



Zahra Moravej

Senior member, IEEE
Ph.D., IIT, Varanasi, 2000

Office Phone: +98-2313366976

Email: zmoravej@semnan.ac.ir
moravej.zahra@gmail.com
z.moravej@ieee.org

Current

- Semnan University, Electrical & Computer Engineering Faculty, Semnan, Iran
Associate professor. (2012-present)
- Moshanir Co., Tehran, Iran, Consultant engineer. (2001-present)

Education

- Ph.D. in Electrical Engineering, BHU Banaras, India. (2000)
Thesis entitled: “*ANN Based Differential Protection of Power Transformer*”
- ME in Electrical Engineering, Bangalore University, Bangalore, India. (1990)
Thesis entitled: “*Microprocessor based point on wave switching device for power system model study application*”
- BE in Electrical Engineering, Bangalore University, Bangalore, India. (1985)
Thesis entitled: “*Design and implementation of intel 8085 assembler*”

Expertise

- Power system protection
- Power quality
- Substation automation systems
- Artificial intelligence

Academic Experience

- Lecturer at Semnan University. (1989-1995)
- Assistant professor at Semnan University. (2000-2012)
Associate Professor at Semnan University from 2012

Membership

- Institute of Electric and Electronic Engineers-IEEE, Senior member.
 - CIGRE, Paris, Member
 - Association of Iranian Electrical & Electronics Engineers (AIEEE), member.
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Industrial Experience

➤ **Consultant Engineer**, Moshanir Power Engineering Consultants, Tehran, Iran. Responsibilities include the design reviewer of electrical network in low voltage (LV) division. The division consists of protection and control systems.

The project, that are under taken are:

Narivaran 400/230/20 kV substation	Sirjan and Rafsanjan replacement of transformers from 120 MVA to 160 MVA
four substation from oil ministry which are 63/20 kV & 63/6.3 kV	Toous Power Plant substation 400 kV (DCS)
Astara 132/20 kVsubstatin, Extension of Rafsanjan & Ahmadabad 230/132/20 kV substation	Extension of Fars Power Plant substation 230 kV(DCS)
Chahal Satoon Extension 400/230/20	Lamard 400/132/20 kV conventional
Khozi Fars 132/20 kV	Turbin and Maaliabad 66/20 kV
Extension of Sanadaj Power Plant substation 230 kV(DCS)	

Research Projects

- Implementation of Substation Automation System & Its Redundancy: Case study, Semnan University, Semnan, Iran. (2007)
- Power Quality Monitoring, Semnan University, Semnan, Iran. (2011)

Students

➤ Ph.D. Graduate Student

Ali Akbar Abdoos (Babol Noshirvani University of Technology)

➤ M. Sc. Graduate Students

J. Kharazmi-Discrimination of internal fault from inrush current using SVM
 M. Pazoki-Fault detection & section identification in compensated transmission line using intelligent method
 M. Gholamzadeh-A new approach for optimal coordination of distance relays in transmission networks
 F. Salehi-Reliability assessment in automated substations
 M. Ahmadipour-Improving power differential transformer using a new method
 H. Alesheikh-Bus bar differential protection with CT saturation current compensating algorithm
 M. Habibi-Distance protection implementation based on intelligent algorithm
 J. Enayati-Harmonic detection in power system
 A. A. Alishah-Study of wide area protection & effective factors on reliability of wide area system
 A. Akhlaghi-Impact of Distributed generation on power quality of distribution network
 S. R. Ebrahimi-Proposing a new method for decaying DC component estimation from fault signal
 J. Azarakhsh-Simulation & classification of power quality events using artificial intelligence
 F. Adelney-Coordination of overcurrent relay using GA
 M. Babaei- *Transient Ground Potential Rise in Gas-Insulated Substations*
 J. Dahghan-Power Swing Detection using new method
 H. Afshar - Modeling and Optimization of Microgrid
 M. Khaksar – CT Saturation Detection and correction
 M. Azari – Effect of residual current on over current operation

➤ **More than 50 B. Sc. Graduate Students**

➤ **Ph. D. Candidate**

Mohammad Pazoki, Seyyed Hamid Mortazavi, Ahmad Shariati, Hossein Kord, Mohammad Akhlaghi, Javad Enayati, Vahed Bahravesh (Pardes), Sajad Baghari (Pardes),

Honors

Top Researcher of Semnan University at 2012

Journal Paper Publication

1. Z. Moravej, D.N. Vishwakarma and S.P. Singh, “*Digital Filtering Algorithms For Differential Relaying of Power Transformer: An Overview*”, **Electric Machines and Power Systems**, 2000.
 2. Z. Moravej, D.N. Vishwakarma and S.P. Singh, “*ANN Based Protection Scheme For Power Transformer*”, **Electric Machines and Power Systems**, 2000.
 3. Z. Moravej, D.N. Vishwakarma and S.P. Singh, “*Radial Basis Function Neural Network Model For Protection of Power Transformer*”, **Electric Machines and Power Systems**, 2001.
 4. Z. Moravej, D.N. Vishwakarma and S.P. Singh, “*Differential Protection of Power Transformer Using ANN*”, **Engineering Intelligent Systems**, 2000.
 5. Z. Moravej, D.N. Vishwakarma and S.P. Singh, “*Application of Radial Basis Function (RBF) Neural Network For Differential Relaying of Power Transformer*”, **Computer and Electrical Eng**, 2003.
 6. Z. Moravej, D.N. Vishwakarma and S.P. Singh, “*An Intelligent Differential Relay*”, **Institution of Engineers (India)**, 2003.
 7. Z. Moravej, D.N. Vishwakarma and S.P. Singh, “*Protection and Condition Monitoring of power transformer using ANN*”, **Electric Machines and Power Systems**, 2002.
 8. Z. Moravej, D.N. Vishwakarma, “*ANN based harmonic restraint differential protection of power transformer,*” **Institution of Engineers (India)**, 2003.
 9. Z. Moravej, “*Minimal Radial Basis Function Neural Network Based Differential Protection of Power Transformer*”, **European Transaction on Electrical Power**, 2004.
 10. Z. Moravej and M.Sanaye-Pasand, “*A novel approach for protection and condition monitoring of power transformer using MRBFNN*”, **Electric Power Components and Systems**, 2004.
 11. Z. Moravej, “*Evolving Neural Nets for Protection and Condition Monitoring of Power Transformer*”, **Electric Power Components and Systems**, 2005.
 12. Z. Moravej, “*Bus bar protection based minimal radial basis function network using OCT*”, **WSEAS TRANSACTIONS ON CIRCUITS AND SYSTEMS**, 2005.
 13. Z. Moravej, “*Speed control of DC Motor based on neural network and fuzzy logic.*” **WSEAS TRANSACTION ON SYSTEMS**, 2005.
 14. Z. Moravej and A.A. Abdoos, “*Protection of power transformer using ANN*”, in Persian, **journal of engineering Semnan university, semnan**, 2006.
 15. Z. Moravej, S.A.Banihashemi and M.H.Velayati, “*Power Quality Event classification and Detection using a Novel Support Vector Algorithm*”, **Energy Conversion and Management**, 2009.
 16. Z. Moravej, M. Pazoki, and A.A. Abdoos, “*Wavelet Transform and Multi-class Relevance Vector Machines Based Recognition and Classification of Power Quality Disturbances*”,
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European Transaction on Electrical Power, 2011.

17. Z. Moravej, A.A. Abdoos and M Sanaypasand, "A New Approach Based on S-transform for Discrimination and Classification of Inrush current from Internal Fault Currents using Probabilistic Neural Network," **Electric Power Components and system**, 2010.
 18. Z. Moravej , A.A. Abdus, and M. Akhlaghi, "Power quality classification using ANN", in Persian, **Journal of engineering Semnan university**, semnan, 2010.
 19. Z. Moravej, M. Pazoki, A. A. Abdoos, "A new approach for fault classification and section detection in compensated transmission line with TCSC", **European Transaction on Electrical Power**, 2011.
 20. Z. Moravej, A.A. Abdoos and M. Sanaye-Pasand, "A new Protection Scheme for Power Transformers Using Time Frequency Analysis", **International Review of Electrical Engineering**, 2011.
 21. Z. Moravej, M. Pazoki, A.A. Abdoos, "A new approach for fault classification and section detection in compensated transmission line with TCSC," **European Transaction on Electrical Power**, 2011.
 22. Z. Moravej, A.A. Abdoos, M. Pazoki, "New Combined S-transform and Logistic Model Tree Technique for Recognition and Classification of Power Quality Disturbances," **Electric Power Components and system**, 2011.
 23. Z. Moravej, A.A. Abdoos and M. Sanaye-Pasand, "Power Transformer Protection Using Improved S-transform, *Electric Power Components and system*", **European Transaction on Electrical Power**, 2012.
 24. Z. Moravej, M. Pazoki, M. Niasati, and A.A. Abdoos, "A Hybrid Intelligence Approach for Power Quality Disturbances Detection and Classification", **European Transactions on Electrical Power**, 2012.
 25. Z. Moravej, M. Jazaeri, M. Gholamzadeh, "Optimal Coordination of Distance and Over-Current Relays in Series Compensated Systems Based on MAPSO," **Energy Conversion and Management**, 2012.
 26. Z. Moravej, M. Khederzadeh, M. Pazoki, "New Combined Method for Fault Detection, Classification and Location in Series Compensated Transmission Line", **Electric Power Components and Systems**, 2012.
 27. Z. Moravej, A.A. Abdoos, "An Improved Fault Detection Scheme for Power Transformer Protection," **Electric Power Components and system**, 2012.
 28. Z. Moravej, J. Enayati, "A Hybrid Least Squares-Clonal Selection Based Algorithm for Harmonic Estimation," **European Transaction on Electrical Power**, 2012.
 29. Z. Moravej, M. Pazoki, "Application of a New Combined Technique to Power Quality Events Classification," **International Review of Electrical Engineering**, 2012.
 30. Z. Moravej, A. Akhlaghi, "A New approach for DG allocation in distribution network with time variable loads using cuckoo search," **International Review of Electrical Engineering**, 2012.
 31. Z. Moravej, A. Akhlaghi, "A Novel Approach Based on Cuckoo Search for DG Allocation in Distribution Network," **International Journal of Electrical Power & Energy Systems**, 2012.
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Z. Moravej, M. Pazoki, and M. Khederzadeh, Impact of UPFC on Power Swing Characteristic and Distance Relay Behavior, IEEE TRANSACTIONS ON POWER DELIVERY, Feb. 2014 Power Delivery, IEEE Transactions on (Volume:29, Issue: 1).

Zahra Moravej*,† and Javad Enayati, A hybrid least squares–clonal selection based algorithm for harmonics estimation, INTERNATIONAL TRANSACTIONS ON ELECTRICAL ENERGY SYSTEMS Int. Trans. Electr. Energ. Syst. (2012) Published online in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/etep.1676

32. Abdalhossein Rezai n, Parviz Keshavarzi, Zahra Moravej, Secure SCADA communication by using a modified key management scheme, *ISA Transactions* 52 (2013) 517–524,
33. R. Rashidi,^{1,2,a)} A. Shariati,^{1,3} Z. Moravvej,¹ and A. Shiroudi, Technical review and economic assessment of ground source heat pump utilization in Taleghan-Iran *JOURNAL OF RENEWABLE AND SUSTAINABLE ENERGY* 5, 033125 (2013)
34. Z.Moravej, A.A.Abdos and M.Pazoki, Power Quality Events Detection using ANN, *Journal of Modeling in Persian*, No.27, Volume 9, 1390.
35. Masoud Ahmadipour and Z. Moravej, A New Approach in Power Transformer Differential Protection, *International Journal of Current Engineering and Technology* ISSN 2277 - 4106 © 2013 INPRESSCO.

Conference Paper Publication & Presentation

1. Z. Moravej, D.N.Vishwakarma and S.P.Singh, "A State of The Art Review of Digital Relaying Algorithms for The Differential Protection of Power Transformer", Proc. International Conference on Modern Trends In the Protection of Electric Power Apparatus and Systems, Oct. 1998, New Delhi, India.
 2. Z. Moravej, D.N.Vishwakarma and S.P.Singh, "Applicability of Artificial Neural Network To Power Transformer Protection: An Overview", Proceeding of 14th National Convention of Electrical Engineers on Modern Trends in The Transmission Systems, pp.230-235, Dec.1998, I.I.T. Kanpur.
 3. Z.Moravej, D.N.Vishwakarma and S.P.Singh, "ANN Based Waveform Classification for Protection of Power Transformer", Proc. 23rd National Systems Conference, I.T., B.H.U, Varanasi (India), pp.264-270.
 4. Z.Moravej, D.N.Vishwakarma and S.P.Singh, "Intelligent Numerical Differential Relay for Power Transformer Protection Using ANN", Accepted for Symposium on Advances in Electronics Electro-2001 I.T., B.H.U., Varanasi, India, pp.437-442.
 5. Z.Moravej, D.N.Vishwakarma and S.P.Singh, "ANN approach to numerical differential protection and condition monitoring of power transformer", International conference, New Delhi India.
 6. Z.Moravej, "Numerical protection and condition monitoring of power transformer using ANN," International power system conference- PSC, Tehran- Iran.
 7. D.N.Vishwakarma and Z.Moravej, "ANN based directional overcurrent relay", Transmission and Distribution Conference and Exposition 2001 IEEE/PES, vol.1, 2001, pp. 59-64, Atlanta, U.S.A.
 8. Z.Moravej, "Radial Basis Function Neural Network Based Directional Overcurrent Relay", 17th International power system conference (PSC), pp. 1-9, Tehran- Iran.
 9. Z. Moravej & S.Aminai, "ANN based Over current protection", **National protection & control conference**, Tehran- Iran (in Persian) pp. 9-19.
 10. Z.Moravej "ANN based Novel fault detector for busbar protection" **38th International universities power engineering conference (UPEC 2003)**, 1-3 September 2003, Thessaloniki Greece, pp.677-680.
 11. Z.Moravej, "Harmonic Restraint Differential Protection of Power Transformer Based MRBF", UPEC 2004 Bristol England, pp.782-788.
 12. Z.Moravej and D.N.Vishwakarma, "Integrated Digital Control & Protection for Modern Substation", **International conference of CBIP India 2004**, pp.60-65.
 13. Z.Moravej and D.N.Vishwakarma, "Minimal radial basis function based directional overcurrent protection, "3rd international conference on power system protection and automation, Nov.2004, New Delhi- India, pp. 103-110.
 14. Z.Moravej, "Minimal Radial Basis Function Network Based Bus Protection System Using OCT," **International conference of WSEAS** Malta Spain on 15-17 Sep.2005.
 15. Z.Moravej, "Speed control of DC motor based neural net and fuzzy logic", **International conference of WSEAS** Malta Spain Sep.2005.
 16. Z.Moravej, "Power transformer protection using support vector machine network", **IASTED international conference on power and energy systems** 2008, USA.
 17. Z.Moravej, "Protection of power transformer using Evolving Neural Network", **has been presented in International conference IASTED** in Thailand, 2-4 April 2007.
 18. Z.Moravej, "Evolving Neural Nets for directional over current protection", **4th international conference on power system protection and automation**, November 2007
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New Delhi, India.

19. Z.Moravej, “**Intelligent and redundant high voltage substation**”, NEEC 2008, IAUNajafabad, Isfahan.
 20. Z.Moravej, M.Mohamadi, M.K. Akbari, “*Protection of power transformer using wavelet transform*”, **Conference of protection and control**, Amir Kabir university in Persian 2008.
 21. Z.Moravej, A.A. Abdoos and M.Pazoki, “*Detection and classification of power quality events using S-transform and SVM*,” **24th International conf. (PSC)**, 1388 (2009), Iran.
 22. Z.Moravej, A.A. Abdoos and M.Sanaypasand, “Recognition of inrush current from internal fault using s transform”, **25th International conf. (PSC)**, 1389 (2010), Iran.
 23. F.Salahi, R. Kaypour and Z.Moravej, “Reliability Assistent of Automated Substation by Considering Redundency”, **25th International conf. (PSC)**, 1389 (2010), Iran.
 24. M. Hajian, Z. Moravej, “Economic Evaluation of Distributed Generation in Semnan Power Grid,” Electric Power Distribution Conf., Bandarabbas, Iran, 2011.
 25. A.H. Rezai, P. Keshavarzi, Z. Moravej, “A New Key Management Scheme for SCADA Networks,” ISCSE Conference, Turkey, 2011.
 26. Zahra Moravej, Mohammad Pazoki, “A pattern recognition system for fault analysis in TCSC based transmission line,” International power system conference 26th-PSC, 2011, Iran.
 27. Hady Afshar,Zahra Moravej , Mohsen Niasati , Modeling and Optimization of Microgrid Considering Emissions, **Conference on Smart Electric Grids Technology (SEGT2012)** 18-19 December 2012, Iran University of Science and Technology, Tehran, Iran, **IU ST** www.segt.org
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