DR. ENG. ROBERTO ROCCHETTA

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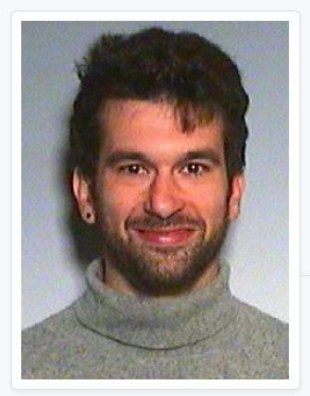

OVERVIEW

Roberto Rocchetta is postdoc involved in a collaborative research effort with the Philips and TU/e. Roberto holds a Master of Science in Energy Engineering from the University of Bologna (IT), a Master of Research in Decision-Making Under Risk and Uncertainty, and a Ph.D. in Resilience Engineering and Data Science from the University of Liverpool (UK). Before joining TU/e Roberto worked one year in the USA as a postdoc involved in a collaborative project with the National Institute of Aerospace (NIA) and NASA Langley. During his Ph.D., he was a visiting student at ETH Zurich, at Polytechnic of Milano, and Ecole Central de Paris. He participated in the development of Machine Learning methods within the start-up ARAMIS in Milan, in 6-month internships. His research focuses on investigating and developing formal generalization error bounds for the solution of stochastic optimization methods and advanced probabilistic frameworks for analysis of data and complex systems. He contributed to the development of computational frameworks for reliability-based design optimization, generalized uncertainty quantification, maintenance optimization, and analysis of complex systems and interconnected energy infrastructures. Roberto's Ph.D. project mostly focused on network reliability and contributed to the OpenCossan software project https://cossan.co.uk. Please refer to the listed publications for more details.

WORK EXPERIENCE, VISITING AND INTERNSHIPS

Postdoc, TU/e and Philips Electronics, Eindhoven, NL	15-01-2019	Present
Research Scholar, NIA and NASA Langley, Hampton, VA, USA	15-01-2019	15-10-2019
Internship, ARAMIS srl, Milan, IT	2017	6 months
Visiting student, Energy Science Center ETH, Zurich, SW	2017	3 months
Visiting student, Lasar group at Milano Polytechnic, Milan, IT	2016	3 months
Master thesis, Ecole Centrale de Paris, Paris, FR	2013	6 months

EDUCATION

Ph.D. at Institute for Risk and Uncertainty, University of Liverpool, UK	2015-2018
Master of Research Decision-Making Under Risk and Uncertainty, Liverpool, UK	2014-2015
Bachelor and Master, Energy Engineering University of Bologna, IT	2008-2014

PERSONAL WEB PAGES

https://research.tue.nl/en/persons/roberto-rocchetta
https://roberock.github.io/
https://www.scopus.com/authid/detail.uri?authorId=56991166000
https://scholar.google.com/citations?user=qMIqumgAAAAJ&hl=en

PEER-REVIEWED JOURNAL PUBLICATIONS

1. R. Rocchetta, Luis G. Crespo, "Reliability-Based Design via Soft-Constrained Scenario Optimization", *(submitted 2020)*
2. R. Rocchetta, E. Patelli, "*A Post-Contingency Power Flow Emulator for Generalized Probabilistic Risks Assessment of Power Grids",* Reliability Engineering & System Safety, Volume 197, May 2020, 106817, https://doi.org/10.1016/j.ress.2020.106817
3. Roberto Rocchetta, Luis G. Crespo, Sean P. Kenny, "*A scenario optimization approach to reliability-based design*", Reliability Engineering & System Safety, Volume 196, 2020, https://doi.org/10.1016/j.ress.2019.106755
4. R. Rocchetta, M. Compare, L. Bellani, E. Patelli, E. Zio, "*A Reinforcement Learning Framework for Optimal Operation and Maintenance of Power Grids",* Applied Energy, Volume 241, Pp 291-301, 2019, https://doi.org/10.1016/j.apenergy.2019.03.027
5. R. Rocchetta, E. Patelli, E. Zio, "*A Power-Flow Emulator Approach for Resilience Assessment of Repairable Power Grids subject to Weather-Induced Failures and Data Deficiency",* Applied Energy, Volume 210, 15, pp 339-350, 2018, https://doi.org/10.1016/j.apenergy.2017.10.126
6. R. Rocchetta, E. Patelli, "*Assessment of Power Grid Vulnerabilities Accounting for Stochastic Loads and Model Imprecision*", International Journal for Electrical Power & Energy Systems, Volume 98, pp 219-232, 2018, https://doi.org/10.1016/j.ijepes.2017.11.047
7. R. Rocchetta, E. Patelli, M. Broggi, Q. Huchet, *"On-Line Bayesian Model Updating for Structural Health Monitoring",* Mechanical Systems and Signal Processing, Volume 103, 174 - 195, 2018, https://doi.org/10.1016/j.ymssp.2017.10.015.
8. R. Rocchetta, E. Patelli, M. Broggi, *"Do we have enough data? Robust reliability via uncertainty quantification*", Applied Mathematical Modelling, Vol-54, pp 710-721, 2018, https://doi.org/10.1016/j.apm.2017.10.020.
9. R. Rocchetta and Y.F. Li and E. Zio, "*Risk Assessment and Risk-Cost Optimization of Distributed Generation Systems Considering Extreme Weather Conditions",* Reliability Engineering and System Safety, Volume 136, pp 47 - 61, 2015, https://doi.org/10.1016/j.ress.2014.11.013.

PEER-REVIEWED CONFERENCE PUBLICATIONS

1. R. Rocchetta, et al. "*Generalization Error Bounds for Support Vector Machines: A Comparative Study",* (under second review at the AAAI 2021 conference)
2. A. Gray, A. Wimbush, R. Rocchetta, M. DeAngelis, P. O. Hristov, E. Miralles-Dolz, D. Calleja, "*Bayesian calibration and probability bounds analysis: solution to the Nasa 2020 UQ challenge on optimization under uncertainty",* Proceedings of the 30th ESREL and the 15th PSAM Conferences, 2020. (available online 1st November 2020)
3. R. Rocchetta, Q. Gao, M. Petkovic, "*Scenario-based generalization error bounds for Anomaly Detection Support Vector Machine Ensembles",* Proceedings of the 30th ESREL and the 15th PSAM Conferences, 2020. (available online 1st November 2020)
4. R. Rocchetta, L. G. Crespo, "*An empirical approach to reliability-based design using scenario optimization",* Proceedings of the 30th ESREL and the 15th PSAM Conferences, 2020 https://www.rpsonline.com.sg/proceedings/esrel2020/pdf/4775.pdf
5. R. Rocchetta, L. G. Crespo, S. Kenny, "*Solution of the benchmark control problem via Scenario Optimization ",* Dynamic system and Control Conference, 2019, 10.1115/DSCC2019-8949
6. R. Rocchetta, L. Bing, E. Patelli, G. Sansavini, *"Effect of load-generation variability on power grid cascading failures",* ESREL 2018, Trondheim, Norway, 2018. 10.1201/9781351174664-337

7. R. Rocchetta, M. Compare, E. Patelli, L. Bellani, E. Zio, *"A reinforcement learning framework for optimisation of power grid operations and maintenance",* 8th international workshop on reliable engineering computing, REC 2018, Liverpool, UK, Jully, 2018.
8. R. Rocchetta, E. Patelli, *"Stochastic Analysis and Reliability-Cost Optimization of Distributed Generators and Air Source Heat Pumps", to be presented at the* 2nd International Conference on System Reliability and Safety, ICSRS, 2017, 10.1109/ICSRS.2017.8272792
9. R. Rocchetta, E. Patelli, *"An Efficient Framework for Reliability Assessment of Power Networks Installing Renewable Generators and Subject to Parametric P-box Uncertainty",* Proceedings of the 27th ESREL conference, https://www.taylorfrancis.com/books/9781315210469
10. R. Rocchetta, E. Patelli, "*Power Grid Robustness to Severe Failures: Topological and Flow Based Metrics Comparison",* European Congress on Computational Methods in Applied Sciences and Engineering, ECCOMAS, Crete 2016, pp. 6121-6135.
11. R. Rocchetta, E. Patelli, M. Broggi, Q. Huchet, *"On Bayesian Approaches for Real-Time Crack Detection",* ESREL conference proceedings, Zurich 2015, pp 1929-1936.
12. R. Rocchetta, E. Patelli, "*Imprecise Probabilistic Framework for Power Grids Risk Assessment and Sensitivity Analysis",* European Safety and Reliability Conference, ESREL, Glasgow 2016
13. R. Rocchetta, E. Patelli, M. Broggi, *"Efficient Epistemic-Aleatory Uncertainty Quantification: Application to the NAFEMS Challenge Problem",* NAFEMS World Congress, San Diego, California, USA 21-24 June 2015.
14. R. *Rocchetta*, E. Patelli*, "A Simulation-Based Probabilistic Risk Assessment of Electric Vehicles Control Strategies Accounting Renewable Energy Sources",* International Probabilistic Workshop, IPW Liverpool, UK, 4-6 November 2015, pp. 183-198.

HONOURS AND AWARDS

Top 3: for the Image of Risk Competition, ESREL 2017, Portorz, Slovenia
First Prize: Mathematical Competitive Game (2016-2017)
'From the Earth to the Moon' Fédération Française des Jeux Mathématiques, French Federation of Mathematical Games & Mathematical Modelling Company, Corp.
Scholarships: For a master of research and PhD offered by EPSRC and ESRC (2015-2016)
Second Prize: Mathematical Competitive Game (2015-2016)
'*Uncertainties in GPS Positioning'* Fédération Française des Jeux Mathématiques, French Federation of Mathematical Games & Mathematical Modelling Company, Corp.
Winner of Leonardo da Vinci Scholarship for Research Abroad (2013)
Final Master Thesis project provided by Bologna University.

LANGUAGE QUALIFICATIONS

Italian	Mother tongue
English (IELTS & Cambridge Certificates)	Working Proficiency
Dutch	Just Started
French	Basic knowledge (A2-B1)

SOFTWARE KNOWLEDGE

- MATLAB, PYTHON, SQL
- R-studio (limited)
- LaTeX, JabRef, Mendely, Microsoft Office, Slack

KEY WORDS AND RESEARCH INTERESTS

Machine Learning, Reliability, Resilience, Vulnerability and Risk, Probability theory, Complex systems and Networks Stochastic Optimization, Generalization error bounds; Uncertainty Quantification; Energy Systems;