MOHAMMAD ABID BAZAZ

Phone: +91-8713812200
Email: abid@nitsri.ac.in
Website: www.abidbazaz.com

Associate Professor & Head
Department of Electrical Engineering
National Institute of Technology Srinagar
Srinagar – 190006
Jammu and Kashmir, India

Areas of interest: Nonlinear and Parametric Model Order Reduction. Dynamical Systems and Automatic Control, Artificial Intelligence and Machine Learning, Disease modeling and analysis.

EDUCATION

PhD Indian Institute of Technology Delhi, New Delhi, India 2010-2013
Dissertation: "Structure Preserving & Parametric Reduced Order Modelling Strategies for System Simulation"
Advisor: Prof. Mashuq-un-Nabi

M.Tech
Indian Institute of Technology Delhi, New Delhi, India 2006-2008
Control and Automation

B.Tech
National Institute of Technology Srinagar, Srinagar, India 1993-1997
Electrical Engineering

HONORS AND AWARDS

1. **President's Gold Medal** and Certificate of Distinction for being the first position holder in B.E. Electrical Engineering. REC Srinagar (NIT Srinagar, now)- 1998
2. **QIP Fellowship** for two years from July 2006- June 2008 for pursuing M.Tech. in Electrical Engineering at IIT Delhi. MHRD, GOI- 2006
3. **Prof. A.K. Sinha prize** for being the best student amongst all branches of Electrical Engineering at IIT Delhi in 2008. IIT Delhi - 2008
4. **QIP Fellowship** for three years from June 2010- June 2013 for pursuing Ph.D. in Electrical Engineering at IIT Delhi. MHRD, GOI - 2010

WORK EXPERIENCE

	Positions held	Name of the Institute	From	To
1.	Lecturer	NIT Srinagar	March 2000	March 2006
2.	Senior Lecturer	NIT Srinagar	March 2006	July 2009

3.	Assistant Professor	NIT Srinagar	July 2009	Sep. 2018
4	Associate Professor	NIT Srinagar	Sep. 2018	Till date

DOCTORAL STUDENTS ADVISED

1. **Junaid Farooq** - Dec. 2019 to Dec 2023 (Expected)
   Thesis: Improved algorithms in artificial intelligence for control applications

2. **Danish Rafiq –** September 2017 to September 2022 (Expected)
   Thesis:

3. **Suhail Ahmad Suhail –** September 2017 to September 2022 (Expected)
   Thesis:

4. **Peerzada Shoaib Hamid–**
   Thesis:

5. **Hadhiq Khan–** Awarded in Dec. 2020
   Thesis: Adaptive Model Reduction Framework for fast simulation of high-fidelity power electronic circuits

6. **Satyavir Singh –** Awarded in 2020
   Thesis: Improved Algorithms for Nonlinear Model Order Reduction

7. **Shoeb Hussain –**
   Thesis: Currently working as Assistant Professor, Department of Electrical Engineering, NIT Srinagar.

PUBLICATIONS

Book Chapters

1. Singh, Satyavir, Mohammad Abid Bazaz, and Shahkar Ahmad Nahvi. "Computationally Efficient Scheme for Simulation of Ring Oscillator Model." Ambient Communications and Computer Systems. Springer, Singapore, 2020. 193-202.

2. Suhail, Suhail Ahmad, Mohammad Abid Bazaz, and Shoeb Hussain. "Active Disturbance Rejection Control Applied to a DC Motor for Position Control." Proceedings of ICETIT 2019. Springer, Cham, 2020. 437-448.

3. Satyavir Singh, M. Abid, Shahkar Nahvi (2019) Reduced Order Modeling of Transient Power Grid Network with Improved Basis POD. Springer

4. Suhail Ahmad, M. Abid Bazaz, Shoeb Hussain (2019) Lecture Series in Electrical Engineering, September, 2018. Active Disturbance Rejection Control Applied to a DC Motor for Position Control. Springer

5. Shoeb Hussain, Mohammad Abid Bazaz (2018) Advances in Intelligent Systems and Computing: Adaptive Neural Type II Fuzzy Logic Based Speed Control of Induction Motor Drive. (In press 2194-5357) Springer

6. Shoeb Hussain, Mohammad Abid Bazaz (2016) Advances in Intelligent Systems and Computing: Sensorless Control of PMSM Drive with Neural Network Observer using a Modified SVPWM strategy. 857-868, 2194-5357. Springer

7. Hadhiq Khan, Shoeb Hussain, Mohammad Abid Bazaz (2016) Advances in Intelligent Systems and Computing: ANFIS Based Speed Controller for a Direct Torque Controlled Induction Motor Drive. 891-902, 2194-5357. Springer.

Journal Publications

1. Danish Rafiq and Mohammad Abid Bazaz, "Model Order Reduction via Moment-Matching: A State of the Art Review", Archives of Computational Methods in Engineering, Springer, (2021), DOI: https://link.springer.com/article/10.1007/s11831-021-09618-2

2. Suhail Ahmad Suhail, Mohammad Abid Bazaz and Shoeb Hussain, "MPC based active disturbance rejection control for automated steering control", Proceedings of the Institution of Mechanical Engineers Part D Journal of Automobile Engineering (2021).

3. Danish Rafiq and Mohammad Abid Bazaz, "Efficient computation of 1D and 2D nonlinear Viscous Burgers' equation International Journal of Dynamics and Control, (2021), DOI.

4. Danish Rafiq and Mohammad Abid Bazaz, "Nonlinear Model Order Reduction via Nonlinear Moment Matching with Dynamic Mode Decomposition", International Journal of Non-Linear Mechanics, Volume 128,103625, ISSN 0020-7462 (2020)

5. Danish Rafiq and Mohammad Abid Bazaz. "A framework for parametric reduction in large-scale nonlinear dynamical systems." Nonlinear Dynamics (2020): vol 102, pp. 1897-1908, (2020).

6. Danish Rafiq, Suhail Ahmad Suhail, and Mohammad Abid Bazaz. "Evaluation and prediction of COVID-19 in India: A case study of worst-hit states." Chaos, Solitons & Fractals 139 (2020): 110014.

7. Farooq, Junaid, and Mohammad Abid Bazaz. "A deep learning algorithm for modeling and forecasting of COVID-19 in five worst-affected states of India." Alexandria Engineering Journal (2020). [doi.org/10.1016/j.aej.2020.09.037]

8. Farooq, Junaid, and Mohammad Abid Bazaz. "A novel adaptive deep learning model of Covid-19 with focus on mortality reduction strategies." Chaos, Solitons & Fractals 138 (2020): 110148. [doi.org/10.1016/j.chaos.2020.110148]

9. Singh, Satyavir, Mohammad Abid Bazaz, and Shahkar Ahmad Nahvi. "Reduced-Order Modeling of Transient Power Grid Network with Improved Basis POD." Advances in Computational Intelligence and Communication Technology. Springer, Singapore, 2020. 433-444.

10. Danish Rafiq, and Mohammad Abid Bazaz. "A comprehensive scheme for reduction of nonlinear dynamical systems." International Journal of Dynamics and Control 8.2 (2020): 361-369.

11. Khan, Hadhiq, Mohammad Abid Bazaz, and Shahkar Ahmad Nahvi. "Adaptive multi-resolution framework for fast simulation of power electronic circuits." IET Circuits, Devices & Systems (2020).

12. Singh, Satyavir, Mohammad Abid Bazaz, and Shahkar Ahmad Nahvi. "Reduced Order Modeling of Large Power Grid Model with POD-DEIM." Journal of Physics: Conference Series. Vol. 1478. 2020.

13. Hussain, Shoeb, and Mohammad Abid Bazaz. "Modified SVPWM technique for a sensorless controlled induction motor drive using neural network observer and predictive controller." International Journal of Advanced Intelligence Paradigms 16.2 (2020): 172-189.

14. Singh, Satyavir, Mohammad Abid Bazaz, and Shahkar Ahmad Nahvi. "Simulating swing dynamics of a power system model using nonlinear model order reduction." COMPEL-The international journal for computation and mathematics in electrical and electronic engineering (2019).

15. Khan, Hadhiq, Mohammad Abid Bazaz, and Shahkar Ahmad Nahvi. "Singular perturbation-based model reduction of power electronic circuits." IET Circuits, Devices & Systems 13.4 (2019): 471-478.

16. Singh, Satyavir, M. Abid Bazaz, and Shahkar Ahmad Nahvi. "A scheme for comprehensive computational cost reduction in proper orthogonal decomposition." Journal of Electrical Engineering 69.4 (2018): 279-285.

17. Hussain, Shoeb, and Mohammad Abid Bazaz. "Adaptive Neural Type II Fuzzy Logic-Based Speed Control of Induction Motor Drive." Ambient Communications and Computer Systems. Springer, Singapore, 2018. 81-92.

18. Khan, Hadhiq, Mohammad Abid Bazaz, and Shahkar Ahmad Nahvi. "Simulation acceleration of high-fidelity nonlinear power electronic circuits using model order reduction." IFAC-PapersOnLine 51.1 (2018): 273-278.

19. Roy, Suman Kumar, Shoeb Hussain, and Mohammad Abid Bazaz. "Implementation of MPPT technique for solar PV system using ANN." 2017 Recent Developments in Control, Automation & Power Engineering (RDCAPE). IEEE, 2017.

20. Hussain, Shoeb, and Mohammad A. Bazaz. "Neural Predictive Observer for Sensorless Controlled Induction Motor Drive" Control and Intelligent Systems 45.2 (2017).

21. Hussain, Shoeb, and Mohammad Abid Bazaz. "Neural network observer design for sensorless control of induction motor drive." IFAC-PapersOnLine 49.1 (2016): 106-111.

22. Hussain, Shoeb, and Mohammad Abid Bazaz. "Sensorless control of PMSM drive using extended Kalman filter and fuzzy logic controller." International Journal of Industrial Electronics and Drives 3.1 (2016): 12-19.

23. Hussain, Shoeb, and Mohammad Abid Bazaz. "Sensorless control of permanent magnet synchronous motor drive using unscented Kalman filter." International Journal of Industrial Electronics and Drives 2.3 (2015): 163-169.

24. Nahvi, Shahkar Ahmad, et al. "Approximate snapshot-ensemble generation for basis extraction in proper orthogonal decomposition." IFAC Proceedings Volumes 47.1 (2014): 917-921.

25. Bazaz, Mohammad Abid, Mashuq-un Nabi, and S. Janardhanan. "Automated and efficient order selection in Krylov-based model order reduction." International Journal of Modelling, Identification and Control 18.4 (2013): 332-340.

26. Bazaz, Mohammad Abid, Mashuq un Nabi, and S. Janardhanan. "Modelling and simulation strategy for parametric transient electromagnetic simulations." International Journal of Modelling, Identification and Control 18.3 (2013): 251-260.

Conference Papers

1. Danish Rafiq and Mohammad Abid Bazaz. "A comprehensive scheme for fast simulation of Burgers' equation." 2019 Sixth Indian Control Conference (ICC). IEEE, 2019.

2. Suhail Ahmad, M. A. Bazaz, and Shoeb Hussain. "Altitude and Attitude Control of a Quadcopter Using Linear Active Disturbance Rejection Control." 2019 International Conference on Computing, Power and Communication Technologies (GUCON). IEEE, 2019.

3. Danish Rafiq and Mohammad Abid Bazaz. "Model Order Reduction of Non-Linear Transmission Lines Using Non-Linear Moment Matching." 2019 International Conference on Computing, Power and Communication Technologies (GUCON). IEEE, 2019.

4. Khan, Hadhiq, Mohammad Abid Bazaz, and Shahkar Ahmad Nahvi. "A Framework for Fast Simulation of Power Electronic Circuits." 2019 International Aegean Conference on Electrical Machines and Power Electronics (ACEMP) & 2019 International Conference on Optimization of Electrical and Electronic Equipment (OPTIM). IEEE, 2019.

5. Khan, Hadhiq, Mohammad Abid Bazaz, and Shahkar Ahmad Nahvi. "Accelerated Simulation Across Multiple Resolutions for Power Electronic Circuits." 2019 Fifth Indian Control Conference (ICC). IEEE, 2019.

6. Bazaz, M. Abid, and Shahkar A. Nahvi. "Model Order Reduction of Two Area Electric Power System." 2018 4th International Conference on Computing Communication and Automation (ICCCA). IEEE, 2018.

7. Bazaz, M. Abid, and Shahkar A. Nahvi. "Reduced Order Modeling of Ring Oscillator System with POD-DEIM." 2018 4th International Conference on Computing Communication and Automation (ICCCA). IEEE, 2018.

8. Lone, Ashiq Hussain, et al. "Load Frequency Control of Two Area Interconnected Power System using SSSC with PID, Fuzzy and Neural Network Based Controllers." 2018 2nd IEEE International Conference on Power Electronics, Intelligent Control and Energy Systems (ICPEICES). IEEE, 2018.

9. Hussain, Shoeb, Hadhiq Khan, and Mohammad Abid Bazaz. "Neural Network Observer for Sensorless Direct Torque Controlled Induction Motor Drive." 2018 International Conference on Power Energy, Environment and Intelligent Control (PEEIC). IEEE, 2018.

10. Khan, Hadhiq, Mohammad Abid Bazaz, and Shahkar Ahmad Nahvi. "Accelerated simulation of a high-fidelity DC-DC buck-boost converter using model order reduction." 2018 Indian Control Conference (ICC). IEEE, 2018.

11. Singh, Saurabh, Shoeb Hussain, and Mohammad Abid Bazaz. "Short term load forecasting using artificial neural network." 2017 Fourth International Conference on Image Information Processing (ICIIP). IEEE, 2017.

12. Khan, Hadhiq, Mohammad Abid Bazaz, and Shahkar Ahmad Nahvi. "Model order reduction of power electronic circuits." 2017 6th International Conference on Computer Applications In Electrical Engineering-Recent Advances (CERA). IEEE, 2017.

13. Iqbal, Zubair, Shoeb Hussain, and Mohammad Abid Bazaz. "Fuzzy tuned PID controller for power system stability." 2017 International Conference on Computing, Communication and Automation (ICCCA). IEEE, 2017.

14. Nahvi, Shahkar Ahmad, Mohammad Abid Bazaz, and Hadhiq Khan. "Model order reduction in power electronics: Issues and perspectives." 2017 International Conference on Computing, Communication and Automation (ICCCA). IEEE, 2017.

15. Wani, Aadil Mehraj, Shoeb Hussain, and Mohammad Abid Bazaz. "Implementation of hybrid fuzzy sliding mode controller for power system stability." 2016 International Conference on Electrical Power and Energy Systems (ICEPES). IEEE, 2016.

16. Khan, Hadhiq, Shoeb Hussain, and Mohammad Abid Bazaz. "ANFIS Based Speed Controller for a Direct Torque Controlled Induction Motor Drive." The International Symposium on Intelligent Systems Technologies and Applications. Springer, Cham, 2016.

17. Hussain, Shoeb, and Mohammad Abid Bazaz. "Sensorless Control of PMSM Drive with Neural Network Observer using a Modified SVPWM strategy." The International Symposium on Intelligent Systems Technologies and Applications. Springer, Cham, 2016.

18. Hussain, Shoeb, and Mohammad Abid Bazaz. "Sensorless control of PMSM drive using Neural Network Observer." 2016 IEEE 1st International Conference on Power Electronics, Intelligent Control and Energy Systems (ICPEICES). IEEE, 2016.

19. Hussain, Shoeb, and Mohammad Abid Bazaz. "Comparative analysis of speed control strategies for vector controlled PMSM drive." 2016 International Conference on Computing, Communication, and Automation (ICCCA). IEEE, 2016.

20. Khan, Hadhiq, Shoeb Hussain, and Mohammad Abid Bazaz. "Neural network modulation for a Direct Torque controlled Induction Motor Drive." 2015 IEEE Student Conference on Research and Development (SCOReD). IEEE, 2015.

21. Khan, Hadhiq, Shoeb Hussain, and Mohammad Abid Bazaz. "Direct torque control of induction motor drive with flux optimization." 2015 International Conference on Advances in Computing, Communications and Informatics (ICACCI). IEEE, 2015.

22. Amitava, Aditya, et al. "Control, Automation and Power Engineering (RDCAPE) 12-13 March 2015 Amity School of Engineering and Technology, Noida, India." (2015).

23. Hussain, Shoeb, and Mohammad Abid Bazaz. "Review of vector control strategies for three phase induction motor drive." 2015 International Conference on Recent Developments in Control, Automation and Power Engineering (RDCAPE). IEEE, 2015.

24. Bazaz, Mohammad Abid, et al. "Adaptive parameter space sampling in matrix interpolatory pMOR." 2015 International Conference on Recent Developments in Control, Automation and Power Engineering (RDCAPE). IEEE, 2015.

25. Hussain, Shoeb, and Mohammad Abid Bazaz. "Sensorless control of PMSM using Extended Kaiman filter with Sliding mode controller." 2014 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES). IEEE, 2014.

26. Hussain, Shoeb, and Mohammad Abid Bazaz. "Fuzzy integrated sliding mode controller for vector controlled PMSM." 2014 6th IEEE Power India International Conference (PIICON). IEEE, 2014.

27. Hussain, Shoeb, and Mohammad Abid Bazaz. "Fuzzy based sliding mode control for vector controlled induction motor." 2014 International Conference on Advances in Computing, Communications and Informatics (ICACCI). IEEE, 2014.

28. Nahvi, S. A., Bazaz, M. A., Nabi, M., & Janardhanan, S. (2014, June). Fast simulation of nonlinear dynamical systems for application in reduced order modelling. In 2014 European Control Conference (ECC) (pp. 1092-1097). IEEE.

29. Hussain, Shoeb, and Mohammad Abid Bazaz. "ANFIS implementation on a three phase vector controlled induction motor with efficiency optimisation." 2014 International Conference on Circuits, Systems, Communication and Information Technology Applications (CSCITA). IEEE, 2014.

30. Bazaz, Mohammad Abid, and S. Janardhanan. "Two-step reduction procedure for parametric transient electromagnetic computations." 2012 Proceedings of International Conference on Modelling, Identification and Control. IEEE, 2012.

31. Bazaz, Mohammad Abid, and S. Janardhanan. "A stopping criterion for Krylov-subspace based model order reduction techniques." 2012 Proceedings of International Conference on Modelling, Identification and Control. IEEE, 2012.

32. Bazaz, Mohammad Abid, and S. Janardhanan. "A review of parametric model order reduction techniques." 2012 IEEE International Conference on Signal Processing, Computing and Control. IEEE, 2012.

33. Bazaz, Mohammad Abid, and S. Janardhanan. "Parameterized model order reduction for fast transient electromagnetic simulations." 2012 International Conference on Power, Signals, Controls and Computation. IEEE, 2012.

34. Bazaz, Mohammad A., and M. Nabi. "Krylov-Subspace Based Reduced Order Modeling of Induction Heating Systems." 2011 International Conference on Process Automation, Control and Computing. IEEE, 2011.

35. Nabi, Mu, M. A. Bazaz, and P. Guha. "Krylov-subspace based model order reduction for field-circuit coupled systems." 2009 European Conference on Circuit Theory and Design. IEEE, 2009.

LANGUAGES

Native: Kashmiri
Fluent: English, Urdu, Hindi
Basic: Arabic