

Dr. Aritro Dey

Assistant Professor
Department of Electrical Engineering
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Present Status: Assistant Professor Grade I, Department of Electrical Engineering, National Institute of Technology, Durgapur.

Research Interest: Research interest includes statistical signal processing, nonlinear state and parameter estimation, target tracking and navigation, Conventional and Nonlinear control with aerospace applications.

Educational Qualifications:

1. PhD in Electrical Engineering Year: 2017,
Affiliation: Department of Electrical Engineering,
Jadavpur University, Kolkata
Specialization: Control Systems
Title of Thesis: State & Parameter Estimation for
Dynamic Systems: Some Investigations
Supervisor: Dr. Smita Sadhu, Professor, JU, EE
Dr. Tapan Kumar Ghoshal,
Honorary Emeritus Professor, JU, EE
2. Master of Electrical Engineering Year: 2011,
Affiliation: Department of Electrical Engineering,
Jadavpur University, Kolkata
Specialization: Control Systems
Percentage of marks: 88.72%
3. Bachelor of Electrical Engineering 2008, Department of Electrical Engineering,
Jadavpur University, Kolkata
Percentage of marks: 76.84%

Work Experiences:

- [1] December 2018 – Till date: Assistant Professor, NIT, Durgapur
- [2] August 2015 – November 2018: Scientist/ Engineer ‘C’, National Control Law Team, Aeronautical Development Agency, Ministry of Defence.
- [3] June 2012 – July 2015: Senior Research Fellow (CSIR-SRF) of Council of Scientific and Industrial Research, MHRD

PhD Students:

- [1] Poluri Sri Mannarayana (Ongoing), Proposed thesis title: “State Estimation for Dynamic Systems using Adaptive Nonlinear filters.”
 - [2] Biswapratim Roy (Ongoing), Proposed thesis title: “Some Aspects of Nonlinear Control for Aerospace Applications”
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Publications:

Journal Publications

- [1] R. Barai, A. Dey, S. Rudra, "Sliding Mode Compensation for Model Uncertainty, Payload Variation and Actuator Dynamics for Inverse Dynamics Velocity Control of Direct Drive Robot" *Journal of Control Engineering and Technology*, vol. 2, issue 2, pp. 203-211
- [2] A. Dey, S. Sadhu, T. K. Ghoshal, "Joint Estimation of Parameters and States of Nonlinear Systems using Adaptive Divided Difference Filter," *International Journal of Electrical, Electronics and Computer Engineering*, 2013, vol. 2, issue 2, pp. pp. 7-12
- [3] M. Das, A. Dey, S. Sadhu, T. K. Ghoshal, "Central Difference Filter for Nonlinear State Estimation," *IET Science Measurement and Technology*, 2015, vol. 9, issue 6, pp. 728-735
- [4] A. Dey, S. Sadhu, T. K. Ghoshal, "Adaptive Gauss-Hermite Filter for Non-Linear Systems with Unknown Measurement Noise Covariance," *IET Science Measurement and Technology*, 2015, vol. 9, issue 8, pp. 1007-1015
- [5] A. Dey, M. Das, S. Sadhu, T. K. Ghoshal, "Adaptive Divided Difference Filter for Parameter and State Estimation of Nonlinear Systems," *IET Signal Processing*, 2015, vol. 9, issue 4, pp. 211-221
- [6] A. Dey, "Adaptive cubature quadrature filter for nonlinear state estimation," *International Journal of Modelling Identification and Control*, 2020, vol. 36, issue 3, pp. 211-221
- [7] P. Yadav, A. Dey, "Power system harmonics estimation using adaptive Kalman filter and its nonlinear variants," *Journal of Indian Chemical Society*, 2020, vol. 97, issue 10B, pp. 1901-1909
- [8] S. Poluri, A. Dey, "Adaptive cubature quadrature Kalman filter for nonlinear state estimation with one-step randomly delayed measurements," *International Journal of Modelling Identification and Control*, accepted in 2020.
- [9] A. Chandra, S. Datta, A. Dey, S. Chowdhuri, "Performance Evaluation of CKF Based Sensorless Vector Controlled PM Synchronous Motor Drive," *Journal of Electrical Engineering & Technology*, 2021, vol. 16, pp. 889-897
- [10] S. Poluri, A. Dey, "Adaptive Gaussian filters for nonlinear state estimation with one-step randomly delayed measurements," accepted in *Asian Journal of Control*, 10.1002/asjc.2816
- [11] S. Poluri, A. Dey, "Adaptive Kalman Filter based on Variational Bayesian Approach for One-step Randomly Delayed Measurements," accepted in *Scientia Iranica*, 2022

International Conference Publications

- [1] R. K. Barai, A. Dey, "Sliding Mode Compensation of Inverse Dynamics Velocity Control," in the Proceedings of 12th International Workshop on Variable Structure Systems (VSS), IIT Bombay, pp. 155-160, 2012.
- [2] A. Dey, S. Sadhu, T. K. Ghoshal, "Joint Estimation of Parameters and States of Nonlinear Systems using Adaptive Divided Difference Filter," in the Proceedings of 2nd Michael Faraday IET India Summit, Kolkata, pp. CS.7-CS.11, 2013.
- [3] A. Dey, S. Sadhu, T. K. Ghoshal, "Adaptive Divided Difference Filter for Nonlinear Systems with Unknown Noise," in the Proceedings of International Conference on Control, Instrumentation, Energy and Communication, University of Calcutta, Kolkata, pp. 640-644, 2014.
- [4] A. Dey, S. Sadhu, T. K. Ghoshal, "Adaptive Gauss Hermite Filter for Parameter varying Nonlinear Systems," in the Proceedings of International Conference on Signal Processing and Communication, IISc Bangalore, , pp. 1-5, 2014.
- [5] A. Dey, M. Das, S. Sadhu, T. K. Ghoshal, "Adaptive Gauss Hermite Filter for Parameter and State Estimation of Nonlinear Systems," in the Proceedings of 11th International Conference on Informatics in Control, Automation and Robotics, Vienna, Austria, vol. 1, pp. 583-589, 2014.

- [6] A. Dey, S. Sadhu, T. K. Ghoshal, "Adaptive Divided Difference Filter for Nonlinear Systems with Non additive Noise," in the Proceedings of 3rd International Conference on Computer, Communication, Control and Information Technology (C3IT), Hooghly, WB, pp. 1-5, 2015.
- [7] A. Dey, S. Sadhu, T. K. Ghoshal, "Multiple Sensor Fusion using Adaptive Divided Difference Information Filter," in the Proceeding of 12th International Conference on Informatics in Control, Automation and Robotics, Colmar, France, vol. 1, pp. 398-406, 2015.
- [8] A. Dey, M. Das, S. Sadhu, T. K. Ghoshal, "Adaptive Unscented Information Filter For Multiple Sensor Fusion," in the proceeding of Michael Faraday IET India Summit 2015, Kolkata, pp. 541-545, 2015.
- [9] M. Das, A. Dey, S. Sadhu, T. K. Ghoshal, "Adaptive Unscented Kalman Filter at the Presence of Non-additive Measurement Noise" in the proceeding of 12th International Conference on Informatics in Control, Automation and Robotics, Colmar, France, vol. 1, pp. 614-620, 2015.
- [10] M. Das, A. Dey, S. Sadhu, T. K. Ghoshal, "Joint Estimation of States and Parameters of a Reentry Ballistic Target Using Adaptive UKF," in the proceeding of Fifth International Symposium on Electronic System Design (ISED), Surathkal, pp. 99 – 103, 2014.
- [11] A. Dey, Akhila MR, A. Goyal, A. Saraf, "A Novel 'Approach Angle-of-Attack Hold Controller' for Landing a Naval Fighter Aircraft on Carrier" in the proceedings of the international conference on Computing Communication & Control (IC4T, 2016), Lucknow. November, 2016
- [12] A. Dey, S. Sadhu, T. K. Ghoshal, "Square Root Quadrature Information Filters for Multiple Sensor Fusion," in International Conference on Modelling and Simulation, pp. 539-547, Springer, 2017.
- [13] A. Dey, "Adaptive Higher Degree Cubature Quadrature Information Filter for Multiple Sensor Fusion," IEEE 1st International Conference on Energy, Systems and Information Processing (ICESIP), Chennai, India, pp. 1-6, 2019.
- [14] A. Dey, "Adaptive Cubature Kalman filter for Bearing only Tracking" International Conference on Emerging Trends in Information Technology and Engineering, VIT, India, pp. 1-6, 2020
- [15] N. Gaurav, A. Dey, "State of Charge Estimation of Li-ion Battery using Adaptive Extended Kalman Filter," International Conference on Water Energy and Environmental Sustainability WEES 2020, NIT Durgapur 2020
- [16] P. Yadav, A. Dey, "Power System Harmonic Estimation using Adaptive Kalman Filter," International Conference on Water Energy and Environmental Sustainability WEES 2020, NIT Durgapur 2020
- [17] P. Yadav, A. Dey, "Investigation of the Suitability of Adaptive Extended Kalman Filter for Power System Harmonics Estimation," First IEEE International Conference on Measurement, Instrumentation, Control and Automation (ICMICA), NIT Kurukshetra, 2020
- [18] P. Srimannarayana, A. Dey, J. Dey, "State of Charge Estimation of Lithium-Ion Battery Using State Augmented Cubature Kalman Filter in Presence of Uncharacterized Coloured Noise," HYDCON2020, Hyderabad, 2020
- [19] P. Srimannarayana, A. Dey, J. Dey, "Estimation of the State-of-Charge of Lithium-ion Battery using Adaptive State Augmented Cubature Kalman Filter in Presence of Uncharacterized Coloured Noise in the Measurement," Michael Faraday IET International Summit 2020 (MFIIS 2020), 2020
- [20] P. Srimannarayana, A. Dey, "Nonlinear State Estimation using Adaptive Cubature Kalman filter with one-step randomly delayed measurements," International (Virtual) Symposium on Control, Communication and Embedded System for Robotics, SOCCER 2020
- [21] Y. Pradhan, A. Dey, "Performance Investigation of Extended Kalman Filter during Power System Harmonics Estimation," orally presented at International Conference on Industrial Instrumentation & Control (ici2c-2021)
- [22] Y. Pradhan, A. Dey, "Power System Harmonics Estimation using R Adaptive Variational Bayesian Kalman Filter," accepted for oral presentation at IEEE International Power and Renewable Energy Conference (IPRECON), 2021
- [23] A. Dey, "Adaptive Square Root Cubature Quadrature Kalman Smoother for Nonlinear State Estimation," accepted for oral presentation at International Conference On Computing, Power, And Communication Technologies (IEEE-IAS-GUCON 2021)

[24] Chatterjee, S., Chowdhury, A., Dey, A., & Thakur, S. S. (2021, December). Power Systems Dynamic State Estimation for Unknown and Non-stationary Measurement Noise Statistics. In 2021 IEEE 2nd International Conference on Smart Technologies for Power, Energy and Control (STPEC) (pp. 1-6). IEEE.

[25] Chowdhury, A., Chatterjee, S., Dey, A., & Thakur, S. S. (2021, December). Adaptive Cubature Kalman Filter for Power Systems Dynamic State Estimation in Face of Unknown Non-Stationary Noise Statistics. In 2021 International Conference on Computational Performance Evaluation (ComPE) (pp. 053-058). IEEE.

[26] Chowdhury, A., Chatterjee, S., & Dey, A. (2022, March). Power Systems Dynamic State Estimation using Central Difference Filter. In 2022 Second International Conference on Power, Control and Computing Technologies (ICPC2T) (pp. 1-6). IEEE.

[27] Chatterjee, S., Chowdhury, A., & Dey, A. (2022, February). Divided Difference Filter for Power Systems Dynamic State Estimation. In 2022 IEEE Delhi Section Conference (DELCON) (pp. 1-6). IEEE.

[28] Pradhan, Y., & Dey, A. (2022). Performance Investigation of Extended Kalman Filter During Power System Harmonics Estimation. In Proceedings of International Conference on Industrial Instrumentation and Control (pp. 225-235). Springer, Singapore.

[29] Chandra, A., Datta, S., Dey, A., & Chowdhuri, S. (2022, March). Sensor-less Vector Control of Surface PM Synchronous Motor Using Reduced-Order Cubature Kalman Filter Based Estimator. In 2022 IEEE International Conference on Signal Processing, Informatics, Communication and Energy Systems (SPICES) (Vol. 1, pp. 412-417). IEEE.

Book Chapters:

[1] A. Dey, S. Sadhu, T. K. Ghoshal, "Adaptive Nonlinear Information Filters for Multiple Sensor Fusion," Revised Selected Papers of 12th International Conference on Informatics in Control, Automation and Robotics, Lecture Notes in Electrical Engineering, Springer Verlag, Springer International Publishing AG Switzerland, 2016

[2] P. Srimannarayana, A. Dey, "Nonlinear State Estimation Using Adaptive Gaussian Filters with One-Step Randomly Delayed Measurements," Communication and Control for Robotic Systems, Springer, Singapore, 2021

Technical documents:

[1] A number of technical documents on Linear Assessment of the Control Law for India's Indigenous Light Combat Aircraft (both Airforce and Naval variant)

[2] Design document on Approach Angle of Attach hold controller for LCA Navy

[3] Functionality document on Control Law for LCA Navy,

[4] Functionality document on Attitude Estimation for LCA Airforce and LCA Navy

Teaching Experience:

[1] Advanced Control Systems (EE710, EE 2013)

[2] Fundamental of Control Systems (EEO 541)

[3] Electrical Technology (EEC01)

[4] Control System Engineering (EEC431)

M Tech Thesis Supervision

[1] Pravir Yadav: "Power system harmonics estimation using nonlinear filters" completed in July 2020

[2] Navin Gaurav: “State of Charge estimation using Extended Kalman filter” completed in July 2020

[3] Yuglina Pradhan: “Power System Harmonics Estimation using Variational Bayesian Extended Kalman Filters” completed in July 2021

[4] Aniruddha Mondal: “State estimation Permanent Magnet Synchronous Motor using Variational Bayesian Nonlinear Kalman filters” completed in July 2021

[5] Sayantan Chatterjee: “Variational Bayesian Adaptive Quadrature filters for Power System Dynamic State Estimation” completed in July 2022

[6] Arindam Mukherjee: “Power System Dynamic State Estimation using Expectation Maximization based Adaptive Nonlinear filters” completed in July 2022

Scholarships and Awards:

[1] Best Paper Award in 2nd Michael Faraday IET India Summit, awarded by IET Kolkata Section in 2013

[2] Senior Research Fellowship awarded by Council of Scientific and Industrial Research (CSIR) in June, 2012 for (2+2) years

[3] Gold Medal from Jadavpur University for standing first in Master of Electrical Engineering, 2011

[4] Subodh Kumar Basu Memorial Medal from Jadavpur University for securing highest marks in Electrical Engineering Laboratory in pre final and final years of Bachelor of Electrical Engineering

Reviewer

[1] IET Electronics letter

[2] IET Signal Processing

[3] IET Radar Sonar Navigation

[4] IET Control Theory

[5] Mechanical System and Signal Processing, Elsevier

[6] IEEE Transaction on Systems Man Cybernetics Systems

Technical program committee:

[1] INDICON 2019

[2] INDICON 2020

[3] INDICON 2021

[4] International Conference on Control, Measurement and Instrumentation (CMI), 2020

Personal Details:

DOB: 08th July, 1986

Sex: Male

MaritalStatus: Married

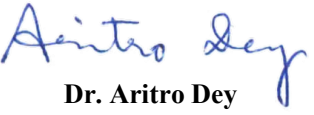
Nationality: Indian

Declaration

I hereby declare that the above written particulars are true to the best of my knowledge and belief.

Date: 15.03.2023

Place: NIT, Durgapur


Dr. Aritro Dey