022.

[48] J. Stiasny, S. Chevalier, R. Nellikkath, B. Sævarsson, and S. Chatzivasileiadis. Closing the loop: A framework for trustworthy machine learning in power systems. In *2022 iREP Symposium - Bulk Power System Dynamics and Control - XI (iREP), Banff, Canada*, 2022.

[49] I. Murzakhanov, A. Venzke, G. S. Misyris, and S. Chatzivasileiadis. Neural networks for encoding dynamic security-constrained optimal power flow. In *2022 iREP Symposium - Bulk Power System Dynamics and Control - XI (iREP), Banff, Canada*, 2022.

[50] S. Chevalier, J. Stiasny, and S. Chatzivasileiadis. Accelerating dynamical system simulations with contracting and physics-projected neural-newton solvers. In *4th Annual Learning for Dynamics & Control Conference (L4DC)*, 2022.

[51] G. Misyris, J. Stiasny, and S. Chatzivasileiadis. Capturing power system dynamics by physics-informed neural networks and optimization. In *IEEE Conference on Decision and Control*, 2021.

[52] J. Stiasny, S. Chevalier, and S. Chatzivasileiadis. Learning without data: Physics-informed neural networks for fast time-domain simulation. In *IEEE SmartgridComm*, 2021.

[53] R. Nellikkath and S. Chatzivasileiadis. Physics-informed neural networks for minimising worst-case violations in dc optimal power flow. In *IEEE SmartgridComm*, 2021.

[54] Y. Lu, I. Murzakhanov, and S. Chatzivasileiadis. Neural network interpretability for forecasting of aggregated renewable generation. In *IEEE SmartgridComm*, 2021.

[55] J. Stiasny, G. S. Misyris, and S. Chatzivasileiadis. Physics-informed neural networks for non-linear system identification applied to power system dynamics. In *IEEE Powertech*, 2021.

[56] E. Prat, L. Herre, J. Kazempour, and S. Chatzivasileiadis. Design of a continuous local flexibility market with network constraints. In *IEEE Powertech*, 2021.

[57] A. Venzke, G. Qu, S. Low, and S. Chatzivasileiadis. Learning optimal power flow: Worst-case guarantees for neural networks. In *IEEE SmartGridComm*, 2020. **Best Student Paper Award**.

[58] G. Misyris, T. Van Cutsem, J. Møller, M. Dijokas, O. Renom-Estragués, B. Bastin, S. Chatzivasileiadis, A. Nielsen, T. Weckesser, J. Østergaard, and F. Kryezi. North sea wind power hub: System configurations, grid implementation and techno-economic assessment. In *Cigre Paris Session*, 2020.

[59] A. Tosatto, M. Dijokas, D. Obradovic, T. Weckesser, R. Eriksson, J. Josefsson, A. Krontiris, M. Ghandhari, J. Østergaard, and S. Chatzivasileiadis. Market integration of hvdc lines: Cost savings from loss allocation and redispatching. In *Cigre Paris Session*, 2020.

[60] G. S. Misyris, A. Venzke, and S. Chatzivasileiadis. Physics-informed neural networks for power systems. In *IEEE PES General Meeting*, 2020. **Selected for the Best Paper Session**.

[61] C. Hidalgo-Arteaga, F. Hancharou, F. Thams, and S. Chatzivasileiadis. Deep learning for power system security assessment. In *IEEE Powertech 2019, Milan, Italy*, pages 1 –6, June 2019.

[62] G. Misyris, S. Chatzivasileiadis, and T. Weckesser. Grid supporting VSCs in power systems with varying inertia and short-circuit capacity. In *IEEE Powertech 2019, Milan, Italy*, pages 1 –6, June 2019.

[63] A. Venzke, L. Halilbasic, A. Barre, L. Roald, and S. Chatzivasileiadis. Chance-constrained AC optimal power flow integrating HVDC lines and controllability. In *11th Mediterranean Conference on Power Generation, Transmission, Distribution and Energy Conversion (Medpower)*, pages 1–6, Nov 2018.

[64] G. Misyris, S. Chatzivasileiadis, and T. Weckesser. Robust frequency control for varying inertia power systems. In *2018 IEEE Innovative Smart Grid Technologies - Europe (ISGT-Europe)*, pages 1–6, Oct 2018.

[65] Andreas Venzke and Spyros Chatzivasileiadis. Convex relaxations of security constrained ac optimal power flow under uncertainty. In *20th Power Systems Computation Conference (PSCC)*, pages 1 –7, June 2018.

[66] Lejla Halilbasic, Florian Thams, Andreas Venzke, Spyros Chatzivasileiadis, and Pierre Pinson. Data-driven security-constrained ac-opf for operations and markets. In *20th Power Systems Computation Conference (PSCC)*, pages 1 –7, June 2018.

[67] F. Thams, S. Chatzivasileiadis, and R. Eriksson. Dc voltage droop control structures and its impact on the interaction modes in interconnected ac-hvdc systems. In *2017 IEEE Innovative Smart Grid Technologies - Asia (ISGT-Asia)*, pages 1–6, Dec 2017.

[68] M. Krutova, L. v. Bremen, and S. Chatzivasileiadis. Novel node selection approach for continent-wide power system studies using spatio-temporal clustering. In *16th Wind Integration Workshop, Berlin, Germany*, October 2017.

[69] F. Thams, L. Halilbasic, P. Pinson, S. Chatzivasileiadis, and R. Eriksson. Data-driven security constrained opf. In *2017 iREP Symposium - Bulk Power System Dynamics and Control - X (iREP), Porto, Portugal*, pages 1 –10, August 2017.

[70] L. Halilbasic, S. Chatzivasileiadis, and P. Pinson. Coordinating flexibility under uncertainty in multi-area ac and dc grids. In *IEEE Powertech 2017, Manchester, UK*, pages 1 –6, June 2017.

[71] F. Thams, S. Chatzivasileiadis, E. Prieto-Araujo, and R. Eriksson. Disturbance attenuation of dc voltage droop control structures in a multi-terminal hvdc grid. In *IEEE Powertech 2017, Manchester, UK*, pages 1 –6, June 2017.

[72] T. L. Vu, S. Chatzivasileiadis, H. D. Chiang, and K. Turitsyn. Structural emergency control for power grids. In *2017 American Control Conference (ACC)*, pages 3418–3423, May 2017.

[73] J. Schmidli, L. Roald, S. Chatzivasileiadis, and G. Andersson. Stochastic ac optimal power flow with approximate chance-constraints. In *IEEE Power and Energy Society General Meeting 2016, Boston, MA, USA*, pages 1 –5, July 2016.

[74] S. Chatzivasileiadis, T. L. Vu, and K. Turitsyn. Remedial actions to enhance stability of low-inertia systems. In *IEEE Power and Energy Society General Meeting 2016, Boston, MA, USA*, pages 1 –5, July 2016.

[75] T. L. Vu, S. Chatzivasileiadis, and K. Turitsyn. Towards electronics-based emergency control in power grids with high renewable penetration. In *American Control Conference 2016, Boston, MA, USA*, pages 1 –8, July 2016.

[76] S. Rotger-Griful, S. Chatzivasileiadis, R. Hylsberg Jacobsen, E. M. Stewart, J. Matanza Domingo, and M. Wetter. Hardware-in-the-loop co-simulation of distribution grid for demand response. In *19th Power Systems Computation Conference (PSCC)*, pages 1 –7, June 2016.

[77] C. Marnay, S. Chatzivasileiadis, J. Geza, C. Abbey, P. Lombardi, R. Iravani, and P. Mancarella. Microgrid evolution roadmap: Engineering, economics, and experience. In *International Symposium on Smart Electric Distribution Systems and Technologies (EDST) 2015*, September 2015.

[78] S. Chatzivasileiadis and G. Andersson. Security constrained OPF incorporating corrective control of HVDC. In *18th Power Systems Computation Conference*, pages 1 –8, August 2014.

[79] A. Ulbig, T. Rinke, S. Chatzivasileiadis, and G. Andersson. Predictive control for real-time frequency control and frequency inertia provision in power systems. In *52nd IEEE Conference on Decision and Control*, pages 1 –8, December 2013.

[80] M. Vrakopoulou, S. Chatzivasileiadis, and G. Andersson. Probabilistic security-constrained optimal power flow including the controllability of HVDC lines. In *IEEE Innovative Smartgrid Technologies (ISGT) 2013*, pages 1 –5, October 2013.

[81] M. Vrakopoulou, S. Chatzivasileiadis, E. Iggland, M. Imhof, T. Krause, O. Mäkelä, J. Mathieu, L. Roald, R. Wiget, and G. Andersson. A unified analysis of security-constrained OPF formulations considering uncertainty, risk, and controllability in single and multi-area systems. In *2013 iREP Symposium - Bulk Power System Dynamics and Control - IX (iREP), Rethymnon, Greece*, pages 1 –19, August 2013.

[82] S. Chatzivasileiadis, T. Krause, and G. Andersson. Supergrid or local network reinforcements, and the value of controllability – an analytical approach. In *IEEE Powertech 2013*, pages 1 –6, June 2013.

[83] S. Chatzivasileiadis, T. Krause, and G. Andersson. HVDC line placement for maximizing social welfare – an analytical approach. In *IEEE Powertech 2013*, pages 1 –6, June 2013.

[84] S. Chatzivasileiadis, T. Krause, and G. Andersson. Security-constrained optimal power flow including post-contingency control of VSC-HVDC lines. In *XII SEPOPE, Rio de Janeiro, Brazil*, pages 1 –12, May 2012.

[85] T. Krause, S. Chatzivasileiadis, M. Katsampani, and G. Andersson. Impacts of grid reinforcements on the strategic behavior of power market participants. In *9th International Conference on the European Energy Market (EEM), Florence, Italy*, pages 1 –8, May 2012.

[86] S. Koch, M.D. Galus, S. Chatzivasileiadis, and G. Andersson. Emergency control concepts for future power systems. In *18th IFAC World Congress, Milan, Italy*, pages 1 –9, August 2011.

[87] A. Ulbig, M. Arnold, S. Chatzivasileiadis, and G. Andersson. Framework for multiple time-scale cascaded MPC application in power systems. In *18th IFAC World Congress, Milan, Italy*, pages 1 –9, August 2011.

[88] S. Chatzivasileiadis, M. Bucher, M. Arnold, T. Krause, and G. Andersson. Incentives for optimal integration of fluctuating power generation. In *17th Power Systems Computation Conference (PSCC), Stockholm, Sweden*, pages 1–8, August 2011.

[89] S. Chatzivasileiadis, T. Krause, and G. Andersson. Flexible AC transmission systems (FACTS) and power system security – a valuation framework. In *IEEE Power and Energy Society General Meeting 2011, Detroit, USA*, pages 1 –8, July 2011.

[90] S. Chatzivasileiadis, M.D. Galus, Y. Reckinger, and G. Andersson. Q-learning for optimal deployment strategies of frequency controllers using the aggregated storage of PHEV fleets. In *IEEE PowerTech 2011, Trondheim, Norway*, pages 1 –8, June 2011.

[91] S. Koch, S. Chatzivasileiadis, M. Vrakopoulou, and G. Andersson. Mitigation of cascading failures by real-time controlled islanding and graceful load shedding. In *2010 iREP Symposium - Bulk Power System Dynamics and Control - VIII (iREP), Buzios, Brazil*, pages 1 –19, Aug. 2010.

[92] A. Ulbig, M.D. Galus, S. Chatzivasileiadis, and G. Andersson. General frequency control with aggregated control reserve capacity from time-varying sources: The case of PHEVs. In *2010 iREP Symposium - Bulk Power System Dynamics and Control - VIII (iREP), Buzios, Brazil*, pages 1 –14, Aug. 2010.

[93] A.L. Dimeas, S.I. Hatzivasiliadis, and N.D. Hatziargyriou. Control agents for enabling customer-driven microgrids. In *IEEE Power and Energy Society General Meeting 2009, Calgary, Canada*, pages 1 –7, July 2009.

[94] A. Dimeas, N. Hatziargyriou, S. Chatzivassiliadis, P. Moutis, and T. Tomtsi. Multi-agent system for creation of virtual power plant (VPP) with aggregated and decentralized control. In *3rd International Conference on Integration of Renewable and Distributed Energy Recources (IRED), Nice, France*, December 2008.

[95] A. Dimeas, N. Hatziargyriou, and S. Chatzivasiliadis. Design of an agent based virtual power plant with aggregated load. In *6th Mediterranean Conference and Exhibition on Power Generation, Transmission and Distribution (MedPower), Thessaloniki, Greece*, November 2008.

[96] A. Dimeas, N. Hatziargyriou, and S. Hatzivasiliadis. Implementation of agent based control for microgrids in the island of Kythnos. In *6th Mediterranean Conference and Exhibition on Power Generation, Transmission and Distribution (MedPower), Thessaloniki, Greece*, November 2008.

[97] S.J. Chatzivasiliadis, N.D. Hatziargyriou, and A.L. Dimeas. Development of an agent based intelligent control system for microgrids. In *IEEE Power and Energy Society General Meeting 2008, Pittsburgh, USA*, pages 1 –6, July 2008.

Book Chapters

[98] S. Chatzivasileiadis and D. Ernst. Towards a Global Grid: The state of play in cross-border electricity markets. In Thomas Cottier, editor, *International Trade in Electricity and the Greening Economy*. Cambridge University Press, 2017.

[99] S. Chatzivasileiadis, D. Ernst, and G. Andersson. Global power grids for harnessing world renewable energy. In Lawrence E. Jones, editor, *Renewable Energy Integration: Practical Management of Variability, Uncertainty and Flexibility in Power Grids*. Elsevier, 2014.

Further Publications

[100] S. Backhaus, G.W. Swift, S. Chatzivasileiadis, W. Tschudi, S. Glover, M. Starke, J. Wang, M. Yue, and D. Hammerstrom. DC microgrids scoping study —- estimate of technical and economic benefits. LA-UR-15-22097. Study funded by the Office of Electricity Delivery and Energy Reliability of the U.S. Department of Energy, 2015.

[101] C. Marnay, C. Abbey, G. Joos, K. Ash, S. Bando, M. Braun, S. Chatzivasileiadis, J. Driesen, N. Hatziargyriou, R. Iravani, G. Jimenez, F. Katiraei, P. Lombardi, K. Lunch, P. Mancarella,

D. Moneta, C. Moreira, A. Oudalov, M. Khattabi, G. Morris, Y. Nakanishi, J. Reilly, M. Ross, T. Shinji, and J. von Appen. Microgrids 1: Engineering, economics, experience. WG C6.22: Microgrids Evolution Roadmap, Technical Report (Brochure), Cigre, 2014.

[102] Spyros Chatzivasileiadis. Transmission investments in deregulated electricity markets. Technical Report, ETH Zurich, EEH Power Systems Laboratory, 2012. [Online]: http://e-collection.library.ethz.ch/view/eth:5559.

Research Grants

Horizon Europe. ODEON – Federated Data and Intelligence Orchestration & Sharing for the Digital Energy TransitioN. 48 months. Total: 26'600'000 EUR; for DTU: 627'000 EUR.

Horizon Europe. SYNERGIES – Shaping consumer-inclusive data pathways towards the energy transition, through a reference energy data space implementation. 42 months. Total: 8'000'000 EUR; for DTU: 530'000 EUR.

ERC Starting Grant 2020. VeriPhIED – Verified physics-aware machine learning to transform nonlinear power system stability and optimization. 60 months. Total: 1'500'000 EUR. Principal Investigator.

EU Horizon 2020. FLEXGRID – A novel smart grid architecture that facilitates high RES penetration through innovative markets towards efficient interaction between advanced electricity grid management and intelligent stakeholders. 36 months. Total: 3'900'000 EUR; for DTU: 433'650 EUR.

Innovation Fund Denmark. ID-EDGe – Indo-Danish collaboration for data-driven control and optimization for a highly efficient distribution grid. 36 months, 2'500'000 DKK. Principal Investigator.

Danish Energy Agency – Energy Technology Development and Demonstration Program (EUDP). NSEH – North Sea Energy Hub Pre-feasibility Study. 20 months, 2'200'000 DKK. Principal Investigator.

Danish Innovation Fund, Grand Solutions – Energy. MULTI-DC – Innovative Methods for Optimal Operation of Multiple HVDC connections and Grids. 48 months, 25'7000'000 DKK. Together with Jacob Østergaard. Co-Principal Investigator.

California Energy Commission, Electric Program Investment Charge (EPIC). DC Current as an Integrating and Enabling Platform. 36 months, 1'000'000 USD. Start date: July 2015. Together with William Tschudi, Richard Brown, Gerald Robinson, Evangelos Vossos.

US Department of Energy, SunShot National Laboratory Multiyear Partnership (SunShot SuNLaMP). CyDER: A Cyber Physical Co-simulation Platform for Distributed Energy Resources in Smart Grids. 36 months, 4'700'000 USD. Together with Emma Stewart, Michael Wetter, Emre C. Kara.

External Research Stays

ETH Zurich, Switzerland. *Visiting Professor.*	Jan.-Jun. 2023.	Host: Prof. G. Hug
Skolkovo Institute of Technology (Skoltech), Russia.	Nov. 2016.	Host: Prof. J. Bialek
Massachusetts Institute of Technology, MA, USA.	Jul. 2016.	Host: Prof. K. Turitsyn
ETH Zurich, Switzerland.	Aug.-Oct. 2015.	Host: Prof. F. Dörfler
University of Liège, Belgium.	May-Jun. 2011.	Host: Prof. D. Ernst

PhD Supervision (Main PhD supervisor, except if otherwise indicated)

12. Emilie Jong. Physics-Informed Machine Learning to Enhance Power System Flexibility. Incoming, September 2023-ongoing.

12. Ignasi Ventura Nadal. Physics-Informed Neural Networks for Power System Dynamic Simulations. September 2023-ongoing.
11. Petros Ellinas. Quantum Computing for Machine Learning Applications in Power Systems. August 2023-ongoing.
10. Brynjar Sævarsson. Power System Security Assessment with Quantum Computing. December 2021-ongoing.
9. Rahul Nellikkath. Machine Learning and Optimization for power systems. Technical University of Denmark. December 2020-ongoing.
8. Jochen Stiasny. Machine Learning techniques for power systems. Technical University of Denmark. December 2019-June 2023. PhD Examination Committee: Prof. Michael Chertkov, Prof. Damien Ernst, Dr. Tuhfe Göçmen.
7. Ilgiz Murzakhanov. Data-driven Approaches for Power Grids. Technical University of Denmark. June 2019-February 2023. PhD Examination Committee: Prof. Kyri Baker, Prof. Petros Aristidou, Prof. Jalal Kazempour.
6. Anders Eltved. Convex Relaxation Techniques for Nonlinear Optimization. Technical University of Denmark. January 2018-March 2021. Co-supervisor. Graduated. PhD Examination Committee: Prof. Daniel Bienstock, Prof. Miguel F. Anjos, Prof. Matthias Stolpe.
5. Andrea Tosatto. Advanced optimization methods for flexible HVDC grids. Technical University of Denmark. October 2017-June 2021. Graduated. PhD Examination Committee: Prof. Gabriela Hug, Prof. Josh Taylor, Prof. Nicolaos A. Cutululis.
4. Georgios Misyris. Stability and control of AC/HVDC grids in varying inertia systems. Technical University of Denmark. September 2017-June 2021. Graduated. PhD Examination Committee: Prof. Dirk Van Hertem, Dr. Robin Preece, Prof. Poul Sørerensen.
3. Andreas Venzke. Optimization, Control, and Stability of Combined AC and DC Grids under Uncertainty. Technical University of Denmark. June 2017-November 2020. Graduated. PhD Examination Committee: Prof. Duncan Callaway, Prof. Andy Sun, Prof. Jalal Kazempour.
2. Lejla Halilbasic. Economic Market Operation of HVDC Grids under uncertainty. Technical University of Denmark. March 2016- May 2019. Graduated. PhD Examination Committee: Prof. Ian Hiskens, Prof. Anthony Papavasiliou, Prof. Jalal Kazempour.
1. Florian Thams. Control impact assessment of HVDC links in the European system. Technical University of Denmark. March 2016- December 2018. Graduated. PhD Examination Committee: Prof. Louis Wehenkel, Prof. Oriol Gomis-Bellmunt, Dr. Nicolaos A. Cutululis.

Postdocs

Johanna Vorwerk. PhD Degree: ETH Zurich, Switzerland. Nov. 2023-present.

Agnes Nakiganda. PhD Degree: Univ. of Leeds, UK. Jul. 2021-present.

Sam Chevalier. PhD Degree: MIT, USA. Feb. 2021-Aug. 2023.

Lars Finn Herre. PhD Degree: KTH, Sweden. Oct. 2020-present.

Alessandro Singlitico. PhD Degree: National Univ. of Ireland, Galway. Oct.2019-Mar.2022.

Research Assistants

Karoline Reich. MSc Degree: Univ. of Copenhagen. Sep. 2022-present.

Brynjar Sævarsson. MSc Degree: DTU. Jan. 2021-Nov. 2021.

Eléa Marie Prat. MSc Degree: DTU. Nov. 2019-Nov. 2021.

Matas Dijokas. MSc Degree: DTU. Jan. 2018-Oct. 2021.

Ona Renom Estragues. MSc Degree: UPC, Spain and DTU. Jul. 2019-Sep. 2020.

Research Visitors

Prof. Pierluigi Mancarella. *Otto Mønsted Visiting Professor*. University of Melbourne, Australia. Jun.-Jul. 2024.

Indrajit Chaudhuri. Indian Institute of Technology Kharagpur, India. May-Jul. 2024.

Prof. Vassilis Kekatos. *Visiting Professor*. Virginia Institute of Technology (VirginiaTech), USA. Sep.-Dec. 2022.

Prof. Christian Rehtanz. *Visiting Professor*. TU Dortmund, Germany. Feb.-Apr. 2022.

Matthew Bossart. Univ. of Colorado, Boulder, USA. Apr.-Jun. 2023.

Rashmi Prasad. Indian Institute of Technology, Roorkee, India. Jan.-Mar. 2023.

Simon Stock. TU Hamburg, Germany. Sep.-Dec. 2022.

Tabia Ahmad and Robert Hamilton. Univ. of Strathclyde, Scotland. Jun. 2022.

Irena Dukovska. TU Eindhoven, Netherlands. Mar.-July 2021.

Vaibhav Nougain. Indian Institute of Technology, Delhi, India. Jun.-Aug. 2019.

Fiodar Hancharou. Skolkovo Institute of Technology (Skoltech). Sep.-Nov. 2018.

PhD Examination Committees

33. Irena Dukovska. Integrating and Coordinating User-Centric Electricity Markets and Distribution System Operation. Technical Univ. Eindhoven, Netherlands. May 2024.
32. Sylvie Koziel. Data management improvements in the electrical grid: a pathway to a smarter cyber-physical system. KTH – Royal Institute of Technology, Sweden. April 2024.
31. Parisa Rahdan. Distributed photovoltaics provides key benefits for a highly renewable European energy system. Aarhus University, Denmark. August 2023. Mid-term PhD exam.
30. Minas Chatzos. Advances in Large-Scale Power System Operations: Reconstruction, Reliability, Learning. Georgia Institute of Technology, GA, USA. May 2023.
29. Spyridon Chapaloglou. Data-driven sizing and control of energy storage for wind-powered offshore platforms. Norwegian University of Science and Technology, Norway. March 2023.
28. Chenguang Wang. Anomaly Detection and Synthetic Data Generation for Power Systems using Autoencoder Neural Networks. TU Delft, Netherlands. March 2023.
27. Kostas Steriotis. Optimization and Game Theory Methods for Smart Energy Grids. National Technical University of Athens, Greece. October 2022.
26. Hannes Hagmar. Data-driven methods for real-time dynamic stability assessment and control. Chalmers University of Technology, Sweden. September 2022.
25. Marija Markovic. Improved Observability of Low-Voltage Grids. University of Colorado, Boulder, USA. September 2022. Doctoral Comprehensive Examination.
24. Dimitrios Lagos. Contribution to the Operation of Non-interconnected Islands with high penetration of Renewable Energy Sources (in Greek). National Technical University of Athens, Greece. July 2022.
23. Anubhav Ratha. Market Design for Integrated Energy Systems of the Future. Technical University of Denmark, Singapore. June 2022. Chairman of the Assessment Committee.

22. Yan Ziming. Data-Driven Operation and Control for Power Systems with High-Level Renewable Energy Resources. Nanyang Technological University, Singapore. April 2022.

21. Leon Joachim Schwenk-Nebbe. Heterogeneous Carbon Dioxide Emission Constraints in the European Energy System. Aarhus University, Denmark. April 2022.

20. Phurailatpam Chitarajan Sharma. Estimation of Synchronous and Non-Synchronous Inertia in Renewable Energy Dominated Systems. Indian Institute of Technology (IIT) Bombay, India and Monash University, Australia. February 2022.

19. Seyedali Meghdadi. Improving the data-driven transient stability assessment of power systems. Monash University, Australia. October 2021.

18. Laurine Duchesne. Machine Learning of Proxies for Power Systems Reliability Management in Operation Planning. University of Liège, Belgium. July 2021.

17. Dimitrios Lagos. Contribution to the Operation of Non-interconnected Islands with high penetration of Renewable Energy Sources (in Greek). National Technical University of Athens, Greece. July 2021. Mid-Term Assessment.

16. Christina Hildebrandt Lüthje Jørgensen. Evaluation of Factorization Methods for Thévenin Equivalent Computations in Real-Time Stability Assessment. Technical University of Denmark. June 2021. Chairman of the Assessment Committee.

15. Vladimir Dvorkin. Stochastic and Private Energy System Optimization. Technical University of Denmark. March 2021. Chairman of the Assessment Committee.

14. Nicola Viafora. Flexible Utilization of Transmission Grid Capacity for Wind Power Integration. Technical University of Denmark. October 2020. Chairman of the Assessment Committee.

13. Yiju Ma. Integrated Modelling of Distribution Networks for Strategic Valuation of Distributed Energy Resources Deployment and Investment. University of Sydney, Australia. September 2020.

12. Juan Andres Perez Rua. Electrical Network Design for Offshore Wind: Analysis, Mathematical Modelling, and Optimization. Technical University of Denmark. September 2020. Chairman of the Assessment Committee.

11. Leon Joachim Schwenk Nebbe. Synergies of Collaboration in a Decarbonising European Electricity System. Aarhus University, Denmark. August 2020. Mid-term PhD exam.

10. Gururaj MV. Performance Investigation of a DFIG Interfaced with a Microgrid. Indian Institute of Technology, Roorkee, India. April 2020.

9. Kateryna Morozovska. Dynamic Rating with Applications to Renewable Energy. KTH - Royal Institute of Technology, Stockholm, Sweden. January 2020.

8. Hanmin Cai. Demand Response for Integrated Heat and Electricity Systems. Technical University of Denmark. December 2019. Chairman of the Assessment Committee.

7. Lesia Mitridati. Market-Based Coordination of Heat and Electricity Systems. Technical University of Denmark. May 2019. Chairman of the Assessment Committee.

6. Christos Ordoudis. Market-based Approaches for the Coordinated Operation of Electricity and Natural Gas Systems. Technical University of Denmark. December 2018. Chairman of the Assessment Committee.

5. Dmitry Shchetinin. Optimization of Power System Operation: Approximation, Relaxations, and Decomposition. ETH Zurich, Switzerland. November 2018.

4. Iasonas N. Kouveliotis-Lysikatos. Contribution to the development of distributed algorithms for the control and operation of smart distribution networks (Greek). National Technical University of Athens, Greece. July 2018. Mid-term assessment.

3. Tetiana Bogodorova. Modelling, model validation and uncertainty idntification for power system analysis. KTH - Royal Institute of Technology, Stockholm, Sweden. December 2017. Opponent.

2. Evangelos Karfopoulos. Contribution to electric vehicle management for their more efficient integration in electric power systems (Greek). National Technical University of Athens, Greece. March 2017.

1. Sébastien Mathieu. Flexibility services in the electrical system. University of Liège, Belgium. March 2016.

Invited Talks

51. *IEEE Power and Energy General Meeting (PES GM) 2023*, Orlando, FL, USA. Panel Session on "Emerging High Performance Computing Applications in the Power Grid". Quantum Computing for Power Systems.

50. *Hitachi Energy,* Switzerland. May 2023. Machine Learning for Power Systems: Is it time to trust it?

49. *EPFL,* Switzerland. May 2023. Machine Learning for Power Systems: Is it time to trust it?

48. *Luxembourg Institute of Science and Technology*. ML4SCOPF Workshop. April 2023. Machine Learning for Power Systems: Is it time to trust it?

47. *ETH Zurich*, Switzerland. National Competence Center for Research in Automation Seminar. April 2023. Machine Learning for Power Systems: Is it time to trust it?

46. *TU Delft*, Netherlands. PowerWeb Institute Lunch Lecture. March 2023. Machine Learning for Power Systems: Is it time to trust it?

45. *Los Alamos Grid Science Winter School*, Santa Fe, USA. January 2023. Machine Learning for Power Systems: Is it time to trust it?

44. *Georgia Institute of Technology, USA.* AI4OPT Seminar Series. October 2022. Machine Learning for Power Systems: Is it time to trust it?

43. *IEEE Power and Energy General Meeting (PES GM) 2022*, Denver, CO, USA. PSDP Working Group on Power System Dynamic Modeling. July 2022. Micro-Flexibility: Challenges for Power System Modelling and Control.

42. *IEEE Conference on Decision and Control (CDC) 2021*, online. Uncertainty Management in Power System Dynamics Workshop. December 2021. Physics-Informed Neural Networks for Power Systems Dynamics.

41. *IEEE Workshop on Machine Learning for Power Systems*, online. November 2021. Neural Network Applications for Power Systems: Is it time to trust them?

40. *US National Academy of Engineering and European Council of Academies of Applied Sciences, Technologies, and Engineering, 2021 EU-US Frontiers of Engineering*, USA (online). November 2021.Trustworthy AI to Remove Barriers for Machine Learning in Power Systems

39. *INFORMS 2021*, USA (online). October 2021. Remove barriers for Machine Learning Applications in Power Systems.

38. *IEEE Powertech*, Portugal (online). Special Session on Big data and Machine learning for Power Systems. June 2021. Interpretability and verification of neural networks: Removing barriers for power system applications.

37. *c3.ai Workshop:Machine Learning for a Resilient, Secure, Carbon-Free Electricity Supply*, USA (online). June 2021. Remove barriers for Machine Learning Applications in Power Systems.

36. *Newcastle University*, UK (online). March 2021. Using Optimization to remove barriers for Machine Learning Applications in Power Systems.

35. *Machine Learning NeEDS Mathematical Optimization Seminar Series* (online). January 2021. Optimization to remove barriers for Machine Learning Applications in Power Systems.

34. *Los Alamos Grid Science Winter School and Conference*, USA (online). January 2021. Physics-Informed Neural Networks for Power Systems.

33. *GeorgiaTech Energy Systems and Optimization Workshop*, USA (online). December 2020. Optimization to remove barriers for Machine Learning Applications in Power Systems.

32. *Imperial College London*, UK (online). September 2020. Machine Learning for Power Systems: Physics-Informed Neural Networks and Verification.

31. *PMAPS 2020 Panel Session*, Liege, Belgium (online). August 2020. Machine learning for power systems: present and future.

30. *IEEE PES GM 2020*, Montreal, Canada (online). Panel Session on "Learning to Optimize Transmission Systems" August 2020. Neural Networks for Optimal Power Flow: Capturing previously intractable security constraints.

29. *IEEE PES GM 2020*, Montreal, Canada (online). Panel Session on "Machine Learning for Power System and Operation". August 2020. Neural Network Verification for Power System Operation

28. *PSCC 2020 Roundtable Discussion*, Porto, Portugal (online). May 2020. Machine learning for power systems: present and future.

27. *European Control Conference 2020*, St. Petersburg, Russia (online). May 2020. From Decision Trees and Neural Networks to MILP: Power System Optimization Considering Dynamic Stability Constraints.

26. *IEEE PES Big Data Tutorial*, Online Webinar. April 2020. Machine Learning for Power Systems: Physics-Informed Neural Networks and Verification.

25. *1st Adelaide Power Systems Summer School*, University of Adelaide, Australia. February 2020. Machine Learning for Power System Applications.

24. *4th Hellenic International Power Group Workshop*, National Technical University of Athens, Greece, December 2019. North Sea Energy Hub 2030: Building artificial islands to cover Europe's electricity demand by Offshore Wind.

23. *ENTSO-e*, Brussels, Belgium, February 2019. Invited to speak at the "ENTSO-e Market Design 2030 Expert Workshop". Topic: Data-driven Security-Constrained Optimal Power Flow.

22. *ETH Zurich*, Switzerland, November 2018. Data-driven Security-Constrained Optimal Power Flow.

21. *Climate Parliament*, New Delhi, India, December 2017. Thinking Big: Towards a Global Power Grid.

20. *Energinet*, Fredericia, Denmark, October 2017. MULTI-DC: Controlling the power flows.

19. *Oxford University*, Oxford, UK, May 2017. Semidefinite Programming for Power System Stability and Chance-Constrained Optimization.

18. *Stanford Smartgrid Seminar Series, Stanford University*, Palo Alto, CA, USA, April 2017. Semidefinite Programming for Power System Stability and Chance-Constrained Optimization.

17. *MOSEK Workshop on Semidefinite Optimization in Power Flow Problems*, Copenhagen, Denmark, February 2017. Semidefinite Programming for Power System Stability and Optimization.

16. *International Conference on Future Electric Power Systems and the Energy Transition*, Champéry, Switzerland, February 2017. Convex Relaxations for Optimization of Power Grids Under Uncertainty.

15. *1st Hellenic International Power Group Workshop*, National Technical University of Athens, Greece, December 2016. Semidefinite Programming for Power System Stability and Optimization.

14. *Russian Academy of Sciences*, Moscow, Russia, November 2016. Power System Control and Optimization: Challenges and Possible Solutions.

13. *Energy Security Summit 2016*, Berlin, Germany, June 2016. Global Power Grids for Harnessing World Renewable Energy.
12. *University of Michigan*, Ann Arbor, MI, USA, February 2016. Robust Power System Stability Assessment with Extensions to Inertia Control.
11. *KU Leuven*, Leuven, Belgium, November 2015. Robust Power System Stability Assessment with Extensions to Inertia Control.
10. *UC Louvain*, Louvain-la-Neuve, Belgium, November 2015. Robust Power System Stability Assessment with Extensions to Inertia Control.
9. *University of Liége*, Liége, Belgium, November 2015. Robust Power System Stability Assessment with Extensions to Inertia Control.
8. *ETA Noon Seminar at Lawrence Berkeley National Laboratory*, Berkeley, CA, USA, March 2015. VirGIL: A Demand Response Platform for Smartgrids.
7. *Los Alamos National Laboratory*, Los Alamos, NM, USA, March 2015. VirGIL: A Demand Response Platform for Smartgrids.
6. *SunPower Corporation*, Richmond, CA, USA, February 2015. VirGIL: A Demand Response Platform for Smartgrids.
5. *University of California, Berkeley, CA, USA*, September 2014. VirGIL: A Co-Simulation Platform for Advanced Distribution Management Systems including Demand Response.
4. *World Trade Forum 2014: International Trade in Electricity and the Greening Economy,* Bern, Switzerland, September 2014. Towards a Global Grid: The state of play in Cross-Border Electricity Markets.
3. *Stanford Policy and Economics Research Roundtable, Stanford University, CA, USA,* May 2014. The Global Grid.
2. *IEEE PES Swiss Chapter Workshop, Bern, Switzerland,* September 2013. Interaction between AC and DC Power Systems: The Need for Controllability.
1. *Swissgrid*, January 2013. Infrastructure Roadmap for the Energy Networks in Europe.

(Co-)Supervised Master and Semester Theses

Emilie Anouk Jong. Quantum computing for probabilistic power flow in power systems. *Master Thesis, Technical University of Denmark*, 2023.

Eduard Antoli Gil. Quantum computations for N-1 secure power systems. *Master Thesis, Technical University of Denmark*, 2023.

Catherine Cecile Marie Cheylan. Topology-adaptive neural networks for power system applications. *Master Thesis, Technical University of Denmark*, 2023.

Anders Dan Hansen. Learn Optimal Power Flow solutions for a reconfigurable distribution grid. *Bachelor Thesis, Technical University of Denmark*, 2022.

Jorge Pelayo Alonso Arroyo. Analysis of conditions for dynamic phasor modelling in zero-inertia systems. *Master Thesis, Forschungszentrum Jülich and Technical University of Denmark*, 2021.

Yucun Lu. Neural network interpretability for forecasting of aggregated renewable generation and control of the aggregated load. *Master Thesis, Technical University of Denmark*, 2021.

Alicia Cobacho. Market Clearing Mechanisms for Flexibility Markets in Distribution Grids. *Master Thesis, Technical University of Denmark*, 2021.

Stefanos Ntomalis. Frequency stability analysis and model development of zero-inertia system with high wind penetration in the North Sea. *Master Thesis, Technical University of Denmark*, 2021.

Jorge Montalvo Arvizu. Deep Reinforcement Learning for Cyber-Physical Power Systems with Complex Automata. *Master Thesis, RTE France and Technical University of Denmark*, 2021.

Jie (Edward) Xu. Role of an aggregator in location-specific flexibility service. *Master Thesis, Centrica Business Solutions and Technical University of Denmark*, 2020.

Juan Felipe Duran. Optimal scheduling of multiple frequency services in the Nordic System. *Master Thesis, Technical University of Denmark*, 2020.

Dominic Scotoni. Development and Implementation of a Distributionally Robust Chance Constrained Optimization Tool for Distribution Grids. *Master Thesis, Technical University of Denmark and ETH Zurich*, 2020.

Lucas Richard. Model predictive voltage control of low inertia offshore transmission grids. *Master Thesis, Technical University of Denmark*, 2019.

Eigil Stig Waahlin Bagger. Interpretable Neural Networks for Power System Security Assessment. *Master Thesis, Technical University of Denmark*, 2020.

Sylvain Ledur. Price-only trading strategies for assets in pay-as-bid balancing markets. *Master Thesis, Ørsted and Technical University of Denmark*, 2020.

Maria Pappa. Optimal Control Strategy for Wind Turbine Generators in Energy Markets. *Master Thesis, Ørsted and Technical University of Denmark*, 2020.

Xavier Martinez Beseler. Feasibility Study of Autonomously Driven Offshore Wind Turbines. *Master Thesis, Technical University of Denmark and Universitat Politècnica de València*, Spain, 2019. **Received the first prize for a Master Thesis at the Universitat Politècnica de València, Spain.**

Ignacio Murga Castro. Optimization Tools for Radial Distribution Networks under Uncertainty. *Master Thesis, Technical University of Denmark*, 2019.

Jeanne Anais Mermet Guyennet. Deep Learning for Security-Constrained Power System Optimization. *Master Thesis, Technical University of Denmark*, 2019.

Ona Renom. HVDC Control and Operation for the integration of extremely high-RES systems. *Master Thesis, Technical University of Denmark and Universitat Politecnica de Catalunya, Spain*, 2019.

Gopi Krishnan Jayasurian. SCOPF in a European Electricity Market Setup: Reviewing Implementation and Comparison. *Master Thesis, ENTSO-e and Technical University of Denmark*, 2018-2019.

Jose-Maria Hidalgo Arteaga. Machine Learning Methods for Power Systems Applications. *Master Thesis, Technical University of Denmark*, 2018-2019.

Riccardo Zanetti. Identifying the needs for grid reinforcements in the European transmission system. *Master Thesis, Technical University of Denmark*, 2018.

Carole Rickmouni. Technical and economic assessment of the future Nordic AC and HVDC grid. *Master Thesis, Technical University of Denmark*, 2018.

Maria Krutova. Clustering and Power Flow Modelling for Wind and Solar Balancing in Eurasia *Master Thesis, University of Oldenburg and Technical University of Denmark*, 2017.

Nicolas Marenne. Data-driven stability assessment for DC microgrids. *Master Thesis, Technical University of Denmark*, 2017.

Andreas Venzke. Convex Relaxations for Optimization of AC and HVDC Grids under Uncertainty. *Master Thesis, ETH Zurich and Technical University of Denmark*, 2017.

Jeremias Schmidli. AC optimal power flow with approximate chance-constraints. *Semester Thesis, ETH Zurich*, 2015.

Florian Schmidt. Security-Constrained Optimal Power Flow including post-contingency control of FACTS devices with application on the European network. *Semester Thesis, ETH Zurich*, 2012.

Marina Katsampani. Impacts of Grid Reinforcements on the Strategic Behaviour of Power Market Participants. *Semester Thesis, ETH Zurich*, 2011.

Yves Reckinger. On Profit Maximization of Fluctuating Generation Coupled with Energy Storage. *Master Thesis, ETH Zurich*, 2011.

Ektor Sotiropoulos. Evaluation of Coherency-based aggregation Methods. *Semester Thesis, ETH Zurich*, 2011.

Matthias Bucher. Impacts of Electricity Storage on the Integration of Fluctuating Generation. *Semester Thesis, ETH Zurich*, 2011.

Tobias Rinke. MPC-based Frequency Regulation and Inertia Mimicking for Improved Grid Integration of Renewable Energy Sources. *Master Thesis, ETH Zurich and Ruhr Universität Bochum*, 2011.

Maria Zerva. Voltage Stability Assessment of the Swiss Power Transmission System. *Master Thesis, ETH Zurich and Swissgrid*, 2010.

Yves Reckinger. Control and Frequency Regulation for Distributed Renewable Energy Sources using the Aggregated Storage of large Fleets of Distributed, Mobile PHEVs. *Semester Thesis, ETH Zurich*, 2010.

Raffael Bühler. Integration of Renewable Energy Sources Using Microgrids, Virtual Power Plants and the Energy Hub Approach. *Semester Thesis, ETH Zurich*, 2010.

Lucas Friedrich and Matthias Gautschi. Grid Stabilization Control and Frequency Regulation for Inverter-connected Distributed Renewable Energy Sources. *Master Thesis, ETH Zurich and Univ. Wisconsin-Madison*, 2009.

Further Mentoring

Markus Heimberger. Efficiency gains from DC microgrids. Exchange Student at Lawrence Berkeley National Lab. PhD Student, Vienna University of Technology, Austria. June-September 2014.

Ciaran Roberts. Power System Modeling of unbalanced distribution systems. Intern at Lawrence Berkeley National Lab. Master Student, University College, Dublin, Ireland, June-September 2014.

Sergi Rotger Griful. Hardware-in-the-Loop Co-simulation of Distribution Grid for Demand Response. PhD Student at Aarhus University, Denmark. May-August 2015.