

VALÉRIA MONTEIRO DE SOUZA

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ACADEMIC CREDENTIALS

Doctor of Philosophy Candidate in Electrical Engineering (2022 – Present)

Norwegian University of Science and Technology (NTNU), Trondheim, Trøndelag, Norway
Concentration: Power System Operation and Analysis
Supervisor: Kjetil Obstfelder Uhlen, Ph.D.

Master of Science in Electrical Engineering (2017 – 2019)

10.00 / 10.00

Federal University of Pará (UFPA), Belém, PA, Brazil
Concentration: Electric Power Systems

Thesis: “Distributed generation pre-dispatch optimization to improve the operation of distribution networks in the presence of bidirectional step voltage regulators”

Supervisor: João Paulo Abreu Vieira, Ph.D.

Available at: repositorio.ufpa.br/jspui/handle/2011/12057

Bachelor of Science in Electrical Engineering (2011 – 2017)

9.04 / 10.00

Federal University of Pará (UFPA), Belém, PA, Brazil

Science without Borders (CsF) scholarship at University of Coimbra, Portugal (2012 – 2013)

Thesis: “Assessment of step voltage regulator operation in distribution networks with distributed generation units using the OpenDSS software”

Supervisor: João Paulo Abreu Vieira, Ph.D.

MAIN RESEARCH INTERESTS

- Wide-area monitoring and control systems based on synchrophasor measurements
- Real-time dynamic power system simulation and analysis of voltage stability indices
- Sizing, placement and interconnection impacts of distributed energy resources (DERs)

PROFESSIONAL EXPERIENCE

R&D Project Co-Investigator (2022 – 2024)

Norwegian University of Science and Technology (NTNU) in association with Statnett, Svenska Kraftnätt, Foundation for Industrial and Technical Research (SINTEF), Research Institutes of Sweden (RISE) and Royal Institute of Technology (KTH)

Project: “Nordic Early Warning Early Prevention System (NEWEPS)”

Duties: Transmission network modeling and simulation of case studies in Python and in PSS®E, with emphasis on monitoring of voltage stability indices (Work Package B)

Principal Investigator: Kjetil Obstfelder Uhlen, Ph.D.

R&D Project Co-Investigator (2016 – 2019)

Federal University of Pará (UFPA) in association with Brazilian Electricity Regulatory Agency (ANEEL), Equatorial Energia Utility Company and ITB Electrical Equipment Co., Ltd.

Project: “Method of detection and protection against reverse power tap changer runaway condition of step voltage regulator banks located at active distribution networks”

Duties: Distribution network modeling and simulation of case studies via OpenDSS software

Principal Investigator: João Paulo Abreu Vieira, Ph.D.

Intern at Biomedical Signal & Image Processing and Analysis Laboratory (2011 – 2012)

Federal University of Pará (UFPA) in association with Amazon Foundation for Studies and Research Support of Pará (FAPESPA)

Duties: Programmer and main translator of the C# language software named Open Dental

Supervisor: Ângela Vilhena Dias, Ph.D.

TEACHING EXPERIENCE

Teaching Assistant (2023 – 2024)

Norwegian University of Science and Technology (NTNU)

Course: “TET4210 – Modelling and Analysis of Electrical Machines”

Duties: Preparation of exercises, grading of exams and individual assistance to students

Course Coordinator: Arne Nysveen, Ph.D.

VOLUNTEER EXPERIENCE

Founding Partner at Nonprofit Institution (2009 – 2021)

Twice-weekly collaborator at a local religious, social welfare, philanthropic, educational, cultural and nonprofit institution named “Casa Cristã Santa Clara”

PROFESSIONAL SKILLS

- Working knowledge of Python language for data science and data analytics tools
- Working knowledge of Power System Simulator for Engineering (PSS®E) software
- Experienced with power systems modeling and renewables interconnection studies
- Advanced user of Microsoft Office tools (Word, PowerPoint, Excel and Visio)
- Advanced user of Open Distribution System Simulator (OpenDSS) software
- Intermediate user of Matrix Laboratory (MATLAB) software
- Intermediate user of Autodesk Computer-Aided Design (AutoCAD) software
- Familiar with SEL-5702 SynchroWave Operations (SWO) software
- Familiar with artificial intelligence applications concerning electric power systems
- Familiar with step voltage regulator control, installation and operation

LANGUAGES

- Portuguese: Native language
- English: Advanced (CEFR level C1)
101/120 score in TOEFL iBT: Reading 29, Listening 28, Speaking 23, Writing 21
- Italian: Intermediate (CEFR level B1)
- Norwegian Bokmål: Basic (CEFR level A1)

CONFERENCES

7th International Conference on Smart Energy Systems and Technologies (SEST), Turin, Italy, 2024. Accepted Paper: "Performance Assessment of Voltage Stability Indices for Real-Time Power Margin Estimation". Role: Oral Presenter.

6th International Conference on Smart Energy Systems and Technologies (SEST), Muğla, Turkey, 2023. Accepted Paper: "Comparison of Voltage Stability Indices Based on Synchronized PMU Measurements". Role: Oral Presenter.

21st EERA DeepWind Conference, Trondheim, Norway, 2023. Role: Organizing Committee.

XXV National Seminar on Electric Power Production and Transmission (SNPTEE), Belo Horizonte, Brazil, 2019. Accepted Paper: "Effects of distributed generation on the bidirectional operation of cascaded step voltage regulators: case study of a real 34.5 kV distribution feeder". Role: Participant.

XVIII Ibero-American Regional Meeting of CIGRÉ (ERIAC), Foz do Iguaçu, Brazil, 2019. Accepted Paper: "Comparison between conventional load flow, QSTS simulation, and dynamic simulation to assess the operation of step voltage regulators in active distribution networks". Role: Oral Presenter.

13th IEEE International Conference on Industry Applications (INDUSCON), São Paulo, Brazil, 2018. Accepted Paper: "Impact of distributed generation on distribution systems with cascaded bidirectional step voltage regulators". Role: Poster Presenter.

VII Brazilian Symposium on Power Systems (SBSE), Niterói, Brazil, 2018. Accepted Paper: "QSTS simulation of reverse power tap changer runaway condition in active distribution networks". Role: Participant.

JOURNAL PUBLICATIONS

V. M. Souza, H. R. Brito, K. O. Uhlen, "Comparative Analysis of Online Voltage Stability Indices Based on Synchronized PMU Measurements", in *Sustainable Energy, Grids and Networks (SEGAN)*, vol. 40, December 2024.
DOI: 10.1016/J.SEGAN.2024.101544

V. M. Souza, J. P. A. Vieira, H. R. Brito, “Mitigating the impact of high-capacity dispatchable distributed generation on reconfigurable distribution networks with step voltage regulators: A real case study on voltage issues”, in *Electric Power Systems Research*, vol. 207, June 2022. DOI: 10.1016/J.EPSR.2022.107842

D.C. Pinheiro, J. P. A. Vieira, **V. M. Souza**, V. C. Souza, H. A. Barata, M. S. Costa, A. O. R. Garcia, “Robust Local Inhibitor of Reverse Power Tap Changer Runaway Events in Reconfigurable and Active Distribution Networks”, in *IEEE Transactions on Power Delivery*, vol. 37, n. 2, pp. 813-822, April 2022. DOI: 10.1109/TPWRD.2021.3071865

CONFERENCE PUBLICATIONS

V. M. Souza, H. R. Brito, K. O. Uhlen, “Performance Assessment of Voltage Stability Indices for Real-Time Power Margin Estimation”, in *7th International Conference on Smart Energy Systems and Technologies (SEST)*, Turin, Italy, 2024. DOI: 10.1109/SEST61601.2024.10694352

H. R. Brito, **V. M. Souza**, K. O. Uhlen, “Impact of Secondary Voltage Regulation Dynamics on Transmission-Level Voltage Stability”, in *7th International Conference on Smart Energy Systems and Technologies (SEST)*, Turin, Italy, 2024. DOI: 10.1109/SEST61601.2024.10694346

K. O. Uhlen, K. P. Myhren, H. Haugdal, D. S. Baltensperger, O. Finseth, A. Z. A. Rajaretnam, **V. M. Souza**, “Wide Area Monitoring and Protection - Application Developments and IT infrastructure”, in *Conseil International des Grands Réseaux Électriques (CIGRÉ) Session*, Paris, France, 2024. Available at: www.e-cigre.org/publications/detail/c2-10972-2024-wide-area-monitoring-and-protection-application-developments-and-it-infrastructure.html

V. M. Souza, H. R. Brito, K. O. Uhlen, “Comparison of Voltage Stability Indices Based on Synchronized PMU Measurements”, in *6th International Conference on Smart Energy Systems and Technologies (SEST)*, Muğla, Turkey, 2023. DOI: 10.1109/SEST57387.2023.10257545

H. R. Brito, **V. M. Souza**, K. O. Uhlen, “Investigations on Secondary Voltage Control for Long-Term Reactive Power Management”, in *6th International Conference on Smart Energy Systems and Technologies (SEST)*, Muğla, Turkey, 2023. DOI: 10.1109/SEST57387.2023.10257330

V. M. Souza, H. R. Brito, J. P. A. Vieira, M. E. L. Tostes, U. H. Bezerra, H. N. S. Cardoso, M. S. Costa, “Comparison between conventional load flow, QSTS simulation, and dynamic simulation to assess the operation of step voltage regulators in active distribution networks”, in *XVIII Ibero-American Regional Meeting of CIGRÉ (ERAC)*, Foz do Iguaçu, Brazil, 2019. DOI: 10.48550/arXiv.2310.09054

H. R. Brito, **V. M. Souza**, J. P. A. Vieira, M. E. L. Tostes, U. H. Bezerra, V. C. Souza, D. C. Pinheiro, H. A. Barata, H. N. S. Cardoso, M. S. Costa, “Effects of distributed generation on the bidirectional operation of cascaded step voltage regulators: case study of a real 34.5 kV distribution feeder”, in *XXV National Seminar on Electric Power Production and Transmission (SNPTEE)*, Belo Horizonte, Brazil, 2019.
DOI: 10.48550/arXiv.2310.09074

V. M. Souza, H. R. Brito, J. P. A. Vieira, “QSTS simulation of reverse power tap changer runaway condition in active distribution networks”, in *VII Brazilian Symposium on Power Systems (SBSE)*, Niterói, Brazil, 2018.
DOI: 10.1109/SBSE.2018.8395574

H. R. Brito, **V. M. Souza**, V. C. Souza, J. P. A. Vieira, U. H. Bezerra, M. E. L. Tostes, A. O. R. Garcia, M. S. Costa, G. T. Carrera, H. N. S. Cardoso, “Impact of distributed generation on distribution systems with cascaded bidirectional step voltage regulators”, in *13th IEEE International Conference on Industry Applications (INDUSCON)*, São Paulo, Brazil, 2018.
DOI: 10.1109/INDUSCON.2018.8627230

PATENTS

M. E. L. Tostes, U. H. Bezerra, J. P. A. Vieira, H. N. S. Cardoso, D. C. Pinheiro, V. C. Souza, H. A. Barata, H. R. Brito, M. N. B. F. Marinho, **V. M. Souza**, T. M. Wanzeler, “Inhibitor of step voltage regulator reverse power tap changer runaway condition”. Brazilian patent number BR512019001562-2, filed July 27, 2017, and issued July 30, 2019.
Available at: transparencia.cc/dados/inpi/software/5120190015622