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CONTACTS

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PROFESSIONAL EXPERIENCE

Coordinator of the Center for Power and Energy Systems (CPES), INESC TEC – Institute for Systems and Computer Engineering, Technology and Science, March 2020 – present

Assistant Coordinator of the Center for Power and Energy Systems (CPES), INESC TEC, July 2018 – February 2020

Area Manager – Energy Analytics and Forecasting of the Center for Power and Energy Systems (CPES), INESC TEC, September 2013 – June 2018

Contracted Senior Researcher, Center for Power and Energy Systems (CPES), INESC TEC, September 2013 – present

PhD Student (Doctoral Research Scholarship) and Junior Researcher, Center for Power and Energy Systems (CPES), INESC TEC, September 2009 – July 2013

Junior Researcher (Research Scholarship), Center for Power and Energy Systems (CPES), INESC TEC, September 2006 – August 2009

EDUCATION

FEUP - Faculty of Engineering of the University of Porto, Porto, Portugal

PhD, Doctoral Program on Sustainable Energy Systems - MIT Portugal Program, September 2009 – 25th July 2013

- Thesis: *Methodologies for the Participation of an Electric Vehicles' Aggregator in the Electricity Markets.* [Online] https://repositorio-aberto.up.pt/handle/10216/73890
- Supervisor: Manuel A. Matos
- Final Classification: approved with distinction

Licenciatura (five years degree), Electrical and Computer Engineering, September 2001 – July 2006

- Specialization in power systems

FEP - Faculty of Economics of the University of PortoFEP - Faculty of Economics of the University of Porto, Porto, Portugal

M.Sc., Data Analysis and Decision Support Systems, September 2006 - July 2008

- Thesis: *Wind power forecasting with data streams techniques and information theoretic learning* [Online] http://hdl.handle.net/10216/10798
- Supervisor: João Gama
- Co-supervisor: Vladimiro Miranda
- Final Classification: very good (in a scale of *good*, *good with distinction* and *very good*)

SHORT BIO

Between 2006 and 2013, he worked as a Junior Researcher, at INESC TEC, in several international and national projects about wind power forecasting and its integration in power system operations. One example is the FP6 EU Project ANEMOS.plus (2008-2011) where he developed three software tools for smart transmission grids with high penetration of wind power.

Another project was ARGUS (2008-2013), funded by the U.S. Department of Energy (DOE), where he developed, in collaboration with Argonne National Laboratory, new algorithms for point and probabilistic wind power forecasting, as well as decision-aid tools to integrate forecasts in decision-making problems. At the national level, in the EPREV project, he developed statistical models for an innovative wind power forecasting system. As a result of this project, a spin-off company, Prewind Lda, was created for selling the forecasting services. He is a co-founder of that company.

Since September 2013, he is a Senior Research at INESC TEC. He was involved in the FP7 EU Projects SuSTAINABLE, evolvDSO and HYPERBOLE where his main tasks are the design of smart grid architectures, innovative grid management tools and the development of spatial-temporal forecasting algorithms. In the Horizon 2020 SENSIBLE (2015-2018) and SmarterEMC2 (2015-2017) projects he designed use cases for innovative grid and market management functions. Presently, he is the technical coordinator of the Horizon 2020 InteGrid project (2017-2020), which is demonstrating how distribution system operators may enable all stakeholders to actively participate in the energy market and distribution grid management and develop and implement new business models, making use of new data management and consumer involvement approaches. Moreover, he is leading the work of INESC TEC in the Horizon 2020 project Smart4RES (2019-2023) to develop privacy-preserving techniques and data auction algorithms for renewable energy forecasting, as well as new methodologies to integrate forecast uncertainty in electrical grid and flexibility management.

He is **Senior Member of IEEE** since February 2019. With a **h-index of 39** (Scopus), co-authored 60 journal papers, 128 conference papers and 7 book chapters about renewable energy forecasting, power system operation and electricity markets. He serves as an **Associate Editor for the IEEE Transactions on Sustainable Energy**.

COORDINATION AND PARTICIPATION IN R&D PROJECTS

1. *Grid2C – Local Grid Coordination & Control*, Dec/2019-Jan/2022. Role: Coordinator of INESC TEC team. Client: ENEIDA Wireless & Sensors (National Project Portugal 2020). Development of a software module to estimate losses with limited characterization of low voltage grids and data-driven analysis of DER connection.

2. *EUniversal – Market Enabling Interface to Unlock Flexibility Solutions for Cost-Effective Management of Smarter Distribution Grids*, Feb/2020–(Jul/2023). Role: Researcher. European Project, H2020 – Grant Agreement 864334, 800k€. Development of a data-driven low voltage state estimation and voltage control function.

3. *Smart4RES – Next Generation Modelling and Forecasting of Variable Renewable Generation for Large-scale Integration in Energy Systems and Markets*, Nov/2019–(Apr/2023). Role: Coordinator of INESC TEC team. European Project, H2020 – Grant Agreement 864337, 408k€. Development of: a) privacy-preserving distributed learning for renewable energy forecasting; b) data markets for renewable energy forecasting; c) predictive management of local flexibility in electrical grids considering forecast uncertainty.

4. *InterConnect – Interoperable Solutions Connecting Smart Homes, Buildings and Grids*, Oct/2019–(Sept/2023). Role: Researcher. European Project, H2020 – Grant Agreement 857237, 2.8M€. Development and demonstration of interoperable and intelligent solutions for demand-side flexibility management and data-driven services.

5. *GPDER+ – Grid Predictive Management Considering Distributed Energy Resources*, Aug/2019–(Jan/2022). Role: Coordinator of INESC TEC team. National Project (Portugal 2020), 250k€. Development of new functions for distribution grids (forecasting, multi-temporal management of flexibility, distribution training system, etc.) and integration in a commercial *Advanced Distribution Management Solutions* (ADMS) from EFACEC.

6. *UNiTED – Unlocking demand response potential with Next generation innovative optimization Tools Empowering prosumers and Distribution grid benefits*, Jun/2018–May/2021. Role: Co-Principal Investigator. National Project, FCT – POCI-01-0145-FEDER-029803, 240k€. Development of distributed optimization algorithms for active consumption management and storage systems, considering their aggregation for participation in the electricity market.

7. *FEEdBACk – Fostering Energy Efficiency and BehAvioural Change through ICT*, Nov/2017–Oct/2020. Role: Researcher. European Project, H2020 – Grant Agreement 768935, 425k€. Development of load forecasting techniques for smart buildings and energy consumption baseline estimation.

8. *InteGrid – Demonstration of INTElligent grid technologies for renewables INTEgration and INTEractive consumer participation enabling INTEroperable market solutions and INTErconnected stakeholders*, Jan/2017–Jun/2020. Role: Technical coordinator. European Project, H2020 – Grant Agreement 731218, 1.3M€. Development and demonstration of: a) software for predictive management of flexibility in medium and low voltage networks; b) software for improving the observability of distribution networks in real-time (state estimation in low voltage and load allocation in medium voltage); c) digital platform (grid and market hub) to support new energy services for domestic and industrial customers.

9. *ESGRIDS – Enhancing Smart Grids for Sustainability*, Jan/2017–Dec/2020. Role: Researcher. National Project, FCT - SAICTPAC/0004/2015-POCI-01-0145-FEDER-016434, 730k€. Development of: a) distributed optimal power flow for unbalanced three-phase networks; b) stochastic optimization of distribution networks with distributed energy resource flexibility; b) causality analysis between electricity tariffs and behavioural changes of residential consumers.

10. *REstable – Improvement of Renewables-based System Services Through Better Interaction of European Control Zones*, Apr/2016–Mar/2019. Role: Researcher. European Project, ERA-NET – SmartGP/0001/2015, 166k€. Development of optimization and control algorithms for virtual power plants based on artificial intelligence.

11. *iMAN – iMAN - Intelligence for advanced Manufacturing systems*, Jul/2015–Jun/2019. Role: Researcher. P2020|Norte2020-Projetos Integrados ICDT, NORTE-01-0145-FEDER-000020. Development of methodologies for quantifying and modeling energy flexibility in industrial processes.

12. *SusCity – Urban data driven models for creative and resourceful urban transitions*, Jan/2015–Dec/2017. Role: Researcher. National Project, FCT – ITP-TB/CS/0026/2013, 126k€. Development of a distributed solar production forecasting algorithm for spatial-temporal time series.

13. *UPGRID – Real proven solutions to enable active demand and distributed generation flexible integration, through a fully controllable LOW Voltage and medium voltage distribution grid*, Jan/2016–Dec/2017. Role: Researcher. European Project, H2020 – Grant Agreement 646531, 590k€. Development and demonstration of software for: a) state estimation based on neural networks for low voltage grids; b) low voltage customer consumption forecasting; c) data management and flexibility activation platform.

14. *SmarterEMC2 – Smarter Grid: Empowering SG Market Actors through Information and Communication Technologies)*, Jan/2015–Oct/2015. Role: Researcher. European Project, H2020 – Grant Agreement 646470, 275k€. Definition of use cases and specification of tools for active management of distribution networks and co-simulation (power grid and communications).

15. *SENSIBLE – Storage ENabled SustaInable energy for BuiLdings and communitiEs)*, Jan/2015–Dec/2015. Role: Coordinator of INESC TEC team. European Project, H2020 – Grant Agreement 645963, 625k€. Use case definition, architecture specification, and tools for managing microgrids and medium voltage electrical grids with small-scale storage systems.

16. *HYPERBOLE – HYdropower plants PERformance and flexiBle Operation towards Lean integration of new renewable Energies*, Sept/2013–Sept/2015. Role: Researcher. European Project, FP7 – Grant Agreement 608532, 340k€. Development of an optimization model for the participation of variable speed reversible hydro groups in the electricity market, secondary and tertiary reserve.

17. *evolvDSO – Development of methodologies and tools for new and evolving DSO roles for efficient DRES integration in distribution networks*, Sept/2013–Dec/2016. Role: Coordinator of INESC TEC team. European Project, FP7 – Grant Agreement 608732, 380k€. Development and demonstration of software for flexibility estimation and active/reactive control at the interface point between the transmission and distribution grids. Definition of the new roles of the distribution system operator.

18. *PrevSol – New methods for solar power forecasting*, Jan/2014–Dec/2015. Role: Coordinator of INESC TEC team. National Project, QREN I&DT (subcontracted by Prewind Lda.). Development of software for solar power forecasting; decision-aid tool for scheduling maintenance actions in solar power plants.

19. *Predict_EV – Mobile Sensing and Reliable Prediction of Electric Vehicle Charging in Smart Grids*, Sept/2013-Dec/2013. Role: Researcher. Funding from CISCO's International R&D Program. Development of statistical techniques to predict electric energy consumption and charging preferences (minimum autonomy, exit time, etc.) of electric vehicles.

20. *SuSTAINABLE – Smart Distribution System operation for maximizing the integration of renewable generation*, Sept/2013–Oct/2015. Role: Researcher. European Project, FP7 – Grant Agreement 38692, 700k€. Development and demonstration of software prototypes for solar power forecasting in smart electricity grids; integration of solar forecasting into medium voltage grid voltage control.

21. *ARGUS – Wind Power Forecasting and Electricity Markets*, Jan/2009–Dec/2012. Role: Researcher. U.S. Department of Energy, Contract no. DE AC02e06CH11357. Development of software for forecasting wind production uncertainty; development of a decision support algorithm for wind power participation in electricity markets with locational marginal prices; development of an algorithm for stochastic unit commitment in US markets. Software ARGUS PRIMA licensed by Argonne National Laboratory [Online] www.anl.gov/tcp/argusprima-wind-power-prediction

22. *ANEMOS.plus – Advanced Tools for the Management of Electricity Grids with Large-Scale Wind Generation*, Jan/2008–Jun/2011. Role: Researcher. European Project, FP6 – Grant Agreement 38692, 440k€. Development and demonstration of three decision support tools (software prototypes) that consider the wind power forecast uncertainty: a) setting power system operating reserve with forecast uncertainty; b) congestion forecasting with fuzzy power flow; c) optimized coordination between wind power plants and hydro pump storage.

CONSULTANCY AND R&D ACTIVITIES WITH INDUSTRY

1. *TSO_LoadForecasting – Statistical learning algorithms for load forecasting in TSO*, Jan/2021-Jun/2021. Role: Coordinator. Client: Austrian Power Grid. Short-term load forecasting for transmission grid nodes.

2. *AI4Substation – Artificial intelligence to reduce the cognitive load of human operators, alarm management in HV/MV substations*, Nov/2019-Nov/2020. Role: Coordinator. Client: E-REDES. Development of a AI methodology for processing and analysing alarms in HV/MV substations. The methodology has two objectives: a) identify anomalous situations in the operation of protection systems; b) predict the sequence of manoeuvrers of the human operator and reduce the time for decision-making. The final result is a computational application.

3. *FlexAgg – Pilot project for demand-side participation in the regulation reserve market*, May/2019-Jun/2020. Role: Coordinator. Client: EDP Comercial. Flexibility audit in energy intensive processes (steel mill and water treatment plants) for participation in the regulation reserve pilot promoted by ERSE. Definition of a standardized test procedure and key performance indicators (KPIs) for flexibility activation.

4. *PredAdvisor – Roadmap for R&D in wind power forecasting and trading*, Sept/2019-Mar/2020. Role: Coordinator. Client: Greenlytics. Consultant on business strategy definition and development for renewable generation forecasting and decision-aid tools for electricity market participation.

5. *RedeDistDigital – Digitalization of the distribution grid - evolution of the distribution grid automation architecture*, Oct/2018-May/2020. Papel: Researcher. Client: E-REDES. Design of E-REDES strategy and use cases for electric grid digitalization and network automation evolution.

6. *FlexOPlan – Operational planning of active and reactive power in the TSO-DSO interface*, May/2019-Nov/2020. Role: Coordinator. Client: EFACEC. Development of software for optimizing the active and reactive power flow at the interface between the transmission and distribution grids. Software integrated into EFACEC's Advanced Distribution Management Solutions (ADMS).

7. *LPVAnalytics – Development of a load and solar power forecasting system*, Jun/2018-Mar/2020. Role: Coordinator. Client: Elergone Energias.

8. *PriceMining – Analysis of electricity market prices with advanced data analytics*, May/2018-Feb/2019. Role: Coordinator. Cliente: EDP Produção.

9. *HIP – Heath index for power transformers*, Jan/2018-Jun/2018. Role: Researcher. Client: EDP Produção. Development of algorithms for estimating the condition of power transformers (health index) and useful life. **Software licensed to EDP Produção.**

10. *fof.PLAN – Energy investment planning using DER-CAM for IKEA Industry in Portugal*, Jun/2018-Jan/2019. Role: Coordinator. Client: IKEA. Energy planning for the IKEA factory in Paços de Ferreira, considering renewable energy sources and energy storage systems and different possibilities for electricity contracts.

11. *SOLAR4DR – Solar power forecasting*, Jan/2018-Sept/2018. Role: Coordinator. Cliente: EFACEC.

12. *StatProbWind – Development of statistical methods for day ahead probabilistic wind power forecasts*, May/2016-Oct/2017. Role: Coordinator. Cliente: EDP Renováveis.

13. *Meteo_NMP_Forecast – Development of statistical wind power forecasting methods*, Dec/2015-Dez/2016. Role: Coordinator. Cliente: Meteobit.

14. *ReservaProb – Software module for setting the operating reserve requirements in Portugal*, Oct/2015-Nov/2016. Role: Coordinator. Client: REN. Development and integration of two tools: i) setting the operating reserve requirements with probabilistic forecasts for all renewable energy technologies; ii) fixing the maximum import net transfer capacity in the interconnection with Spain

15. *Prev_PRE – Software module for probabilistic forecasting of small-hydro, wind, solar and co-generation*, Jun/2014-Dec/2015. Role: Coordinator. Cliente: REN.

16. *OTGEN – Energy storage technologies*, Mar/2014-Dec/2015. Role: Researcher. Client: EDP Produção. Consulting work for state-of-the-art survey and technical-economic analysis of small and-large scale storage technologies.

17. *ModPrev – Wind power forecasting*, Dec/2013-Dec/2014. Role: Coordinator. Client: Prewind .Operational improvement (forecast error reduction) of the company's statistical forecasting models.

18. *Prev_Agreg – Forecasting aggregated (National) wind power generation*, Mar/2013-Dec/2015. Role: Coordinator. Client: EDP Serviço Universal.

19. *Conceptualising framework conditions for the tole of renewable Energies and their integration into the networks*, Set/2012-Jan/2013. Role: Researcher. Client: European Commission, DG JRC, Institute for Energy and Transport (via NEWES, New Energy Solutions). Consulting on: (a) critical analysis of transmission grid planning methodologies in several European countries to integrate renewable energy; (b) recommendations on technology, tools and regulation to deal with the uncertainty and variability of renewable energy in power system operation.

20. *ONS-EOLICA – Wind power forecasting in Brazil*, May/2011-Dec/2011. Role: Researcher. Client: ONS. Consulting work to define a roadmap for the development and integration of wind forecasting tools in Brazil.

21. *Martifer-CV(GeSto) – Integrate renewable energy in the Cabo Verde islands*, Jan/2011-Jul/2011. Role: Researcher. Client: Gesto Energia, S.A.. Conceptual and functional specification of a renewable energy forecasting system.

22. *Generation capacity adequacy analysis in the island of Madeira for 2008-2015*, Oct/2007–Dec/2007. Role: Researcher. Client: Empresa de Electricidade da Madeira (EEM). Consulting work to evaluate the risk (LOLP, LOLE) associated with the expansion plans of the electric generation system for the period 2008-2015.

23. *HEOWIND - Technical evaluation of the wind power integration in the Hungarian transmission network and generation power system*, Apr/2007– Sept/2007. Role: Researcher. Client: Hungarian Energy Office (HEO). Consultancy work for the assessment of the integration capacity (i.e., static reserve, transmission grid capacity) of wind power in the Hungarian electricity system.

24. *Plano energy plan for West and Tagus Valley (PROT-OVT) and North region (PROT-NORTE)*, Sept/2006–Feb/2007. Role: Researcher. Client: Comissões de Coordenação e Desenvolvimento Regional de Lisboa e Vale do Tejo (CCDR-LVT) e do Norte (CCDR-N). Evaluation of the region's energy resources, characterization of the energy and natural gas transportation grid, study of the investment plan for the transmission grid, long-term energy consumption forecast by sector and county.

25. *EPREV – Wind power forecasting*, Oct/2006–Jun/2007. Role: Researcher. Client: Consortium of wind power developers (ENERNOVA, Finergie, Galp Power, GENERG, SIIF, TECNEIRA E TELENER). Development and supply of a wind production forecasting system, consisting of statistical algorithms and computational modules for data processing and management. The results of the project gave rise to a *spin-off* company to commercialize the service:

    - **Co-founder of *spin-off* company Prewind em Sept/2010**, a provider of forecasting services for the energy sector. Some of these services are related to electricity forecasting (e.g., wind and solar energy) and electricity prices. It was acquired 100% by INEGI in Dec/2017.

ARTICLES IN PEER-REVIEW JOURNALS

1. R.J. Bessa, V. Miranda, and J. Gama, "Entropy and correntropy against minimum square error in offline and online three-day ahead wind power forecasting," *IEEE Transactions on Power Systems*, vol. 24, no. 4, pp. 1657-1666, November 2009.

2. I. J. Ramirez-Rosado, L. A. Fernandez-Jimenez, C. Monteiro, J.N. Sousa, and R.J. Bessa, "Comparison of two new short-term wind power forecasting systems," *Renewable Energy*, vol. 34, no. 7, pp. 1848-1854, July 2009.

3. A. Botterud, J. Wang, R.J. Bessa, and V. Miranda, "Wind power forecasting in U.S. electricity markets," *Electricity Journal*, vol. 23, no. 3, pp. 71-82, April 2010.

4. Manuel A. Matos, and R.J. Bessa, "Setting the operating reserve using probabilistic wind power forecasts," *IEEE Transactions on Power Systems*, vol. 26, no. 2, pp.594-603, May, 2011.

5. R.J. Bessa, V. Miranda, A. Botterud, and J. Wang, "Good or bad wind power forecasts: a relative concept," *Wind Energy*, vol. 14, no. 5, pp. 625-636, July 2011.

6. J. Wang, A. Botterud, R.J. Bessa, H. Keko, V. Miranda, J.S. Akilimali, L. Carvalho, and D. Issicaba, "Wind power forecasting uncertainty and unit commitment," *Applied Energy*, vol. 88, no. 11, pp.4014-4023, Nov. 2011.

7. R.J. Bessa and Manuel A. Matos, "Economic and technical management of an electric vehicles aggregation agent: a literature survey," *European Transactions on Electrical Power*, vol. 22, no. 3, pp. 334-350, April, 2012.

8. R.J. Bessa, Manuel A. Matos, F.J. Soares, and J.A. Peças Lopes, "Optimized bidding of a EV aggregation agent in the electricity market," *IEEE Transactions on Smart Grid*, vol. 3, no. 1, pp.443-452, Mar. 2012.

9. R.J. Bessa, V. Miranda, A. Botterud, Z. Zhou, and J. Wang, "Time-adaptive quantile-copula for wind power probabilistic forecasting," *Renewable Energy*, vol. 40, no. 1, pp. 29-39, April 2012.

10. A. Botterud, J. Wang, Z. Zhou, R.J. Bessa, H. Keko, J.S. Akilimali, and V. Miranda, "Wind power trading under uncertainty in LMP markets," *IEEE Transactions on Power Systems*, vol. 27, no. 2, pp. 894-903, May 2012.

11. R.J. Bessa, M.A. Matos, I.C. Costa, L. Bremermann, I.G. Franchin, R. Pestana, N. Machado, H-P. Waldl, and C. Wichmann, "Reserve setting and steady-state security assessment using wind power uncertainty forecast: a case study," *IEEE Transactions on Sustainable Energy*, vol. 3, no. 4, pp. 827-837, Oct. 2012.

12. R.J. Bessa, V. Miranda, A. Botterud, J. Wang, and Emil M. Constantinescu, "Time adaptive conditional kernel density estimation for wind power forecasting," *IEEE Transactions on Sustainable Energy*, vol. 3, no. 4, pp. 660-669, Oct. 2012.

13. H. Holttinen, M. Milligan, E. Ela, N. Menemenlis, J. Dobschinski, B. Rawn, R.J. Bessa, D. Flynn, E.G. Lazaro, and N. Detlefsen, "Methodologies to determine operating reserves due to increased wind power," *IEEE Transactions on Sustainable Energy*, vol. 3, no. 4, pp. 713-723, Oct. 2012.

14. R.J. Bessa and M.A. Matos "Global against divided optimization for the participation of an EV aggregator in the day-ahead electricity market – Part I: theory," *Electric Power Systems Research*, vol. 95, pp. 309-318, Feb. 2013.

15. R.J. Bessa and M.A. Matos "Global against divided optimization for the participation of an EV aggregator in the day-ahead electricity market – Part II: numerical analysis," *Electric Power Systems Research*, vol. 95, pp. 319-329, 2013.

16. A. Botterud, Z. Zhou, J. Wang, J. Sumaili, H. Keko, J. Mendes, R.J. Bessa, and V. Miranda, "Demand dispatch and probabilistic wind power forecasting in electricity markets: a case study of Illinois," *IEEE Transactions on Sustainable Energy*, vol. 4, no. 1, pp. 250-261, January 2013.

17. Z. Zhou, A. Botterud, J. Wang, R.J. Bessa, H. Keko, J. Sumaili, and V. Miranda, "Application of probabilistic wind power forecasting in electricity markets," *Wind Energy*, vol. 16, no. 3, pp. 321-477, April 2013.

18. R.J. Bessa and M.A. Matos, "Optimization models for EV aggregator participation in a manual reserve market," *IEEE Transactions on Power Systems*, vol. 28, no. 3, pp. 3085-3095, August 2013.

19. R.J. Bessa, C.L. Moreira, B. Silva, and M.A. Matos, "Handling renewable energy variability and uncertainty in power systems operation," *Wiley Interdisciplinary Reviews: Energy and Environment*, vol. 3, 156-178, 2014.

20. E.D. Castronuovo, J. Usaola, R.J. Bessa, M.A. Matos, I.C. Costa, L. Bremermann, J. Lugaro, and G. Kariniotakis "An integrated approach for optimal coordination between wind power and hydro pumping storage," *Wind Energy*, vol. 17, no. 6, pp. 829-852, June 2014.

21. R.J. Bessa, M.A. Matos, "Optimization models for an EV aggregator selling secondary reserve in the electricity market," *Electric Power Systems Research*, vol.106, pp.36-50, January 2014.

22. R.J. Bessa, A. Trindade, V. Miranda, "Spatial-temporal solar power forecasting for smart grids," *IEEE Transactions on Industrial Informatics*, vol. 11, no. 1, pp. 232-241, Feb. 2015.

23. R.J. Bessa, A. Trindade, C.S. Silva, V. Miranda, "Probabilistic solar power forecasting in smart grids using distributed information," *International Journal of Electrical Power & Energy Systems*, vol. 72, pp. 16-23, Nov. 2015.

24. C. Gallego-Castillo, R.J. Bessa, L. Cavalcante, O. Lopez-Garcia, "On-line quantile regression in the RKHS (Reproducing Kernel Hilbert Space) for operational probabilistic forecasting of wind power," *Energy*, vol. 113, pp. 355-365, Oct. 2016.

25. L. Cavalcante, R.J. Bessa, M. Reis, J. Dowell, "LASSO vector autoregression structures for very short-term wind power forecasting," *Wind Energy*, vol. 20, no. 4, pp. 657-675, April 2017.

26. J.R. Andrade, R.J. Bessa, "Improving renewable energy forecasting with a grid of numerical weather predictions," *IEEE Transactions on Sustainable Energy*, vol. 8, no. 4, pp. 1571-1580, Oct. 2017.

27. R.J. Bessa, C. Möhrlen, V. Fundel, M. Siefert, J. Browell, S. Haglund El Gaidi, Bri-Mathias Hodge, U. Cali, and G. Kariniotakis, "Towards improved understanding of the applicability of uncertainty forecasts in the electric power industry," *Energies*, vol. 10, no. 9, pp. 1402, 2017.

28. J. Dobschinski, R.J. Bessa, P. Du, K. Geisler, S. Ellen Haupt, M. Lange, C. Möhrlen, D. Nakafuji, M. de la Torre Rodriguez, "Uncertainty forecasting in a nutshell: prediction models designed to prevent significant errors," *IEEE Power and Energy Magazine*, vol. 15, no. 6, Oct./Dec. 2017.

29. J.R. Andrade, J.M. Filipe, M. Reis, R.J. Bessa, "Probabilistic price forecasting for day-ahead and intraday markets: Beyond the statistical model," *Sustainability*, vol. 9, no. 11, pp. 1990, 2017.

30. R.B. Pinto, R.J. Bessa, M.A. Matos, "Multi-period flexibility forecast for low voltage prosumers," *Energy*, vol. 141, pp. 2251-2263, Dec. 2017.

31. T. Soares, R.J. Bessa, P. Pinson, H. Morais, "Active distribution grid management based on robust AC optimal power flow," *IEEE Transactions on Smart Grid*, vol. 9, no.6, pp. 6229-6241, Nov. 2018.

32. J. Silva, J. Sumaili, R.J. Bessa, L. Seca, M.A. Matos, V. Miranda, "The challenges of estimating the impact of distributed energy resources flexibility on the TSO/DSO boundary node operating points," *Computers & Operations Research*, vol. 96, pp. 294-304, Aug. 2018.

33. J. Villar, R.J. Bessa, M.A. Matos, "Flexibility products and markets: literature review," *Electric Power Systems Research*, vol. 154, pp. 329-340, Jan. 2018.

34. J. Silva, J. Sumaili, R.J. Bessa, L. Seca, M.A. Matos, V. Miranda, M. Sebastian-Viana, M. Caujolle, B. Goncer-Maraver, "Estimating the active and reactive power flexibility area in the TSO-DSO interface," *IEEE Transactions on Power Systems*, vol. 33, no.5, pp. 4741-4750, Sept. 2018.

35. J. Filipe, R.J. Bessa, C. Moreira, B. Silva, "Optimal bidding strategy for variable speed pump storage in day-ahead and frequency restoration reserve markets," *Energy Systems*, vol. 10, no. 2, pp. 273–297, May 2019.

36. V. Miranda, P. Cardoso, R.J. Bessa, I. Decker, "Through the looking glass: seeing events in power systems dynamics," *International Journal of Electrical Power & Energy Systems*, vol. 106, pp. 411-419, March 2019.

37. T. Soares, R.J. Bessa, "Proactive management of distribution grids with chance-constrained linearized AC OPF," *International Journal of Electrical Power and Energy Systems*, vol. 109, pp. 332-342, Jul. 2019.

38. J. Filipe, R.J. Bessa, M. Reis, R. Alves, P. Póvoa, "Data-driven energy optimization in wastewater treatment plants," *Applied Energy*, vol. 252, pp. 113423, Oct. 2019.

39. K. Ganesan, J. Tomé Saraiva, R.J. Bessa, "On the use of causality inference in designing tariffs to implement more effective behavioral demand response programs," *Energies*, vol. 12, no. 14, pp. 2666, July 2019.

40. C. Sweeney, R.J. Bessa, J. Browell, P. Pinson, "The future of forecasting for renewable energy," *Wiley Interdisciplinary Reviews: Energy and Environment*, vol. 9, no. 2, March/April 2020.

41. J. Peças Lopes, A.G. Madureira, M.A. Matos, R.J. Bessa, V. Monteiro, J. Afonso, S. Santos, J.P. Catalão, C. Antunes, P. Magalhães, "The future of power systems: challenges, trends and upcoming paradigms," *Wiley Interdisciplinary Reviews: Energy and Environment*, vol. 9, no. 3, May/June 2020.

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80. K. Ganesan, J. Tomé Saraiva, R.J. Bessa, "Using causal inference to measure residential consumers demand response elasticity," *Proc. of the 2019 IEEE Milan PowerTech*, Milano, Italy, 23-27 June 2019

81. J. Viana, J. Sousa, R.J. Bessa, "Load forecasting benchmark for smart meter data," *Proc. of the 2019 IEEE Milan PowerTech*, Milano, Italy, 23-27 June 2019

82. J. Villar, R. Rocha, R.J. Bessa, "Business models for peer-to-peer energy markets," *16th European Energy Market Conference (EEM 2019)*, Ljubljana, Slovenia, 18-20 Sept. 2019.

83. P. Póvoa, P. Inocêncio, F. Paixão, R.J. Bessa, J.M. Filipe, "Energy demand response applied to water resource recovery facilities," *in Proc. of the 92nd Water Environment Federations Annual Technical Exhibition and Conference (WEFTEC 2019)*, Chicago, Illinois, 21-25 September 2019.

84. M. Simões, G. Sampaio, A. Madureira, R.J. Bessa, J. Pereira, D. Lopes, D. Fonseca, P. Godinho Matos, R. Pires, "Avoid technical problems in LV networks: from data-driven monitoring to predictive control," *25th International Conference on Electricity Distribution (CIRED 2019)*, Madrid, 3-6 June 2019.

85. J. Pessanha, A.G. Melo, R.J. Bessa, V. Andrade de Almeida, "Uma metodologia para geração de cenários de produção eólica compatíveis com as correlações espaciais entre os regimes de ventos," *XXV Seminário Nacional de Produção e Transmissão de Energia Elétrica (SNPTEE)*, Belo Horizonte , Brazil, 10-13 Nov. 2019.

86. G. Giebel, W. Shaw, H. Frank, P. Pinson, C. Draxl, J. Zack, C. Möhrlen, G. Kariniotakis, R.J. Bessa, "IEA wind task 36 forecasting," *European Geosciences Union (EGU 2020) General Assembly*, May 2020. doi.org/10.5194/egusphere-egu2020-14253

87. G. Kariniotakis, S. Camal, R.J. Bessa, P. Pinson, G. Giebel, Q. Libois, R. Legrand, M. Lange, S. Wilbert, B. Nouri, A. Neto, R. Verzijlbergh, G. Sauba, G. Sideratos, E. Korka, S. Petit, "Smart4RES: Towards next generation forecasting tools of renewable energy production," *European Geosciences Union (EGU 2020) General Assembly*, May 2020. doi.org/10.5194/egusphere-egu2020-20205

88. C. Gonçalves, L. Cavalcante, M. Brito, R.J. Bessa and J. Gama, "Forecasting conditional extreme quantiles for wind energy," in *Proc. of the 21st Power Systems Computation Conference (PSCC 2020)*, 29 June-3 July 2020.

89. A. Coronati, J.R. Andrade, R.J. Bessa, "A deep learning method for forecasting residual market curves," in *Proc. of the 21st Power Systems Computation Conference (PSCC 2020)*, 29 June-3 July 2020.

90. M. Kezunovic, P. Pinson, Z. Obradovic, S. Grijalva, T. Hong, R. J. Bessa, "Big data analytics in the electricity grids of the future," in *Proc. of the 21st Power Systems Computation Conference (PSCC 2020)*, 29 June-3 July 2020.

91. J. Mello, J. Villar, R.J. Bessa, M. Lopes, J. Martins, M. Pinto, "Power-to-Peer: a blockchain P2P post-delivery bilateral local energy market," *17th European Energy Market Conference (EEM 2020)*, Stockholm, Sweden, 16-18 Sept. 2020.

92. J.M. Terras, T. Simão, D. Rua, R.J. Bessa, C. Gouveia, J. Baumeister, et al. "Fostering the relation and the connectivity between smart homes and grids - InterConnect Project," *CIRED Berlin 2020 Workshop*, 22-23 Sept. 2020.

93. J. Moreira, R. Bernardo, R. Prata, U. Krisper, R.J. Bessa, F. Coelho, F. Schwarzländer, "A service catalyst providing a neutral framework for supporting grid operation, while promoting market-based services: Grid and market hub," *CIRED Berlin 2020 Workshop*, 22-23 Sept. 2020.

94. D. Lopes, R.J. Bessa, B. Almeida, A. Madureira, M. Simões, J. Silva, et al., "InteGrid pilot in Portugal: Smart Grid based flexibility management tools for LV and MV predictive grid operation," *CIRED Berlin 2020 Workshop*, 22-23 Sept. 2020.

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97. C. Gonçalves, R. J Bessa, P. Pinson., "Data market for collaborative renewable energy forecasting," *40th International Symposium on Forecasting*, 26-28 Oct. 2020.

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103. G. Kariniotakis, S. Camal, A. Statigakos, P. Pinson, G. Giebel, L. Han, R.J. Bessa, et al., "Research directions and results in the Smart4RES project for improving renewable energy forecasting," *Wind Energy Science Conference (WESC 2021)*, 25-28 May 2021.

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108. J. Falcão, C. Cândido, D. Silva, J. Sousa, M. Pereira, D. Rua, C. Gouveia, F. Coelho, R.J. Bessa, A. Lucas, "Enabling interoperable flexibility and standardized grid support services," *26th International Conference & Exhibition on Electricity Distribution (CIRED 2021)*, 20-23 September 2021.

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110. S. Camal, F. Sossan, G. Kariniotakis, R.J. Bessa, P. Pinson, G. Giebel, Q. Libois, M. Lange, B. Nouri, A. Neto, R. Verziljbergh, M. Eijgelaar, N. Hatziargyriou, C. Vitellas, L. Raynaud, M. Cassas, A. Pierrot, T. Göcmen, R.M. Santos, G. Mendes, J. Lezaca, G. Deen, G. Sideratos, G. Sauba, S. Petit, R. Legrand, A. Mehrens, J. Gouveia, L. Teixeira, "Smart4RES: Next generation solutions for renewable energy forecasting and applications with focus on distribution grids," *26th International Conference & Exhibition on Electricity Distribution (CIRED 2021)*, 20-23 September 2021.

111. C. Möhrlen, R.J. Bessa, and G. Giebel, "IEA Wind Task 36 "Probabilistic forecasting games and experiments initiative," *European Meteorological Society Annual Meeting (EMS2021)*, 3-10 September 2021.

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113. G. Kariniotakis, S. Camal, F. Sossan, B. Nouri, J. Lezaca, M. Lange, B. Alonzo, Q. Libois, P. Pinson, R.J. Bessa, C. Goncalves, "Data science for next generation renewable energy forecasting - Highlight results from the Smart4RES Project," *11th Solar & Storage Integration Workshop*, Berlin, Germany, Sept. 2021.

114. G. Sampaio, C. Gouveia, R.J. Bessa, J. Villar, F. Retorta, L. Carvalho, C. Merckx, F. Benothman, F. Promel, M. Panteli, R. Lopes Mourão, M. Louro, A. Águas, P. Marques, "EUniversal's smart grid solutions for the coordinated operation & planning of MV and LV networks with high EV integration," *CIRED Porto Workshop 2022*, 2-3 June 2022.

115. G. Sampaio, R.J. Bessa, C. Gonçalves, C. Gouveia, "Conditional parametric model for sensitivity factors in LV grids: A privacy-preserving approach," in *Proc. of the 22nd Power Systems Computation Conference (PSCC 2022)*, Porto, Portugal, 27 June-1 July 2022.

116. E. Dudkina, J. Villar, R. J. Bessa, "Maximizing green hydrogen production with power flow tracing," *18th European Energy Market Conference (EEM)*, Ljubljana, Slovenia, 13-15 September, 2022.

117. F. André Coelho, F. Silva, C. Gonçalves, R.J. Bessa, Ana Alonso, "A blockchain-based data market for renewable energy forecasts," *4th International Conference on Blockchain Computing and Applications (BCCA 2022)*, San Antonio, Texas, 5-7 Sept. 2022.

118. K. Parginos, R.J. Bessa, S. Camal, G. Kariniotakis, "Interpretable data-driven solar power plant trading strategies," *IEEE PES Innovative Smart Grid Technologies (ISGT) Europe 2022*, Novi Sad, Serbia, 10-12 Oct. 2022.

119. F. Retorta, C. Gouveia, G. Sampaio, R.J. Bessa, J. Villar, "Local flexibility needs estimation based on distribution grid segmentation," *18th European Energy Market Conference (EEM)*, Ljubljana, Slovenia, 13-15 September, 2022.

120. V. Campos, J.R. Andrade, R.J. Bessa, C. Gouveia, "ML-assistant for human operators to solve faults and classify events complexity in electrical grids," *13th Mediterranean Conference on Power Generation, Transmission, Distribution and Energy Conversion (MEDPOWER)*, Malta, 7-9 Nov. 2022.

121. K. Parginos, S. Camal, R.J. Bessa, G. Kariniotakis, "Optimizing wind energy trading decisions using interpretable AI-based tools – the symbolic regression approach," *WindEurope Annual Event 2023*, 25-27 Apr. 2023. **Best Poster Award**

122. L. Costa, A. Silva, R.J. Bessa, R.E. Araújo, "PV inverter fault classification using machine learning and Clarke transformation," *IEEE PowerTech 2023 Conference*, Belgrade, Serbia, 25-29 June 2023.

123. B. Fritz, G. Sampaio, R.J. Bessa, "Data-driven assessment of the DER flexibility impact on the LV grid management," *IEEE PowerTech 2023 Conference*, Belgrade, Serbia, 25-29 June 2023.

124. P. Viegas, J. Simões, P. Silva, D. Cabral, M. Gomes, A. Rodrigues, L. Gonçalves, C. Costa, R.J. Bessa, J. Pereira, P. Benedicto, M. Simões, R. Andrade, J. Viana, M. Araújo, M. Azevedo, "The next generation of ADMS functions for predictive management of DER," *27th International Conference and Exhibition on Electricity Distribution (CIRED 2023)*, Rome, Italy, 12-15 June 2023.

125. R. Couto, J. Faria, J. Oliveira, G. Sampaio, R.J. Bessa, F. Rodrigues, R. Santos, "DeepGrid: Bringing the operational awareness to the LV grid," *27th International Conference and Exhibition on Electricity Distribution (CIRED 2023)*, Rome, Italy, 12-15 June 2023.

126. C. Martins, M. Marques, R.J. Bessa, F. Moaidi, S. Camal, "The benefits of Smart4RES predictive analytics," *27th International Conference and Exhibition on Electricity Distribution (CIRED 2023)*, Rome, Italy, 12-15 June 2023.

127. B. Fritz, G. Sampaio, R.J. Bessa, "Data-driven assessment of the DER flexibility impact on the LV grid management," *IEEE PowerTech 2023 Conference*, Belgrade, Serbia, 25-29 June 2023.

128. L. Rodrigues, D. Faria, F. Coelho, J. Mello, J. Saraiva, J. Villar, R. J. Bessa, "Analysis of flexibility-centric energy and cross-sector business models," *19th International Conference on European Energy Markets (EEM)*, Lappeenranta, Finland, 6-8 June 2023.

PATENTS

- Patent pending, EP19168270.7, Method and device for controlling a wastewater tank pumping system, April 2019. WO/2020/161624 https://patentscope.wipo.int/search/en/detail.jsf?docId=WO20161624
- Patent pending, EP20215836.6, Method and device for preserving privacy of linear regression distributed learning, December 2020. https://patentscope.wipo.int/search/en/detail.jsf?docId=WO22090580

SUPERVISION OF POST-DOC RESEARCHERS, PHD AND MSC STUDENTS

Post-doc researchers

- Laura Cavalcante, April 2015 - June 2018. Forecasting renewable energy production using vector autoregressive model and distributed convex optimization. Project SusCity (FCT).
- Tiago Soares, June 2017 - present. Robust optimization of smart power grids with distributed energy resource flexibility and renewable forecast uncertainty. Project ESGRIDS (FCT).
- Conceição Nunes, December 2018 - present. Data analytics applied to the energy sector. Contracted researcher.
- Hodjat Mariji, November 2019 - present. Data markets applied to renewable energy forecasting. Project Smart4RES (Horizonte 2020).

Supervisor and co-supervisor of PhD Thesis (concluded)

- Kamalanathan Ganesan, *Residential consumer behavioural analysis on the participation in demand response strategies including distributed generation and electric vehicles*, FEUP - Faculty of Engineering, University of Porto, Jul. 2021. Participation of 50% in the supervision team.
- Carla Gonçalves, *Renewable Energy Forecasting – Extreme Quantiles, Data Privacy and Monetization*, FCUP - Faculty of Sciences, University of Porto, Jun. 2021. Participation of 80% in the supervision team.

Co-supervision of PhD students (short-stays at INESC TEC)

- Tiago Soares, Technical University of Denmark (DTU). September 2015-February 2016. *Active distribution grid management based on robust AC optimal power flow*, Chapter 5 of the PhD thesis "Renewable energy sources offering flexibility through electricity markets" [Online] http://orbit.dtu.dk/files/131995209/Thesis_tiasoar_final.pdf.
- Romain Dupin, MINES ParisTech. January 2017-April 2017. *Dynamic line rating forecasts. Advanced modelling of extreme quantiles and impact on forecast value.* Chapter 3 of the PhD thesis "Prévision du Dynamic Line Rating et impact sur la gestion du système électrique" [Online] https://pastel.archives-ouvertes.fr/tel-02149342.

- Margaux Brégère, EDF R&D, *Laboratoire de Mathématiques d'Orsay*, Inria Paris. January-March 2020. *Simulating tariff impact in electrical energy consumption profiles with conditional variational autoencoders*, Chapter 7 of the PhD thesis "Stochastic Bandit Algorithms for Demand Side Management" [Online] https://hal.archives-ouvertes.fr/tel-03059605v3

Supervision and co-supervision of MSc thesis

- Nuno Lima, *Comparison of charging strategies for electric vehicles*, FEUP - Faculty of Engineering, University of Porto, Oct. 2012. https://repositorio-aberto.up.pt/handle/10216/65290
- Miguel Lage, *Parameterization of risk curves associated with the operational reserve*, FEUP - Faculty of Engineering, University of Porto, Oct. 2012. https://repositorio-aberto.up.pt/handle/10216/64948
- Artur Trindade, *Very short-term solar power forecast for MV/LV distribution grids*, FEUP - Faculty of Engineering, University of Porto, March 2014. https://repositorio-aberto.up.pt/handle/10216/83137
- Jorge Filipe, *Optimization strategies for pump-hydro storage and wind farm coordination including wind power uncertainty*, FEUP - Faculty of Engineering, University of Porto, July 2014. [Online] https://repositorio-aberto.up.pt/handle/10216/74603
- Pedro Castro, *Participation of wind generation in balancing reserve markets*, FEUP - Faculty of Engineering, University of Porto, July 2015. [Online] https://repositorio-aberto.up.pt/handle/10216/79429
- Rui Moreira, *Probabilistic forecast of Iberian electricity market prices*, FEP - Faculty of Economics, University of Porto, November 2015. [Online] https://repositorio-aberto.up.pt/handle/10216/808009
- Pedro Cardoso, *Deep learning applied to PMU data in power systems*, FEUP - Faculty of Engineering, University of Porto, July 2017. [Online] https://repositorio-aberto.up.pt/handle/10216/106289
- Rui Oliveira, *Training autoencoders for state estimation in smart grids*, FEUP - Faculty of Engineering, University of Porto, July 2017. [Online] https://repositorio-aberto.up.pt/handle/10216/106291
- Rui Nunes, *Big data techniques for solar power forecasting*, FEP - Faculty of Economics, University of Porto, November 2017. [Online] https://repositorio-aberto.up.pt/handle/10216/108315
- Cézar Cerciari, *Probabilistic forecast of the deviations of the commercial agents and producers in the electricity market*, FCUP - Faculty of Sciences, University of Porto, November 2017. https://repositorio-aberto.up.pt/handle/10216/110613
- Ricardo Silva, *Artificial intelligence techniques applied for the predictive control of stationary storage*, FEUP - Faculty of Engineering, University of Porto, July 2018. [Online] https://repositorio-aberto.up.pt/handle/10216/114216
- Alex Coronati, *Deep learning applied to forecast residual demand curve from wholesale electricity market*, Technical University of Denmark (DTU), Department of Electrical Engineering, July 2018.
- Rui Couto, *Improving solar power forecasting through advanced feature engineering*, FEUP - Faculty of Engineering, University of Porto, July 2020. [Online] https://hdl.handle.net/10216/132804
- Tiago Torres, *Comparison between traditional network reinforcement and the use of DER flexibility*, FEUP - Faculty of Engineering, University of Porto, July 2020. [Online] https://hdl.handle.net/10216/132859
- José Ferreira, *Multivariate forecasting of renewable energy generation*, FEP - Faculty of Economics, University of Porto, October 2021.
- Olga Klyagina, *Improving renewable energy predictability via weather stations' location determination*, Skolkovo Institute of Science and Technology (Skoltech), Russia, June 2022.

- Inês Marques, *Impact of smart meter data availability in data-driven low voltage management*, FEUP - Faculty of Engineering, University of Porto, Oct. 2022.
- Luís Noronha, *Data markets for single buyer and multiple data owners in the energy sector*, FEP - Faculty of Economics, University of Porto, Oct. 2022.
- David Rocha, *Congestion management: Human decision-making under forecast uncertainty*, FEUP - Faculty of Engineering, University of Porto, Oct. 2023.
- Filipe Lobo, *Optimization of EV dynamic tariffs in hybrid PV and storage charging stations*, FEUP - Faculty of Engineering, University of Porto, Oct. 2023.
- Liliana Rodrigues, *Energy management and storage to decarbonize high-performance computing centers*, FEUP - Faculty of Engineering, University of Porto, Oct. 2023.

ACADEMIC JURY (PHD)

- Qi Wang, *Real-time trading strategies for proactive distribution company with distributed generation and demand Response*. Technical University of Denmark (DTU), Denmark, August 2016
- Carlos Adrián Correa Flórez, *Optimization of prosumers flexibility in electricity markets*. MINES ParisTech, France, April 2019.
- Guillaume Le Ray, *On the role of smart metering data analytics in the energy sector digitization process*. Technical University of Denmark (DTU), Denmark, July 2019
- Rodrigo Amaro e Silva, *Spatio-temporal solar forecasting*. University of Lisbon, Faculty of Sciences, Portugal, March 2020.
- Ciaran Gilbert, *Topics in high dimensional energy forecasting*. University of Strathclyde, Uk, September 2020.
- Jonathan Dumas, *Weather-based forecasting of energy generation, consumption and price for microgrids management*. Liège University, Belgium, November 2021.
- David Obst, *Textual data & Transfer Learning for Time Series Forecasting*. Aix-Marseille Université, France, November 2021.
- Kevin Bellinguer, *Optimisation of the use of multiple sources of data in short-term photovoltaic generation forecasting models*. MINES ParisTech, France, June 2022.
- Luis Dias, *Leveraging asset management policies with analytics for multi-dependent and heterogeneous multi-asset systems*. Faculty of Engineering - University of Porto, Portugal, Dec. 2022.
- Paschalia Stefanidou-Voziki, *Advanced data-driven fault diagnosis schemes for active distribution grids*. Polytechnic University of Catalonia (UPC), Spain, Jan. 2023.
- Ekaterina Dudkina, *Peer-to-peer energy exchanges in networks of microgrids*. Universitá di Pisa, Italy, Jan. 2023.

PHD REVIEW REPORT

- Luis González Sotres, *Technical and economic assessment of information and communication technologies for smart grids*. Universidad Pontificia Comillas, Spain, June 2017.

INVITED TALKS

1. *On the use of probabilistic forecasts in power system operations: a demonstration for REN*, IEA Wind Task 25 - Design and Operation of Power Systems with Large Ammounts of Wind Power, Lisbon, 20-21 de September 2011.

2. *Wind power forecasting algorithms and application*, Statistics Seminar, Toulouse School of Economics, Toulouse, France, 13 de December 2011.

3. *Electric vehicles aggregation agents: a business opportunity*, E3 Forum - Education, Employment and Entrepreneurship (International Conference of the MIT Portugal Doctoral Program), Lisbon, Portugal, 28 de June 2012.

4. *Renewable energy forecasting and integration of forecasts in power system operation*, International Congress of System Operation and Energy Markets, COSMER CIER 2013, Medellín, Colombia, 23-25 September 2013.

5. *Economic grid support from variable renewables. Frequency and voltage support at high shares of wind and solar PV at the Iberian peninsula*, (REserviceS EU Project Regional Workshop - panel session about Grid support services in transmission and distribution networks at the Iberian peninsula), Madrid, Spain, 8 October 2013

6. *Remuneration of storage in electricity markets (including ancillary services)*, *Energy Storage - from technologies to grids and electricity markets* , Workshop Organized by EDP, Porto, 4 July 2014.

7. *Integration of renewable energy forecasts in decision-aid tools*, Fórum Labora 2014, Cascais, Portugal, 16 October 2014.

8. *Forecasts in decision making processes*, Workshop - "Renewable Energies Forecasting - State of the art & challenges for the future" organized by the COST Action ES1002 WIRE (Weather Intelligence for Renewable Energies), Paris, France, 22 October 2014.

9. *LV state estimator and voltage control*, FP7 EU Project DREAM Winter School, Grenoble INP, 15 December 2015.

10. *Wind power forecasting with geographically distributed information*, Wind Power Big Data and IoT Forum, Berlin, Germany, 19-20 October 2016.

11. *Knowledge extraction from weather prediction models to improve renewable energy forecasting skill*, 2nd Wind Power Big Data and IoT Forum, Amsterdam, Netherlands, 30-31 March 2017.

12. *The role of HPC in the energy sector digitalization*, Workshop on HPC for Energy applications, Brussels, June 15, 2017.

13. *A rede de distribuição e os seus desafios para uma economia mais limpa, segura e inovadora*. Labora and III China-Portugal Energy R&D Seminar 2017, Cascais, Portugal, 30 October 2017.

14. *Distributed PV forecasting and data marketplace in an era of data privacy concerns*. ESIG 2018 Forecasting Workshop – Applying Meteorology in Power System Planning and Operations, St. Paul, MN, USA, 19-21 Junho 2018.

15. *Energy Analytics for the Smart Grid Ecosystem*. From Intelligent Energy Solutions to Disruptive Business Models, EU Sustainable Energy Week 2018 (EUSEW18), Lisbon, 27 June 2018.

16. *Energy analytics for smart grids and flexibility management*. European Utility Week, Hub Programme ("Consumption Data as Driver for New Business Models"), Vienna, Austria, 7 November, 2018.

17. *Inteligência artificial & energia*. Fórum Energia - Implicações da Transição Energética Desafios e Oportunidades, Lisbon, 16 July 2019.

18. *Data science in sustainable energy systems*, Data Science Portugal Meetup, Porto, Portugal, 4 March 2020.

19. *Network operation tools enabling the use of flexibility*, ISGAN Academy – New business models for distribution grid stakeholders under high penetration of DER, 19 May 2020.

20. *Network operation tools enabling the use of flexibility*, ISGAN Academy – New business models for distribution grid stakeholders under high penetration of DER, 17 December 2020.

21. *Grid and Market Hub – A pathway to the digital energy system of the future*, International SAP Conference for Utilities 2021, 20 May 2021.

22. *Challenges to build communities of edge AI in power grids*, NSF-Sponsored Joint US-European Workshop 2022 "Grid at the Edge: towards the zero-carbon power grid with improved visibility, safety and reliability´´, Split, Croatia, 23-24 May 2022.

23. *Preventing definition of flexibility actions for solving technical problems in electrical grids using uncertainty forecasts*, PMAPS 2022 Special Session – Smart4RES, Manchester, UK, 12-15 June 2022.

24. *Vertical integration of energy use cases in the system-of-systems digital twin*, ENLIT 2022, Frankfurt, Germany, 28-30 November 2022.

25. *ML-assistant for human operators in processing power system alarm data*, Panel Session in 2023 IEEE PES General Meeting "Application of Big Data and AI/ML in monitoring, operations, planning and protection", Orlando, USA, 16-20 July 2023.

26. *Federated learning for predictive management of low voltage grids* , Panel Session in 2023 IEEE PES General Meeting "Big data for enhanced grid performance with considerations of data barriers and privacy", Orlando, USA, 16-20 July 2023.

27. *The challenges of local energy and flexibility markets: more information and simplicity*, EPFL Energy Workshop: Evolution of Electricity Markets, Lausanne, Switzerland, 11 September 2023.

28. *Leveraging big data and data-driven models for sustainable energy systems*, IEEE BDA Tutorial Series: Big Data & Analytics for Power Systems, 26 October 2023.

KEYNOTES

1. Keynote in International Ruhr Energy (INREC 2022), "Decision-making in energy markets under uncertainty: human-in-the-loop"

TUTORIALS IN INTERNATIONAL CONFERENCES

1. L. Matias, R.J. Bessa, J. Grabocka, "Eureka! - How to build accurate predictors for real-valued outputs from simple methods," Tutorial session, ECML-PKDD 2015 - European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Database, Porto, Portugal, Sept. 2015.

2. R.J. Bessa, "Operational problems at the distribution network level," Tutorial: Probabilistic methods for power system management: state of the art, challenges and perspectives (organized by Pierre Pinson, DTU – Danmarks Tekniske Universitet), *19th Power Systems Computation Conference (PSCC 2016)*, Genoa, Italy, June 2016.

3. R.J. Bessa, "Probabilistic forecasting of renewable energy in decision-aid problems under risk," Tutorial: Managing uncertainties in power system operation (organized by Andrea Pitto, Ricerca sul Sistema Energetico – RSE S.p.A.), *13th IEEE PowerTech 2019*, Milano, Italy, 23-27 June 2019.

PARTICIPATION IN EVALUATION PANELS OF R&D PROJECTS

- Dutch Research Council (NWO), Domain Applied and Engineering Sciences (AES).
- National Science Centre Poland.

PARTICIPATION IN EVALUATION PANELS OF ACADEMIC POSITIONS

- Katholieke Universiteit Leuven (KU Leuven), senior research professors (senior BOFZAP) – equivalent to a tenure position as associate professor. December 2020.

ORGANIZATION OF ADVANCED TRAINING COURSES

1. *Risk Management in Power Systems: from Theory to Practice*. EES-UETP: Electric Energy Systems - University Enterprise Training Partnership. Porto, 15-17 June, 2016.
2. *Advanced Data Analytics for Energy Systems*. EES-UETP: Electric Energy Systems - University Enterprise Training Partnership. Porto, 3-5 September, 2018.
3. Power system and grids. Advanced Renewable Energy Program in the Water Sector, EPAL (Portuguese Water Treatment and Distribution Company). May 2020; April 2021.

MEMBER OF EDITORIAL BOARDS

- IEEE Transactions on Sustainable Energy, Feb 2018 – present
- IEEE Power Engineering Letters, Feb 2018 – present
- Guest Editor-in-Chief: "Guest editorial for the special section on advances in renewable energy forecasting: predictability, business models and applications in the power industry," *IEEE Transactions on Sustainable Energy*, vol. 13, no. 2, pp. 1166-1168, April 2022.
- Guest Editor of "AI to enhance power system capabilities: Modelling, operation and control," *IEEE Power and Energy Magazine*, 2023-2024
- MDPI Energies, Sept 2018 – 2022
- Advisor of Open Research Europe Collection: *Data sharing: distributed, federated and collaborative analytics in future energy systems*. https://open-research-europe.ec.europa.eu/collections/data-sharing-future-energy/about

TECHNICAL PROGRAM COMMITTEE OF INTERNATIONAL CONFERENCES

- *Power Systems Computation Conference (PSCC 2018)*, 11-15 Jue 2018, Dublin, Irland
- *Power Systems Computation Conference (PSCC 2020)*, 29 June to 3 de July, Web-conference, 2020.
- *SEST 2019 - 2nd International Conference on Smart Energy Systems and Technologies*, 9-11 September 2019, Porto, Portugal
- *SEST 2020 - 3nd International Conference on Smart Energy Systems and Technologies*, 7-9 September 2019, Istanbul, Turkey

- *SEST 2021 - 4th International Conference on Smart Energy Systems and Technologies*, 6-8 September 2019, Vaasa, Finland.
- *SEST 2022 - 5th International Conference on Smart Energy Systems and Technologies*, 5-7 September 2019, Eindhoven, Netherlands.
- *SEST 2023 - 6th International Conference on Smart Energy Systems and Technologies*, 4-6 September 2023, Mugla, Turkey.

ORGANIZATION COMMITTEE OF INTERNATIONAL CONFERENCES

- *Power Systems Computation Conference (PSCC 2020)*, 29 June to 3 July, Web-conference, 2020.
- *Power Systems Computation Conference (PSCC 2022)*, 27 June to 1 July, Porto, Portugal, 2022.

ORGANIZATION OF SPECIAL SESSIONS IN INTERNATIONAL CONFERENCES

- *Wind Energy Science Conference (WESC 2021). Mini-Symposium: Wind power forecasting*, 25 to 28 of May, Web-conference, 2021.
- *2021 IEEE PowerTech Conference. Big data and machine learning for power systems*, 28 June to 2 July, Web-conference, 2021.
- *IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (IEEE SmartGridComm 2022). Workshop: Data Sharing in Smart Grids*, Singapore, 27 November 2022.

PARTICIPATION IN INTERNATIONAL WORKING GROUPS

- *International Energy Agency (IEA) Task 36 – Forecasting for Wind Energy*. Role: WP leader, 2017-2021.
- *International Energy Agency (IEA) Task 25 – Design and Operation of Power Systems with Large Amounts of Wind Power*. Role: Participant, 2012-2014
- *International Energy Agency (IEA) Task 51 – Forecasting for the Weather Driven Energy System*. Role: WP leader, 2022-Present
- Member of *CIRED (Congrès International des Réseaux Électriques de Distribution) WG 2019-3, Flexibility In Active Distribution Systems*. 2019
- Cigré (International Council on Large Electric Systems) WG2.42 – The impact of the growing use of ML-AI in the operation and control of power networks from an operational perspective. Role: Secretary. Convener: Antoine Marot (RTE), 2022-Present
- IEEE Working Group on Energy Forecasting and Analytics, Role: Secretary. Chair: Jethro Browell, Vice-chair: Yi Wang, 2022-Present
- IEEE Task Force on Data Sharing in Energy Systems, Role: Vice-chair, Chair: Yi Wang, 2022-Present
- Member of WG2 “DERMS and market platforms”, Flexibility Lab by Enel Grids, 2023-...
- Member of WG4 “Digitalisation of the electricity system and customer participation”, ETIP Smart Networks for Energy Transition (SNET), 2023-...

AWARDS

- *IEEE Senior Member*, since February 2019
- Best Paper Selection at the 18th Power Systems Computation Conference (PSCC 2014)
- *ESIG Excellence Award, 2022 - Energy Systems Integration Group*. *"Ricardo Bessa, INESC TEC; for contributions to advances in renewable energy forecasting and development of renewable energy forecasting systems"*. The Excellence Award honors individuals who have made outstanding personal and professional contributions in the renewable energy industry.
- *IEEE Transactions on Sustainable Energy Outstanding Reviewers for 2014*
- *IEEE Transactions on Sustainable Energy Outstanding Reviewers for 2017*
- *IEEE Transactions on Sustainable Energy Outstanding Associated Editors for 2021*