

# MICHELE GARAU

SINTEF Energy Research  
Sem Sælands vei 11  
7034 Trondheim

tel: +47 929 88 438  
web: me.com  
email: michele.garau@sintef.no

---

## 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

## Journal Publications

- 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 Proceedings

- 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., Kravlevska, 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>
- Kravlevska, 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 for students*

**Thesis supervision and co-supervision**

NTNU | Department of Information Security and Communication Technologies

- |      |   |
|------|---|
| 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

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