REFERENCES

- [1] Arturo Roman Messina, *Wide-Area Monitoring of Interconnected Power Systems*. London, United Kingdom: The Institution of Engineering and Technology, 2015.
- [2] L. L. Lei, "Power System Restructuring and Deregulation," *JOHN WILEY SONS*, *LTD*, vol. 53, no. 9, pp. 1689–1699, 2001.
- [3] Roy Billinton and W. LI, *Reliability Assessment of Electric Power System Using System Using Monte Carlo Methods*, 1'st editi. Springer, 1994.
- [4] T. Jain, S. N. Singh, and S. C. Srivastava, "Adaptive wavelet neural network-based fast dynamic available transfer capability determination," *IET Gener. Transm. Distrib.*, vol. 4, no. 4, p. 519, Dec. 2010.
- [5] N. G. Singhal and K. W. Hedman, "Iterative transmission and distribution optimal power flow framework for enhanced utilisation of distributed resources," *IET Gener. Transm. Distrib.*, vol. 9, no. 11, pp. 1089-1095(6), Aug. 2015.
- [6] J. Brady and M. O'Mahony, "Modelling charging profiles of electric vehicles based on real-world electric vehicle charging data," *Sustain. Cities Soc.*, vol. 26, pp. 203–216, 2016.
- [7] F. Luo, Z. Y. Dong, G. Liang, J. Murata, and Z. Xu, "A Distributed Electricity Trading System in Active Distribution Networks Based on Multi-Agent Coalition and Blockchain," *IEEE Trans. Power Syst.*, p. 1, 2018.
- [8] M. L. Di Silvestre, P. Gallo, M. G. Ippolito, E. R. Sanseverino, and G. Zizzo, "A Technical Approach to the Energy Blockchain in Microgrids," *IEEE Trans. Ind. Informatics*, vol. 14, no. 11, pp. 4792–4803, Nov. 2018.
- [9] T. T. C. T. Force, "Available transfer capability definitions and determination," Jun. 1996.
- [10] T. T. C. T. Force, "Transmission Transfer Capability," 1995.
- [11] FERC, "Open Access Same-Time Information System and Standards of Conduct."
- [12] J. Kumar and A. Kumar, "ACPTDF for Multi-transactions and ATC Determination in Deregulated Markets," *Int. J. Electr. Comput. Eng.*, 2011.
- [13] B. Marisekar and P. L. Somasundaram, "Computation of available transfer capability(ATC) in the open access transmission system(OATS) for various uncertainity conditions," in 2015 International Conference on Circuits, Power and Computing Technologies [ICCPCT-2015], 2015, pp. 1–5.
- [14] P. Grid, "Approach Paper for Assessment of Transfer Capability in the Indian Bulk Power System'."
- [15] A. Kumar S. C. Sirvastva, "AC Power Transfer Distribution Factors for Allocating Power Transactions in a Deregulated Market," *IEEE Power Eng. Rev.*, vol. 22, no. 7, pp. 42–43, Jul. 2002.

- [16] D. P. Venkatesh, R. Gnanadass, and D. N. P. Padhy, "Available Transfer Capability Determination Using Power Transfer Distribution Factors," *Int. J. Emerg. Electr. Power Syst.*, vol. 1, no. 2.
- [17] A. KUMAR, S. C. SRIVASTAVA, and S. N. SINGH, "Available Transfer Capability (ATC) Determination in a Competitive Electricity Market Using AC Distribution Factors," *Electr. Power Components Syst.*, vol. 32, no. 9, pp. 927– 939, 2004.
- [18] G.L. Landgren H.L. Terhune and R.K. Angel, "Transmission interchange capability - analysis by computer," *IEEE Trans. Power Appar. Syst.*, vol. 91, no. 6, pp. 2405-2414,.
- [19] M. S.-N. G.C. Ejebe J.G. Waight, "Fast calculations of linear available transfer capability," *Power Ind. Comput. Appl. Conf.*, pp. 255–260., 1999.
- [20] R.D.Christie B.F. Wollenberg and I. Wangersteen, "Transmission management in the deregulated environment," *Proc. IEEE*, vol. 88, no. 2, pp. 170–195.
- [21] D. Manjuree Elham Makram, "Investigation of distribution factors for bilateral contract assessment," *Electr. Power Syst. Res.*, pp. 205–214, 2003.
- [22] Y. Ou and C. Singh, "Calculation of risk and statistical indices associated with available transfer capability," *IEE Proc. - Gener. Transm. Distrib.*, vol. 150, no. 2, pp. 239-244(5), Mar. 2003.
- [23] Y. Ou and C. Singh, "Assessment of available transfer capability and margins," *IEEE Trans. Power Syst.*, vol. 17, no. 2, pp. 463–468, 2002.
- [24] R. Prathiba and C. C. A. Rajan, "Estimation of available transfer capability using soft computing techniques," in *IET Chennai 3rd International on Sustainable Energy and Intelligent Systems (SEISCON 2012)*, 2012, pp. 1–6.
- [25] C. Vaithilingam and R. P. Kumudini Devi, "Available transfer capability estimation using Support Vector Machine," *Int. J. Electr. Power Energy Syst.*, vol. 47, pp. 387–393, 2013.
- [26] M. Y. Patel and A. A. Girgis, "New iterative method for Available Transfer Capability calculation," in 2011 IEEE Power and Energy Society General Meeting, 2011, pp. 1–6.
- [27] N. B. Dev Choudhury and R. Jena, "Available Transfer Capability enhancement in constrained network conditions using TCSC," in 2014 International Conference on Advances in Engineering Technology Research (ICAETR - 2014), 2014, pp. 1– 7.
- [28] N. D. Ghawghawe and K. L. Thakre, "ATC evaluation with consideration of load changes and participation factors- A sensitivity analysis approach," in 2007 International Power Engineering Conference (IPEC 2007), 2007, pp. 124–129.
- [29] G. C. Ejebe, J. Tong, J. G. Waight, J. G. Frame, X. Wang, and W. F. Tinney, "Available transfer capability calculations," *IEEE Trans. Power Syst.*, vol. 13, no. 4, pp. 1521–1527, Nov. 1998.
- [30] C. A. Canizares and F. L. Alvarado, "Point of collapse and continuation methods for large AC/DC systems," *IEEE Trans. Power Syst.*, vol. 8, no. 1, pp. 1–8, Feb.

1993.

- [31] Hsiao-Dong Chiang, A. J. Flueck, K. S. Shah, and N. Balu, "CPFLOW: a practical tool for tracing power system steady-state stationary behavior due to load and generation variations," *IEEE Trans. Power Syst.*, vol. 10, no. 2, pp. 623–634, May 1995.
- [32] M. Kim, D. Kim, Y. T. Yoon, S. Lee, and J. Park, "Determination of Available Transfer Capability Using Continuation Power Flow with Fuzzy Set Theory," in 2007 IEEE Power Engineering Society General Meeting, 2007, pp. 1–7.
- [33] Zhongjie Chen, M. Zhou, and G. Li, "ATC determination for the AC/DC transmission systems using modified CPF method," in 2010 5th International Conference on Critical Infrastructure (CRIS), 2010, pp. 1–8.
- [34] M. Eidiani, H. Zeynal, A. K. Zadeh, and K. M. Nor, "Exact and efficient approach in static assessment of Available Transfer Capability (ATC)," in 2010 IEEE International Conference on Power and Energy, 2010, pp. 189–194.
- [35] S. Kim, M. Kyeom, and J. Park, "Electrical Power and Energy Systems Consideration of multiple uncertainties for evaluation of available transfer capability using fuzzy continuation power flow," *Int. J. Electr. Power Energy Syst.*, vol. 30, no. 10, pp. 581–593, 2008.
- [36] R. Kumar and A. Kumar, "Impact of SSSC Control Parameters on Available Transfer Capability Enhancement," in 2015 International Conference on Computational Intelligence and Communication Networks (CICN), 2015, pp. 1520–1526.
- [37] T. Nireekshana and P. K. Chowdary, "Enrichment of Available Transfer Capability using TCSC," in 2015 Conference on Power, Control, Communication and Computational Technologies for Sustainable Growth (PCCCTSG), 2015, pp. 217–221.
- [38] R. K. Pandey and K. V Kumar, "Multi agent system driven SSSC for ATC enhancement," in 2016 National Power Systems Conference (NPSC), 2016, pp. 1– 6.
- [39] R. K. Pandey and D. K. Gupta, "ATC enhancement with SSSC-knowledge inference based intelligent controller tuning," in 2016 IEEE Region 10 Conference (TENCON), 2016, pp. 2730–2733.
- [40] A. Sunny and V. Janamala, "Available Transfer Capability (ATC) enhancement optimization of UPFC shunt converter location with GSF in deregulated power system," in 2016 International Conference on Circuit, Power and Computing Technologies (ICCPCT), 2016, pp. 1–5.
- [41] N. Sinha, S. Karan, and S. K. Singh, "Modified DE Based ATC Enhancement Using FACTS Devices," in 2015 International Conference on Computational Intelligence and Networks, 2015, pp. 3–8.
- [42] J. A. Momoh and S. S. Reddy, "Optimal location of FACTS for ATC enhancement," in 2014 IEEE PES General Meeting | Conference Exposition, 2014, pp. 1–5.
- [43] Y. Xiao, Y. H. Song, C.-C. Liu, and Y. Z. Sun, "Available transfer capability

enhancement using FACTS devices," *IEEE Trans. Power Syst.*, vol. 18, no. 1, pp. 305–312, Feb. 2003.

- [44] M. Pavella, D. Ruiz-Vega, J. Giri, and R. Avila-Rosales, "An integrated scheme for on-line static and transient stability constrained ATC calculations," in 1999 IEEE Power Engineering Society Summer Meeting. Conference Proceedings (Cat. No.99CH36364), 1999, vol. 1, pp. 273–276 vol.1.
- [45] Y. Yuan, J. Kubokawa, T. Nagata, and H. Sasaki, "A solution of dynamic available transfer capability by means of stability constrained optimal power flow," in 2003 IEEE Bologna PowerTech - Conference Proceedings, 2003, vol. 2, pp. 191–198.
- [46] T. K. Hahn, M. K. Kim, D. Hur, J.-K. Park, and Y. T. Yoon, "Evaluation of available transfer capability using fuzzy multi-objective contingency-constrained optimal power flow," *Electr. Power Syst. Res.*, vol. 78, no. 5, pp. 873–882, 2008.
- [47] O. Alsac and B. Stott, "Optimal load flow with steady-state security," *IEEE Trans. Power Appar. Syst.*
- [48] Guoqing Li, Hao Sun, and Zhiyuan Lv, "Study of Available Transfer Capability based on Improved Artificial Fish Swarm Algorithm," in 2008 Third International Conference on Electric Utility Deregulation and Restructuring and Power Technologies, 2008, pp. 999–1003.
- [49] C. Audet and J. E. Dennis, "Analysis of Generalized Pattern Searches," *SIAM J. Optim.*, vol. 13, no. 3, pp. 889–903, 2002.
- [50] Weixing Li, Peng Wang, and Zhizhong Guo, "Determination of optimal total transfer capability using a probabilistic approach," *IEEE Trans. Power Syst.*, vol. 21, no. 2, pp. 862–868, May 2006.
- [51] A. B. Rodrigues and M. G. Da Silva, "Probabilistic Assessment of Available Transfer Capability Based on Monte Carlo Method With Sequential Simulation," *IEEE Trans. Power Syst.*, vol. 22, no. 1, pp. 484–492, Feb. 2007.
- [52] D.-J. Shin, J.-O. Kim, K.-H. Kim, and C. Singh, "Probabilistic approach to available transfer capability calculation," *Electr. Power Syst. Res.*, vol. 77, no. 7, pp. 813–820, 2007.
- [53] L. Gang, C. Jinfu, C. Defu, S. Dongyuan, and D. Xianzhong, "Probabilistic assessment of available transfer capability considering spatial correlation in wind power integrated system," *IET Gener. Transm. Distrib.*, vol. 7, no. 12, pp. 1527-1535(8), Dec. 2013.
- [54] P. Du *et al.*, "Probabilistic-Based Available Transfer Capability Assessment Considering Existing and Future Wind Generation Resources," *IEEE Trans. Sustain. Energy*, vol. 6, no. 4, pp. 1263–1271, Oct. 2015.
- [55] E. Ciapessoni, D. Cirio, G. Kj⊘lle, S. Massucco, A. Pitto, and M. Sforna, "Probabilistic risk-based security assessment of power systems considering incumbent threats and uncertainties," in 2017 IEEE Power Energy Society General Meeting, 2017, p. 1.
- [56] N. F. Avila and C. Chu, "Distributed Probabilistic ATC Assessment by Optimality Conditions Decomposition and LHS Considering Intermittent Wind Power Generation," *IEEE Trans. Sustain. Energy*, vol. 10, no. 1, pp. 375–385, Jan. 2019.

- [57] F. Li, J. Wang, H. Cheng, Y. Zheng, and X. Zhang, "Probabilistic assessment of interregional available transfer capability for renewable energy transactions," in 2015 5th International Conference on Electric Utility Deregulation and Restructuring and Power Technologies (DRPT), 2015, pp. 76–81.
- [58] R. Zhang, G. Li, and H. Chen, "Study of Probabilistic Available Transfer Capability by Improved Particle Swarm Optimization," in 2006 International Conference on Power System Technology, 2006, pp. 1–6.
- [59] H. Maghrabi, J. A. Refaee, and M. Mohandes, "Contingency analysis of bulk power system using neural networks," in *POWERCON '98. 1998 International Conference on Power System Technology. Proceedings (Cat. No.98EX151)*, 1998, vol. 2, pp. 1251–1254.
- [60] M. M. Othman, A. Mohamed, and A. Hussain, "A novel feature selection and extraction method for neural network based transfer capability assessment of power systems," in *Student Conference on Research and Development: Networking the Future Mind in Convergence Technology, SCOReD 2003 -Proceedings*, 2003, pp. 401–406.
- [61] K. Narasimha Rao, J. Amarnath, K. Kiran Kumar, and S. Kamakshiah, "Available transfer capability calculations using neural networks in deregulated power," in 2008 International Conference on Condition Monitoring and Diagnosis, 2008, pp. 711–715.
- [62] S. N. Pandey, N. K. Pandey, S. Tapaswi, and L. Srivastava, "Neural Network-Based Approach for ATC Estimation Using Distributed Computing," *IEEE Trans. Power Syst.*, vol. 25, no. 3, pp. 1291–1300, Aug. 2010.
- [63] T. Jain, S. N. Singh, and S. C. Srivastava, "A neural network based method for fast ATC estimation in electricity market," in *IEEE PES General Meeting*, 2007, pp. 1–8.
- [64] T. Jain, S. N. Singh, and S. C. Srivastava, "Adaptive wavelet neural network-based fast dynamic available transfer capability determination," *IET Gener. Transm. Distrib.*, vol. 4, no. 4, pp. 519-529(10), Apr. 2010.
- [65] T. Jain, S. N. Singh, and S. C. Srivastava, "Fast static available transfer capability determination using radial basis function neural network," *Appl. Soft Comput.*, vol. 11, no. 2, pp. 2756–2764, 2011.
- [66] V. Agnes Idhaya Selvi, M. Karuppasamypandiyan, R. Narmathabanu, and D. Devaraj, "Artificial neural network approach for on-line ATC estimation in deregulated power system," in 2014 International Conference on Power Signals Control and Computations, EPSCICON 2014, 2014, no. January, pp. 8–10.
- [67] X. Luo, A. D. Patton, and C. Singh, "Real power transfer capability calculations using multi-layer feed-forward neural networks," *IEEE Trans. Power Syst.*, vol. 15, no. 2, pp. 903–908, May 2000.
- [68] M. Khazaei and S. Jadid, "Contingency ranking using neural networks by Radial Basis Function method," in 2008 IEEE/PES Transmission and Distribution Conference and Exposition, 2008, pp. 1–4.
- [69] Rakesh K. Misra and Shiv P. Singh, "Efficient ANN method for post-contingency

status evaluation," Int. J. Electr. Power Energy Syst., vol. 32, no. 1, pp. 54-62, 2010.

- [70] S. R, R. S. Kumar, and A. T. Mathew, "Online Static Security Assessment Module Using Artificial Neural Networks," *IEEE Trans. Power Syst.*, vol. 28, no. 4, pp. 4328–4335, 2013.
- [71] I. H. A. A. Wahab Mohamed Noor Azah, "Feature Selection and Extraction Methods for Power Systems Transient Stability Assessment Employing Computational Intelligence Techniques," *Neural Process. Lett.*, 2012.
- [72] S. Kesherwani, S. C. Srivastava, and A. Mohapatra, "Synchrophasor measurement-based approach for online available transfer capability evaluation," *IET Gener. Transm. Distrib.*, vol. 13, no. 17, pp. 3941–3950, Sep. 2019.
- [73] W. Li, C. Wen, J. Chen, K. Wong, J. Teng, and C. Yuen, "Location Identification of Power Line Outages Using PMU Measurements With Bad Data," *IEEE Trans. Power Syst.*, vol. 31, no. 5, pp. 3624–3635, 2016.
- [74] H. Shah and K. Verma, "PMU-ANN based approach for real time voltage stability monitoring," in 2016 IEEE 6th International Conference on Power Systems (ICPS), 2016, pp. 1–5.
- [75] J. Machowski, J. W. Bialek, and J. R. Bumby, POWER SYSTEM DYNAMICS Stability and Control, 2nd ed. West Susex, United Kingdom: 8 JohnWiley & Sons, 2008.
- [76] J. Ma, P. Zhang, H. j. Fu, B. Bo, and Z. y. Dong, "Application of Phasor Measurement Unit on Locating Disturbance Source for Low-Frequency Oscillation," *IEEE Trans. Smart Grid*, vol. 1, no. 3, pp. 340–346, Dec. 2010.
- [77] I. Idehen, Z. Mao, and T. Overbye, "An emulation environment for prototyping PMU data errors," in 2016 North American Power Symposium (NAPS), 2016, pp. 1–6.
- [78] A. St. Leger, J. Spruce, T. Banwell, and M. Collins, "Smart grid testbed for Wide-Area Monitoring and Control systems," in 2016 IEEE/PES Transmission and Distribution Conference and Exposition (T D), 2016, pp. 1–5.
- [79] B. Cui, A. Srivastava, and P. Banerjee, "Synchrophasor Based Condition Monitoring of Instrument Transformers using Clustering Approach," *IEEE Trans. Smart Grid*, p. 1, Dec. 2019.
- [80] J. Lin, J. Song, and C. Lu, "Synchrophasor Data Analytics: Transmission Line Parameters Online Estimation for Energy Management," *IEEE Trans. Eng. Manag.*, 2019.
- [81] R. K. Panda, A. Mohapatra, and S. C. Srivastava, "Online Estimation of System Inertia in a Power Network utilizing Synchrophasor Measurements," *IEEE Trans. Power Syst.*, p. 1, Dec. 2019.
- [82] D. M. Laverty, R. J. Best, P. Brogan, I. Al Khatib, L. Vanfretti, and D. J. Morrow, "The OpenPMU Platform for Open-Source Phasor Measurements," *IEEE Trans. Instrum. Meas.*, vol. 62, no. 4, pp. 701–709, 2013.
- [83] R. V Krishna, S. Ashok, and M. G. Krishnan, "Synchronised Phasor Measurement

Unit," in 2014 International Conference on Power Signals Control and Computations (EPSCICON), 2014, pp. 1–6.

- [84] H. Liu, T. Bi, and Q. Yang, "The Evaluation of Phasor Measurement Units and Their Dynamic Behavior Analysis," *IEEE Trans. Instrum. Meas.*, vol. 62, no. 6, pp. 1479–1485, 2013.
- [85] D. F. Dakhlan, R. D. Dityagraha, and M. Popov, "Experience of design and implementation intranet based telecommunication for phasor measurement," in 2015 IEEE International Conference on Smart Energy Grid Engineering (SEGE), 2015, pp. 1–4.
- [86] J. S. S. H. G. Jang, "Development of a Transmission and Distribution Integrated Monitoring and Analysis System for High Distributed Generation Penetration," *Energies — Open Access J. Energy Res. Eng. Policy*, 2017.
- [87] N. G. Singhal and K. W. Hedman, "Iterative transmission and distribution optimal power flow framework for enhanced utilisation of distributed resources," *IET Gener. Transm. Distrib.*, vol. 9, no. 11, pp. 1089–1095, 2015.
- [88] H. Jia, W. Qi, Z. Liu, B. Wang, Y. Zeng, and T. Xu, "Hierarchical Risk Assessment of Transmission System Considering the Influence of Active Distribution Network," *IEEE Trans. Power Syst.*, vol. 30, no. 2, pp. 1084–1093, Mar. 2015.
- [89] H. P. Schmidt, J. C. Guaraldo, M. d. M. Lopes, and J. A. Jardini, "Interchangeable Balanced and Unbalanced Network Models for Integrated Analysis of Transmission and Distribution Systems," *IEEE Trans. Power Syst.*, vol. 30, no. 5, pp. 2747–2754, 2015.
- [90] H. Sun, Q. Guo, B. Zhang, Y. Guo, Z. Li, and J. Wang, "Master–Slave-Splitting Based Distributed Global Power Flow Method for Integrated Transmission and Distribution Analysis," *IEEE Trans. Smart Grid*, vol. 6, no. 3, pp. 1484–1492, May 2015.
- [91] Z. Li, Q. Guo, H. Sun, and J. Wang, "Coordinated Economic Dispatch of Coupled Transmission and Distribution Systems Using Heterogeneous Decomposition," *IEEE Trans. Power Syst.*, vol. 31, no. 6, pp. 4817–4830, Nov. 2016.
- [92] R. Huang, R. Fan, J. Daily, A. Fisher, and J. Fuller, "Open-source framework for power system transmission and distribution dynamics co-simulation," *IET Gener. Transm. Distrib.*, vol. 11, no. 12, pp. 3152–3162, 2017.
- [93] Q. Huang and V. Vittal, "Integrated Transmission and Distribution System Power Flow and Dynamic Simulation Using Mixed Three-Sequence/Three-Phase Modeling," *IEEE Trans. Power Syst.*, vol. 32, no. 5, pp. 3704–3714, 2017.
- [94] Z. Li, Q. Guo, H. Sun, and J. Wang, "Coordinated Transmission and Distribution AC Optimal Power Flow," *IEEE Trans. Smart Grid*, vol. 9, no. 2, pp. 1228–1240, Mar. 2018.
- [95] J. P. Silva *et al.*, "Estimating the Active and Reactive Power Flexibility Area at the TSO-DSO Interface," *IEEE Trans. Power Syst.*, p. 1, 2018.
- [96] J. Xiao, F. Li, W. Z. Gu, C. S. Wang, and P. Zhang, "Total supply capability and its extended indices for distribution systems: definition, model calculation and applications," *IET Gener. Transm. Distrib.*, vol. 5, no. 8, pp. 869–876, Aug. 2011.

- [97] G. Papaefthymiou and B. Klockl, "MCMC for Wind Power Simulation," *IEEE Trans. Energy Convers.*, vol. 23, no. 1, pp. 234–240, Mar. 2008.
- [98] B. S. Borowy and Z. M. Salameh, "Methodology for optimally sizing the combination of a battery bank and PV array in a wind/PV hybrid system," *IEEE Trans. Energy Convers.*, vol. 11, no. 2, pp. 367–375, Jun. 1996.
- [99] Y. Lin, M. Yang, C. Wan, J. Wang, and Y. Song, "A Multi-Model Combination Approach for Probabilistic Wind Power Forecasting," *IEEE Trans. Sustain. Energy*, vol. 10, no. 1, pp. 226–237, Jan. 2019.
- [100] X. Yang, Y. Zhang, Y. Yang, and W. Lv, "Deterministic and Probabilistic Wind Power Forecasting Based on Bi-Level Convolutional Neural Network and Particle Swarm Optimization," *Appl. Sci.*, vol. 9, no. 9, 2019.
- [101] M. Abuella and B. Chowdhury, "Solar power probabilistic forecasting by using multiple linear regression analysis," in *SoutheastCon 2015*, 2015, pp. 1–5.
- [102] M. Olama, A. Melin, J. Dong, S. Djouadi, and Y. Zhang, "Stochastic short-term high-resolution prediction of solar irradiance and photovoltaic power output," in 2017 North American Power Symposium (NAPS), 2017, pp. 1–6.
- [103] A. B. Rodrigues and M. G. Da Silva, "Probabilistic Assessment of Available Transfer Capability Based on Monte Carlo Method With Sequential Simulation," vol. 22, no. 1, pp. 484–492, 2007.
- [104] X. Kou and F. F. Li, "Interval Optimization for Available Transfer Capability (ATC) Evaluation Considering Wind Power Uncertainty," *IEEE Trans. Sustain. Energy*, p. 1, 2018.
- [105] P. Du et al., "Probabilistic-Based Available Transfer Capability Assessment Considering Existing and Future Wind Generation Resources," *IEEE Trans. Sustain. Energy*, vol. 6, no. 4, pp. 1263–1271, 2015.
- [106] N. Daina, A. Sivakumar, and J. W. Polak, "Modelling electric vehicles use: a survey on the methods," *Renew. Sustain. Energy Rev.*, vol. 68, no. July 2016, pp. 447–460, 2017.
- [107] E. Xydas, C. Marmaras, L. M. Cipcigan, N. Jenkins, S. Carroll, and M. Barker, "A data-driven approach for characterising the charging demand of electric vehicles: A UK case study," *Appl. Energy*, vol. 162, pp. 763–771, 2016.
- [108] A. Ehsan and Q. Yang, "Active Distribution System Reinforcement Planning with EV Charging Stations-Part I: Uncertainty Modelling and Problem Formulation," *IEEE Trans. Sustain. Energy*, p. 1, 2019.
- [109] Z. Liu, F. Wen, and G. Ledwich, "Optimal planning of electric-vehicle charging stations in distribution systems," *IEEE Trans. Power Deliv.*, vol. 28, no. 1, pp. 102–110, 2013.
- [110] X. Jin, T. Yu, X. Wang, S. Li, and T. Pu, "A reconfiguration strategy for active distribution network with electric vehicles," in 2016 International Conference on Smart Grid and Clean Energy Technologies (ICSGCE), 2016, pp. 155–160.
- [111] S.Singh S.P. Singh, "Opportunities and Challenges for Deployment of CVR/VVO Methodology in Indian Smart Energy Distribution," *Int.Conf.and Exhib. Smart*

Grid andSmart Cities (India SmartGrid Week) ISGF, Mar. 2016.

- [112] E. Diskin, T. Fallon, G. O'mahony, and C. Power, "Conservation voltage reduction and voltage optimisation on Irish distribution networks," in *CIRED 2012 Workshop: Integration of Renewables into the Distribution Grid*, 2012, pp. 1–4.
- [113] M. A. Peskin, P. W. Powell, and E. J. Hall, "Conservation Voltage Reduction with feedback from Advanced Metering Infrastructure," in *PES T D 2012*, 2012, pp. 1– 8.
- [114] R. F. Preiss and V. J. Warnock, "Impact of Voltage Reduction on Energy and Demand," *IEEE Trans. Power Appar. Syst.*, vol. PAS-97, no. 5, pp. 1665–1671, 1978.
- [115] S. Lefebvre et al., "Measuring the efficiency of voltage reduction at Hydro-Québec distribution," in 2008 IEEE Power and Energy Society General Meeting -Conversion and Delivery of Electrical Energy in the 21st Century, 2008, pp. 1–7.
- [116] K. P. Schneider, J. C. Fuller, F. K. Tuffner, and R. Singh, "Evaluation of Conservation Voltage Reduction (CVR) on a National Level," 2010.
- [117] B. R. Williams, "Distribution capacitor automation provides integrated control of customer voltage levels and distribution reactive power flow," in *Proceedings of Power Industry Computer Applications Conference*, 1995, pp. 215–220.
- [118] Z. Wang and J. Wang, "Review on Implementation and Assessment of Conservation Voltage Reduction," *IEEE Trans. Power Syst.*, vol. 29, no. 3, pp. 1306–1315, May 2014.
- [119] W. Ellens, A. Berry, and S. West, "A quantification of the energy savings by Conservation Voltage Reduction," in 2012 IEEE International Conference on Power System Technology (POWERCON), 2012, pp. 1–6.
- [120] A. K. Bharati, A. Singhal, V. Ajjarapu, and Z. Wang, "Comparison of CVR impact on transmission system load margin with aggregated and de-aggregated distribution system," in 2017 North American Power Symposium (NAPS), 2017, pp. 1–6.
- [121] S. Singh, D. Shukla, and S. P. Singh, "Peak demand reduction in distribution network with smart grid-enabled CVR," in 2016 IEEE Innovative Smart Grid Technologies - Asia (ISGT-Asia), 2016, pp. 735–740.
- [122] V. J. Warnock and T. L. Kirkpatrick, "Impact of Voltage Reduction on Energy and Demand: Phase II," *IEEE Trans. Power Syst.*, vol. 1, no. 2, pp. 92–95, May 1986.
- [123] M. Diaz-Aguiló et al., "Field-Validated Load Model for the Analysis of CVR in Distribution Secondary Networks: Energy Conservation," *IEEE Trans. Power Deliv.*, vol. 28, no. 4, pp. 2428–2436, 2013.
- [124] H. Sheng and H. D. Chiang, "Available delivery capability of general distribution networks with renewables: Formulations and solutions," in *Proceedings of the IEEE Power Engineering Society Transmission and Distribution Conference*, 2014.
- [125] M. Cheng, Q. Luo, and Z. Cui, "Research on total supply capability of distribution network based on power product service system," *Procedia CIRP*, vol. 83, pp.

434-439, 2019.

- [126] D. Shukla, S. Singh, S. P. Singh, A. K. Thakur, and S. P. Singh, "Block-chain Based Energy Trading in ADN with its probable impact on Aggregated Load Profile and Available Distribution Capability," in 2020 2nd International Conference on Smart Power Internet Energy Systems (SPIES), 2020, pp. 486–491.
- [127] V. Sharma, "An Energy-Efficient Transaction Model for the Blockchain-Enabled Internet of Vehicles (IoV)," *IEEE Commun. Lett.*, vol. 23, no. 2, pp. 246–249, Feb. 2019.
- [128] S. Nakamoto, "Bitcoin : A Peer-to-Peer Electronic Cash System," pp. 1–9.
- [129] S. Thakur and J. G. Breslin, "Peer to Peer Energy Trade Among Microgrids Using Blockchain Based Distributed Coalition Formation Method," *Technol. Econ. Smart Grids Sustain. Energy*, vol. 3, no. 1, p. 5, May 2018.
- [130] J. Kang, R. Yu, X. Huang, S. Maharjan, Y. Zhang, and E. Hossain, "Enabling Localized Peer-to-Peer Electricity Trading Among Plug-in Hybrid Electric Vehicles Using Consortium Blockchains," *IEEE Trans. Ind. Informatics*, vol. 13, no. 6, pp. 3154–3164, Dec. 2017.
- [131] Z. Liu *et al.*, "A Survey on Blockchain: A Game Theoretical Perspective," *IEEE Access*, vol. 7, pp. 47615–47643, 2019.
- [132] M. L. Di Silvestre *et al.*, "Ancillary Services in the Energy Blockchain for Microgrids," *IEEE Trans. Ind. Appl.*, p. 1, 2019.
- [133] M. Shaaban and S. M. Ieee, "Transfer Capability Computations in Deregulated Power Systems," vol. 00, no. c, pp. 1–5, 2000.
- [134] T. G. Kolda, R. M. Lewis, and V. Torczon, "A generating set direct search augmented Lagrangian algorithm for optimization with a combination of general and linear constraints," *Energy*, no. SAND2006-5315, 2006.
- [135] R. W. Ferrero, S. M. Shahidehpour, and V. C. Ramesh, "Transaction analysis in deregulated power systems using game theory," *IEEE Trans. Power Syst.*, vol. 12, no. 3, pp. 1340–1347, 1997.
- [136] S. Singh and S. P. Singh, "Energy saving estimation in distribution network with smart grid-enabled CVR and solar PV inverter," *IET Gener. Transm. Distrib.*, vol. 12, no. 6, pp. 1346–1358, 2018.
- [137] X. Li, P. Balasubramanian, M. Sahraei-Ardakani, M. Abdi-Khorsand, K. W. Hedman, and R. Podmore, "Real-Time Contingency Analysis With Corrective Transmission Switching," *IEEE Trans. Power Syst.*, vol. 32, no. 4, pp. 2604–2617, Jul. 2017.
- [138] D. Shukla, E. S. Lakshmi, and S. P. Singh, "Estimation of ATC using PS-NR," in 2017 6th International Conference on Computer Applications in Electrical Engineering - Recent Advances, CERA 2017, 2018, vol. 2018-January, pp. 111– 116.
- [139] POSOCO, "Synchrophasor Iniative in India," 2013.
- [140] P. S. R. Murthy, Power System Analysis. BS Publication, 2007.

- [141] N. H. A. Rahman and A. F. Zobaa, "Optimal PMU placement using topology transformation method in power systems," J. Adv. Res., vol. 7, no. 5, pp. 625–634, 2016.
- [142] S. P. Singh and S. P. Singh, "Optimal PMU Placement in Power System Considering the Measurement Redundancy," *Adv. Electron. Electr. Eng.*, vol. 4, no. 6, pp. 593–598, 2014.
- [143] R. Billinton and W. LI, Reliability Assessment of Electric Power System Using System Using Monte Carlo Methods. Springer, 1994.
- [144] Y. Chen *et al.*, "Short-term load forecasting: Similar day-based wavelet neural networks," *IEEE Trans. Power Syst.*, vol. 25, no. 1, pp. 322–330, 2010.
- [145] K. A. Keitsch and T. Bruckner, "Input data analysis for optimized short term load forecasts," pp. 1–6, 2017.
- [146] H. Drucker, C. J. C. Surges, L. Kaufman, A. Smola, and V. Vapnik, "Support vector regression machines," *Adv. Neural Inf. Process. Syst.*, vol. 1, pp. 155–161, 1997.
- [147] R. Jiao, R. Mo, B. Lin, and C. Su, "Construction of training sample in a support vector regression short-term load forecasting model," *Proc. - 2012 5th Int. Symp. Comput. Intell. Des. Isc. 2012*, vol. 2, pp. 339–342, 2012.
- [148] C. Lin, "Support Vector Machine," Power Syst., vol. 28, pp. 161–226, 2007.
- [149] A. T. A. Loadforecaster, "Very Short-Term Load Forecasting Using Artificial," vol. I, no. I.
- [150] T. Yang, H. Sun, and A. Bose, "Transition to a Two-Level Linear State Estimator; Part I: Architecture," *IEEE Trans. Power Syst.*, vol. 26, no. 1, pp. 46– 53, Feb. 2011.
- [151] Z. C. S. A. B. P. W. K. Ngiam Jiquan and A. Y. Ng, "Sparse Filtering," Adv. Neural Inf. Process. Syst., vol. 24, pp. 1125–1133, 2011.
- [152] J. Nocedal, Numerical Optimization, Second, Spr. Springer, 2006.
- [153] G. P. Alliance, "Open Source Software & Services for Electric Utilities." .
- [154] O. Alsac and B. Stott, "Optimal Load Flow with Steady-State Security," *IEEE Trans. Power Appar. Syst.*, vol. PAS-93, no. 3, pp. 745–751, 1974.
- [155] U. W. Archive, "Power Systems Test Case Archive.".
- [156] S. P. Singh, A. K. Thakur, and S. P. Singh, "PMU Placement for Maximum Observability of Power System under Different Contingencies," *Energy Procedia*, vol. 117, pp. 893–900, 2017.
- [157] S. P. Singh and S. P. Singh, "A Multi-objective PMU Placement Method in Power System via Binary Gravitational Search Algorithm," *Electr. Power Components Syst.*, vol. 45, no. 16, pp. 1832–1845, 2017.
- [158] Venkaiah D. M. V. Kumar and K. Murali, "Dynamic ATC Computation for Real-Time Power Markets," J. Electr. Eng. Technol., vol. Vol-5, no. No-2, p. pp-209-219, 2010.

- [159] M.Eidiani 'M.H.M.Shanechi, "FAD-ATC: A new method for computing dynamic ATC," *Int. J. Electr. Power Energy Syst.*, vol. 28, no. 2, pp. 109–118, Feb. 2006.
- [160] D. Shukla, S. P. Singh, and S. R. Mohanty, "Optimal Strategy for ATC Enhancement and Assessment in presence of FACTS devices and Renewable Generation," in 2018 20th National Power Systems Conference (NPSC), 2018, pp. 1–6.
- [161] A. Padilha-Feltrin, D. A. Quijano Rodezno, and J. R. S. Mantovani, "Volt-VAR Multiobjective Optimization to Peak-Load Relief and Energy Efficiency in Distribution Networks," *IEEE Trans. Power Deliv.*, vol. 30, no. 2, pp. 618–626, Apr. 2015.
- [162] D. Effi and C. Studies, "Green Circuit: Distribution Effi ciency Case Studies," R195, 2011.
- [163] S. R, S. K. Kumar, and A. T. Mathew, "Online Static Security Assessment Module Using Artificial Neural Networks," *IEEE Trans. Power Syst.*, vol. 28, no. 4, pp. 4328–4335, 2013.
- [164] H. Gharibpour, F. Aminifar, and M. Haji Bashi, "Short-circuit-constrained transmission expansion planning with bus splitting flexibility," *IET Gener. Transm. Distrib.*, vol. 12, no. 1, pp. 217–226, Jan. 2018.
- [165] L. Bai, J. Wang, C. Wang, C. Chen, and F. Li, "Distribution Locational Marginal Pricing (DLMP) for Congestion Management and Voltage Support," *IEEE Trans. Power Syst.*, vol. 33, no. 4, pp. 4061–4073, Jul. 2018.
- [166] H. Gilbert and H. Handschuh, "Security Analysis of SHA-256 and Sisters," in *Selected Areas in Cryptography*, 2004, pp. 175–193.

A. APPENDIX:

PUBLICATION IN REFERRED AND PEER-REVIEWED JOURNALS

Table 0.1 Publication from thesis' work.

S. N.	Publication	Impact Factor
1	D. Shukla and S. P. Singh, "Aggregated Effect of Active Distribution System on Available Transfer Capability Using Multi-Agent System Based ITD Framework," in IEEE Systems Journal, doi: 10.1109/JSYST.2020.3000930.	3.987
2	D. Shukla and S. P. Singh, "Real-time estimation of ATC using PMU data and ANN," in IET Generation, Transmission & Distribution, vol. 14, no. 17, pp. 3604-3616, 4 9 2020, doi: 10.1049/iet-gtd.2019.1260.	2.862
3	D. Shukla, S. P. Singh, A. K. Thakur and S. R. Mohanty, "ATC assessment and enhancement of integrated transmission and distribution system considering the impact of active distribution network," in IET Renewable Power Generation, vol. 14, no. 9, pp. 1571-1583, 6 7 2020, doi: 10.1049/iet-rpg.2019.1219.	3.894
4	D. Shukla, S. Singh, Satyendra P. Singh, A. K. Thakur, S. P. Singh, "Block-chain Based Energy Trading in ADN with its probable impact on Aggregated Load Profile and Available Distribution Capability and Load-ability Margin" in IET Renewable Power Generation. Under Review	3.894

S. N.	Publication	Impact Factor
1	A.K. Thakur, S.P. Singh, Devesh Shukla, S. Singh' A Passive	3.894
	Method for Islanding Detection using Variational Mode	
	Decomposition' accepted for publication, IET Renewable Power	
	Generation. Accepted	

B. APPENDIX:

PUBLICATION IN NATIONAL/INTERNATIONAL CONFERENCES.

Table 0.3 Publication in national/international conferences.

S. N.	Publication
1	D. Shukla, S. Singh, Satyendra P. Singh, A.K. Thakur, "Block-chain Based Energy Trading in ADN with its probable impact on Aggregated Load Profile and Available Distribution Capability" Accepted for publication SPIES 2020, Bangkok, Thailand
2	D. Shukla, Siddhi Jaiswal, S.P. Singh, "Near-Real Time Load Forecasting in Power System". National Power System Conference 2020, IIT Gandhinagar, (Accepted for Publication)
3	D. Shukla, E. S. Lakshmi and S. P. Singh, "Estimation of ATC using PS-NR," 2017 6th International Conference on Computer Applications In Electrical Engineering-Recent Advances (CERA), Roorkee, 2017, pp. 111-116, doi: 10.1109/CERA.2017.8343311.
4	D. Shukla, S. P. Singh and S. R. Mohanty, "Optimal Strategy for ATC Enhancement and Assessment in presence of FACTS devices and Renewable Generation," 2018 20th National Power Systems Conference (NPSC), Tiruchirappalli, India, 2018, pp. 1-6, doi: 10.1109/NPSC.2018.8771774.
5	D. Shukla and S. P. Singh, "PMU emulation for static security analysis of power system," 2016 IEEE 7th Power India International Conference (PIICON), Bikaner, 2016, pp. 1-6, doi: 10.1109/POWERI.2016.8077230.
6	S. Singh, S. K. Muwal, D. Shukla and S. P. Singh, "Model Predictive Driven Volt/VAr Control for Smart Grid Enabled CVR in Active Distribution

Network," 2018 IEEE 8th Power India International Conference (PIICON), Kurukshetra, India, 2018, pp. 1-6, doi: 10.1109/POWERI.2018.8704367.

- D. Shukla, S. P. Singh and S. P. Singh, "Pseudo PMU for quasi-static analysis of power system," 2016 IEEE Annual India Conference (INDICON), Bangalore, 2016, pp. 1-6, doi: 10.1109/INDICON.2016.7839056.
- S. Singh, D. Shukla and S. P. Singh, "Peak demand reduction in distribution network with smart grid-enabled CVR," 2016 IEEE Innovative Smart Grid Technologies - Asia (ISGT-Asia), Melbourne, VIC, 2016, pp. 735-740, doi: 10.1109/ISGT-Asia.2016.7796476.