

Michele Garau

SINTEF Energy Research
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PRESENT APPOINTMENT

2020 - present Research Scientist at SINTEF Energy Research, dept. Energy Systems

PREVIOUS APPOINTMENTS

2018 - 2020 Postdoctoral Fellow at NTNU, dept. of Information Security and
Communication Technology
2014 Researcher at the Dept. of Electrical and Electronic Engineering,
University of Cagliari

EDUCATION

2018	Industrial Engineering, University of Cagliari	Ph.D.
2013	Energy Engineering, University of Cagliari	M.A.
2008	Electric Engineering, University of Cagliari	B.A.

RESEARCH INTERESTS

Electric Vehicles; Smart Grids; Power system planning and operation; ICT for Smart Grids;
Dependability analysis of Smart Grids; Smart Grids simulation

PUBLICATIONS AND TALKS

Journal articles

- Danese, A., Torsæter, B. N., Sumper, A., & Garau, M. (2022). "Planning of High-Power Charging Stations for Electric Vehicles: A Review". *Applied Sciences*, 12(7), 3214. <https://doi.org/10.3390/app12073214>
- Danese, A., Garau, M., Sumper, A., & Torsæter, B. N. (2021). "Electrical Infrastructure Design Methodology of Dynamic and Static Charging for Heavy and Light Duty Electric Vehicles". *Energies*, 14(12), 3362. <https://doi.org/10.3390/en14123362>
- Zerihun, T. A., Garau, M., & Helvik, B. E. (2020). "Effect of Communication Failures on State Estimation of 5G-Enabled Smart Grid". *IEEE Access*, 8, 112642–112658. <https://doi.org/10.1109/ACCESS.2020.3002981>
- Garau, M., Ghiani, E., Celli, G., Pilo, F., & Corti, S. (2018). "Co-Simulation of Smart Distribution Network Fault Management and Reconfiguration with LTE Communication". *Energies*, 11(6), 1332. <https://doi.org/10.3390/en11061332>
- Garau, M., Celli, G., Ghiani, E., Pilo, F., & Corti, S. (2017). "Evaluation of Smart Grid Communication Technologies with a Co-Simulation Platform". *IEEE Wireless Communications*, 24(2), 42–49. <https://doi.org/10.1109/MWC.2017.1600214>

Conference Presentations

- Erdogan, G., Tøndel, I., Tokas, S., Garau, M., & Jaatun, M. (2022, September 1). Needs and Challenges Concerning Cyber-risk Assessment in the Cyber-physical Smart Grid. 17th International Conference on Software Technologies. Retrieved September 1, 2022, from <https://www.scitepress.org/Link.aspx?doi=10.5220/0011137100003266>
- Garau, M., & Helvik, B. E. (2021, November). Power Unavailability Reduction in Distribution Grid Fault Management with Entropy Minimization, In *2021 5th International Conference on System Reliability and Safety (ICSRS)*. 2021 5th International Conference on System Reliability and Safety (ICSRS). <https://doi.org/10.1109/ICSRS53853.2021.9660625>
- Garau, M., Muka, R., Heegaard, P. E., & Helvik, B. E. (2021, November). Co-simulation and Discrete Event Simulation for Reliability Assessment of Power System and ICT: A Comparison, In *2021 5th International Conference on System Reliability and Safety (ICSRS)*. 2021 5th International Conference on System Reliability and Safety (ICSRS). <https://doi.org/10.1109/ICSRS53853.2021.9660630>
- Muka, R., Garau, M., Tola, B., & Heegaard, P. E. (2021, October). Effect of 5G communication service failure on placement of Intelligent Electronic Devices in Smart Distribution Grids, In *2021 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm)*. 2021 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm). <https://doi.org/10.1109/SmartGridComm51999.2021.9632333>
- Jakobsen, S. H., Garau, M., & Mo, O. (2021, September). An open-source tool for reliability analysis in radial distribution grids, In *2021 International Conference on Smart Energy Systems and Technologies (SEST)*. 2021 International Conference on Smart Energy Systems and Technologies (SEST). <https://doi.org/10.1109/SEST50973.2021.9543279>
- Muka, R., Garau, M., & Heegaard, P. E. (2021, September). GENETIC ALGORITHM FOR PLACEMENT OF IEDs FOR FAULT LOCATION IN SMART DISTRIBUTION GRIDS, In *CIRE2021 - The 26th International Conference and Exhibition on Electricity Distribution*. CIRE2021 - The 26th International Conference and Exhibition on Electricity Distribution. <https://doi.org/10.1049/icp.2021.1640>
- Garau, M., & Torsæter, B. N. (2021, June). Agent-Based Analysis of Spatial Flexibility in EV Charging Demand at Public Fast Charging Stations, In *2021 IEEE Madrid PowerTech*. 2021 IEEE Madrid PowerTech. <https://doi.org/10.1109/PowerTech46648.2021.9494818>
- Forland, M. K., Krlevska, K., Garau, M., & Gligoroski, D. (2019, December). Preventing DDoS with SDN in 5G, In *2019 IEEE Globecom Workshops (GC Wkshps)*. 2019 IEEE Globecom Workshops (GC Wkshps). <https://doi.org/10.1109/GCWkshps45667.2019.9024497>
- Krlevska, K., Garau, M., Førland, M., & Gligoroski, D. (2019, December 10). Towards 5G Intrusion Detection Scenarios with OMNeT++, In *EPiC Series in Computing*. Proceedings of 6th International OMNeT++ Community Summit 2019, EasyChair. <https://doi.org/10.29007/2jg6>
- Amare, T., Garau, M., & Helvik, B. E. (2019, March 12). Dependability Modeling and Analysis of 5G Based Monitoring System in Distribution Grids, In *Proceedings of the 12th EAI International Conference on Performance Evaluation Methodologies and Tools*, New York, NY, USA, Association for Computing Machinery. <https://doi.org/10.1145/3306309.3306334>
- Carcangiu, S., Celli, G., Fanni, A., Garau, M., Montisci, A., & Pilo, F. (2017, September). Bit loading optimization for smart grid energy storage management, In *2017 IEEE 3rd International Forum on Research and Technologies for Society and Industry (RTSI)*. 2017 IEEE

- 3rd International Forum on Research and Technologies for Society and Industry (RTSI). <https://doi.org/10.1109/RTSI.2017.8065946>
- Garau, M., Ghiani, E., Celli, G., & Pilo, F. (2017, September). Tecno-economic and environmental assessment of a full electric smart city eco-district, In *2017 AEIT International Annual Conference*. 2017 AEIT International Annual Conference. <https://doi.org/10.23919/AEIT.2017.8240566>
- Garau, M., Anedda, M., Desogus, C., Ghiani, E., Murrioni, M., & Celli, G. (2017, June). A 5G cellular technology for distributed monitoring and control in smart grid, In *2017 IEEE International Symposium on Broadband Multimedia Systems and Broadcasting (BMSB)*. 2017 IEEE International Symposium on Broadband Multimedia Systems and Broadcasting (BMSB). <https://doi.org/10.1109/BMSB.2017.7986141>
- Ghiani, E., Garau, M., Celli, G., Pilo, F., & Marongiu, G. (2017, June). Smart integration and aggregation of nanogrids: Benefits for users and DSO, In *2017 IEEE Manchester PowerTech*. 2017 IEEE Manchester PowerTech. <https://doi.org/10.1109/PTC.2017.7981205>
- Celli, G., Garau, M., Ghiani, E., Pilo, F., & Corti, S. (2016, June). Co-simulation of ICT technologies for smart distribution networks, In *CIREN Workshop 2016*. CIREN Workshop 2016. <https://doi.org/10.1049/cp.2016.0745>
- Garau, M., Celli, G., Ghiani, E., Soma, G. G., Pilo, F., & Corti, S. (2015, September). ICT reliability modelling in co-simulation of smart distribution networks, In *2015 IEEE 1st International Forum on Research and Technologies for Society and Industry Leveraging a better tomorrow (RTSI)*. 2015 IEEE 1st International Forum on Research and Technologies for Society and Industry Leveraging a Better Tomorrow (RTSI). <https://doi.org/10.1109/RTSI.2015.7325125>
- Celli, G., Corti, S., Garau, M., Ghiani, E., & Pilo, F. G. L. (2014). A co-simulation tool for active distribution networks. CIREN Workshop 2014 "Challenges of Implementing Active Distribution System Management". Retrieved May 11, 2019, from <https://iris.unica.it/handle/11584/59545>

TEACHING

Teaching Assistant

NTNU | Department of Information Security and Communication Technologies

2018 TTM4110 – Dependability and Performance with Discrete Event Simulation - *Fundamentals of Probability*

University of Cagliari | Department of Electrical and Electronic Engineering

2016 - 2017 Power Systems Generation and Economics - *Distributed Generation / OpenDSS training*

2014 - 2015 Electric Circuits - *Exercises and tutoring*

Thesis supervision and co-supervision

NTNU | Department of Information Security and Communication Technologies

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|------|---|
| 2020 | Bendik Balstad Deraas - <i>Modelling and Analysis of Interdependencies between Financial, Communication and Power System Infrastructures in a Smart Grid Scenario</i> |
| 2020 | Håvard Sandgrind Refvik - <i>Robustness of short-term load forecasting models for smart grids</i> |

University of Cagliari | Department of Electrical and Electronic Engineering

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| 2017 | Gian Luigi Cuccu - <i>Strumenti di simulazione di sistemi TLC per Smart Grid</i> |
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