

Udaykumar S. Suryawanshi

Ph.D. Research Scholar, E-MC² Lab, CDRC, VJTI, Mumbai, India.

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Google Scholar Profile

Educational Qualification

Ph.D. (Pursuing) in Electrical Engineering VJTI, Mumbai, Maharashtra, India	Aug' 25 – till date
M. Tech, Electrical (Power Systems) VJTI, Mumbai, Maharashtra, India Thesis: <i>Optimization techniques using an Evolutionary Game Approach</i>	Aug' 17 – Jul' 19
B.E. in Electrical Engineering Shivaji University, Kolhapur, Maharashtra, India	Aug' 07 – Jun' 10
Diploma in Electrical Engineering VJTI, Mumbai, Maharashtra, India	Aug' 02 – May' 07

Professional Experience

K J Somaiya Polytechnic, Mumbai, India Lecturer, Dept. of Electrical Engineering	Jun' 13 – till date
Siemens Ltd. (TCPL), Navi-Mumbai, India Production Engineer	Aug' 10 – Feb' 11
Brihanmumbai Electric Supply and Transport (BEST) In-Plant Trainee Technician Apprentice	Dec' 05 – Dec' 06

Publications

Book Chapter

1. A. Sheikh, V. Kamuni, M. Fulpagare, **U. Suryawanshi**, S. Wagh, and N. M. Singh, "Blockchain-based Decentralized, Flexible, and Transparent Energy Market," in *Flexibility in Electric Power Distribution Networks*, pp. 233–253, Taylor & Francis, CRC Press, 2021.

Peer-Reviewed Journal Articles

1. **U. S. Suryawanshi**, S. Arekar, S. Kumar, B. B. Pimple, and S. R. Wagh, "Intertwined Escort Dynamics: A Dynamical Framework for Constrained Optimization," *Electric Power Systems Research*, Elsevier, vol. 265, Art. no. 114229, 2027. doi: 10.1016/j.epsr.2026.114229.

Journal Manuscripts Under Review

1. **U. S. Suryawanshi**, S. Kumar, B. B. Pimple, S. R. Wagh, and N. Singh, "Power System Manifold Networks: A Geometric Framework for Cascading Failure Detection, Classification, and Causal Analysis," *Electric Power Systems Research*, Elsevier, **revised manuscript under review**. Available at SSRN: SSRN 6983945.
2. **U. S. Suryawanshi**, M. Patil, S. Kumar, B. B. Pimple, S. K. Bhil, and S. R. Wagh, "Economic Load Dispatch: A Dynamic Lagrange Multiplier Evolution Framework," *Optimal Control Applications and Methods*, Wiley, **under review**.
3. **U. S. Suryawanshi**, S. Kumar, B. B. Pimple, and S. R. Wagh, "Renewable-Integrated Economic Load Dispatch: A Stress-Aware Mean Field Game Approach," *IET Smart Energy Systems*, Wiley, **under review**.
4. **U. S. Suryawanshi**, S. R. Wagh, and N. M. Singh, "Scalable Port-Hamiltonian Stability Certification for Converter-Dominated Power Grids Using Local NAIM Reduction," *International Journal of Electrical Power & Energy Systems*, Elsevier, **under review**.
5. **U. S. Suryawanshi**, S. R. Wagh, and N. M. Singh, "Geometric NHIM-Based Causal Cascade Prediction and Vulnerability Analysis in Power Networks," *IEEE Transactions on Power Systems*, **under review**.

6. **U. S. Suryawanshi**, S. Kumar, S. R. Wagh, and N. M. Singh, "Topology-Adaptive Detection of Collective Synchronisation Loss in Kron-Reduced GFM Converter Networks," *IEEE Transactions on Power Systems*, **under review**.
7. Rayyan Petkar, **Uday Suryawanshi**, Adil Sheikh, Sunny Kumar, Sushma Wagh, "Short-Term Load Forecasting and Anomaly Detection in Smart Buildings: A Hybrid TRN-XGBoost Framework," *Energy and Buildings*, Elsevier, **under review**.

Conference Papers

1. M. Patil, A. Mane, R. Petkar, D. Tiwari, **U. Suryawanshi**, S. Bhil, S. Kumar, and S. Wagh, "Dynamic Voltage Enhancement for Multimachine Power System Through PCH-Based GCI," *CoDIT*, Italy, 2026.
2. A. Mane, R. Petkar, M. Patil, S. Arekar, **U. Suryawanshi**, and S. Kumar, "Short-Term Transient Prediction Using Data-Driven Framework for Power System Networks: A Comparative Case Study," *APPEEC*, Singapore, 2026.
3. R. Petkar, **U. Suryawanshi**, A. Sheikh, D. Tiwari, S. Bhil, S. Kumar, and S. Wagh, "Short-Term Load Forecasting and Anomaly Detection in Smart Building," *NAPS*, United States, 2026.
4. M. Pawar, R. Petkar, Y. Mhatre, **U. Suryawanshi**, and S. Kumar, "Harmonic Attenuation Through Cascaded Multilevel Inversion: A Comparative Simulation Study from 3-Level to 99-Level Topologies," *IMTRONICS*, United Kingdom, 2026.
5. Revati G., Palak M., **U. Suryawanshi**, S. Shadab, and A. Sheikh, "Load Profile Prediction in Smart Building using Data Driven Approaches," *AUPEC*, Australia, 2021.
6. Shalini K., **U. Suryawanshi**, S. Mohite, V. Kamuni, A. Sheikh, S. G. Jayasinghe, and S. Bhil, "Energy Trading for Ferry-to-Grid Network Using Game Theoretic Approach," *ICPES*, Australia, 2019.
7. **U. Suryawanshi**, S. Jawarkar, V. Kamuni, A. Sheikh, S. Bhil, and S. G. Jayasinghe, "Enhancing the Performance of Distribution Network using Ferry-to-Grid Technology," *ICPES*, Australia, 2019.
8. S. G. Jayasinghe, **U. Suryawanshi**, A. Sheikh, and S. Alahakoon, "Fuel Saving with a Hybrid Power System for an Electric Ferry," *ICIIS*, Sri Lanka, 2019.
9. S. Mohite, **U. Suryawanshi**, A. Sheikh, S. Wagh, and N. M. Singh, "Impact of Temperature on State of Charge Estimation for an Electric Vehicle," *NAPS*, United States, 2019.
10. **U. Suryawanshi**, M. Sawant, J. Moyalan, A. Sheikh, and S. Bhil, "Unit Commitment: An Escort Dynamics Approach," *CoDIT*, France, 2019.
11. Y. Baviskar, **U. Suryawanshi**, and A. Sheikh, "Modelling of Track Layout for Intelligent Railway Signalling System: A Machine Learning Application," *SPEC*, Singapore, 2018.

International Visits

1. Presented paper at ICPES-2019, Murdoch University, Perth, Australia, 09–12 December 2019.
2. Presented paper at NAPS-2019, Kansas State University, Wichita, Kansas, USA, 13–15 October 2019.
3. Presented paper at CoDIT-2019, Le Cnam, Paris, France, 23–26 April 2019.
4. Presented poster at SPEC-2018, Nanyang Technological University, Singapore, 11–13 December 2018.

Award Received

1. Received Student Travel Grant Award of AUD 300 for presenting a paper at ICPES-2019, Perth, Australia.

Funded Projects

Sr. No.	Project	Funding Agency	Funds
1	Development of e-Yantra Lab under IIT Bombay (2015)	K J Somaiya Polytechnic	3 Million
2	Installation of Grid-tie 10kW Solar Power Plant (2015)	K J Somaiya Polytechnic	1 Million
3	Minimization of Power bills for KJSP, Mumbai, India (2014)	K J Somaiya Polytechnic	0.3 Million
4	Energy auditing at K J Somaiya Hospital, Mumbai, India (2014)	Somaiya Vidyavihar	0.2 Million

Professional Membership

ISTE Faculty Life Member: since 2013 – Membership No.: LM 93806

IEEE Student Member: since 2018 – Membership No.: 95160267

Computer Skills

Programming Languages/Tools: MATLAB, SIMULINK, ETAP, LaTeX

Software: MS Windows, MS Office, Visio

Training Courses

1. FDP on Analytical and Numerical Methods for Linear and Non-Linear Ordinary and Partial Differential Equations.
2. ISTE Approved FDP on Decoding Quantum Computing: Principles, Algorithms and Applications.
3. TEQIP-III course on Perspective in Linear Control Systems.
4. STTP on Electrical Engineering Solutions for Smart Cities: Integration, Innovation and Impact.
5. Industrial training at Lauritz Knudsen Electrical & Automation, Pune.
6. STTP on Fundamentals of Artificial Intelligence.
7. FDP on Green Hydrogen & AI: Driving the Future of Sustainable Energy.
8. Industrial training in Power Plant Familiarization and Best Management Practices at Adani DTPS, Dahanu, India.

References

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