



Sukanta Das

Professor

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Personal webpage: <https://www.iitism.ac.in/faculty-details?faculty=asksukanta>

Bio-Sketch:

Dr. Sukanta Das received the Bachelor of Engineering degree in Electrical Engineering from Jalpaiguri Government Engineering College, Jalpaiguri, India, in 2002, and the Master of Engineering and Ph.D. degrees in Electrical Engineering from Bengal Engineering and Science University (now known as the Indian Institute of Engineering Science and Technology Shibpur), Howrah, India, in 2004 and 2013, respectively.

Dr. Das is currently a Professor in the Department of Electrical Engineering, Indian Institute of Technology (ISM), Dhanbad, India. Apart from teaching regular courses on Electrical Machines & Drives, he is actively involved in Research & Development work. He has accomplished a few projects sponsored by SERB, MHI, DST etc. and is also currently involved in other Industry projects with Mahindra & Mahindra Ltd. India. Till date, Prof. Das has guided 9 students towards their Ph.D degrees. Moreover, 28 students have completed their M.Tech. dissertations under his supervision. He has authored /coauthored about 70 publications in journals /conferences.

His current research interests include high-performance drives, fault-tolerant control of induction motor drives, energy efficient operation of induction motor drives, predictive control of machine drives, fast charging of electrical vehicles and other aspects of electrical machine drives.

Presently, Prof. Das is a *Senior Member of IEEE, INAE and Fellow of IEI*.

Academic Qualifications:

- **BE (Electrical Engg.) 2002** - Jalpaiguri Govt. Engineering College, Jalpaiguri, under University of North Bengal (NBU), West Bengal, India.
- **ME (Electrical Engg.) - 2004 & Ph.D (Engg.) 2013** - Indian Institute of Engineering Science & Technology (IIST), Shibpur, Howrah (Erstwhile Bengal Engineering and Science University (BESU), Shibpur, Howrah, India).

Personal Details:

- Male, Married, from West Bengal-India, DOB: January 16, 1979.

Current Research Interests:

Mathematical formulation of concepts, their theoretical development and finally experimental validation using microcontrollers or rapid prototyping platforms are the key steps followed in the following research areas.

- Brushless Special Machines.
- High-Performance Electric Drives.
- Energy Efficient Control of Motor Drives.
- Fault Tolerant Control of Motor Drives.
- Drives for Electric Vehicles.
- Fast Charging Technologies.

Experience:

Teaching-Twenty-one years. Till date different subjects of Under-graduate and post-graduate courses of Electrical Engineering have been taught. A few project/thesis dissertations at undergraduate and Ph.D. levels are completed, and a few more research/thesis guidance at undergraduate, post-graduate and Ph.D. levels are on-going.

Employer	Position held	Duration in the post
Birbhum Institute of Engineering and Technology, Suri, Birbhum, West Bengal, India.	Lecturer	March 15, 2004 –August 31, 2008
	Senior Lecturer	September 01, 2008-October 31, 2010
Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand, India.	Assistant Professor	November 01, 2010 – April 11, 2021
Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand, India.	Associate Professor	April 12, 2021 – April 19, 2026
Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand, India.	Professor	April 20, 2026 – Continuing

Courses Offered in Under-Graduate:

Sl. No.	Courses	Code	L-T-P	Program
1	Electrical Technology	EEC11102/12102	3-1-0	1 st year B.Tech. (EE)
2	Electrical Technology Practical	EEC12201	0-0-3	
3	Circuit Theory	EEC13111	3-1-0	2 nd year B.Tech. (EE)
4	Circuit Theory Practical	EEC13211	0-0-3	
5	Electrical Measurements Practical	EEC14211	0-0-3	
6	Applied Electrical Engg.	EER14101	3-0-0	2 nd year B.Tech. (MEC)
7	Electrical Machines-II	EED308	3-0-0	3 rd year B.Tech. (EE)
8	Utilization of Electric Power	EEH16101	3-0-0	
9	Power Electronics Practical	EEC16211	0-0-3	
10	Power System Practical	EEC16212	0-0-3	
11	Applied Electrical Engg.	EER16101	3-1-0	3 rd year B.Tech. (MLE)
12	Special Purpose Electric Machines & Drives	EED406	3-0-0	4 th year B.Tech. (EE)

Courses Offered in Post-Graduate:

Sl. No.	Courses	Code	L-T-P	Program
1	Generalized Theory of Electrical Machines	EEC51101	3-0-0	1 st year M.Tech. (PSE+PEED)

Significant Projects Supervised at Under-Graduate (B.Tech.) Level:

- Application of Wavelet Transform in Power Quality Study.
- Detection and Prevention of CT Saturation Using Artificial Neural Network.
- Induction Motor Condition Monitoring.
- Vector Controlled Methods for Induction Motor Drives.
- Energy Efficient Control of Induction Motor Driven Electric Vehicles.
- SOC and SOH Monitoring of Battery.

Significant Projects Supervised at Post-graduate (M.Tech.) Level: 28**Academic session-2013-14: 01**

1. "A Comparative Study on Different PWM Techniques and Assessment of Performance of Induction Motor Drives Using ANN Based Space Vector Pulse Width Modulated VSI"-- by **Taneesha Bhandari**

Academic session-2014-15: 03

2. "Phase-Disposition PWM Five-level Inverter Switch Fault Diagnosis using DWT MRA and ANN"-- by **Anant Khalkho**

3. "Estimation of Speed and Rotor Resistance for Speed Sensorless Induction Motor Drive Utilizing Reactive Power Based MRAS"-- by **Murli Manohar**
4. "Estimation of Speed and Rotor Resistance for Speed Sensorless Induction Motor Drive Utilizing Rotor Flux Based MRAS"-- by **Senen James Purti**

Academic session-2015-16: 04

5. "Design of Wavelet Notch Filter using Multi-Resolution Analysis" -- by **Vikash Ranjan**
6. "Sensorless Speed Control of Permanent Magnet Synchronous Motor Drive Utilizing V*xI Model Reference Adaptive System" -- by **Alok Kumar Bhoi**
7. "Sensorless Vector Control of Induction Motor Drives Connected in Parallel" -- by **Sandeep Kumar**
8. Vector Control Technique for Speed Control of DFIM Drive Using Back-to-Back Converters -- by **Nilesh Kumar**

Academic session-2016-17: 04

9. "Space Vector Modulation Based Direct Torque Control of Induction Motor Drive" -- by **Pasupuleti Sivakumar**
10. "Comparative Performance Assessment of Different Multi-Level Inverter Fed Induction Motor Drive System" -- by **Avinash Saw**
11. "Correction of Current Transformer Secondary Current Distortion due to Saturation Using Artificial Neural Networks" -- by **Rishabh Gaurav**
12. "A comparative Study of Different Advanced Speed Control Techniques of Induction Motor Drive" -- by **Pooja Sharma**

Academic session-2017-18: 05

13. "Different Model Predictive Control Based Advanced Speed Control Techniques for Induction Motor Drive" -- by **Diksha Singh**
14. "Application of on-line Loss Minimization Strategy in Direct Torque Controlled Induction Motor Drive" -- by **Saurabh Nandy**
15. "Development and Validation of Automatic Model Predictive Controller for UGV based Lane Centering System" -- by **Parag Goyal**
16. "Development of FOC based Speed Controllers for PMSM and IM Drives for Electric Vehicle Application" -- by **Rachana Singh**
17. "Model Predictive Control Based Supervisory Controller for Hybrid Electric Vehicle" -- by **Anuradha Singh**

Academic session-2018-19: 04

18. "Field Oriented Control of Multi-Phase Induction Machine" -- by **Praveen Kumar**
19. "Design of 10 kVA Two-Level Three-Phase Voltage Source Inverter Using IPM PMRSB120 for Three-Phase Induction Motor Drives" -- by **Urbesh Sarkar**
20. "Speed Control of Brushless Doubly-Fed Reluctance Machine Using Direct Torque Control" -- by **Niraj Tiwary**
21. "Speed Control of Induction Motor Drive Using Model Predictive Current Control" -- by **Sunil Kumar**

Academic session-2019-20: 02

22. "A Speed Sensorless Rotor Flux-MRAS Based Direct Torque Control Scheme for Induction Motor Drives" -- by **Devjyoti Roy**
23. "Comparative Analysis of Speed Control of Brushless DC Motor Using Field Oriented Controller by Both SPWM And SVPWM Techniques" -- by **Kurra Govardhan**

Academic session-2020-21: 01

24. "Speed Control of Doubly Fed Induction Machine with Field-Oriented Control" -- by **Akash Lal**

Academic session-2021-22: 01

25. "Development of Bharat DC001 Standard Based Fast Charger for Electric Vehicle"-- by **Sai Kiran S**

Academic session-2023-24: 01

26. "Current Sensor Fault-Tolerant Strategy for IM Drives Operating under Model Predictive Control Regime"-- by **Rajarshi Chakraborty**

Academic session-2024-25: 01

27. "Online Loss-Minimization Strategy for Permanent Magnet Synchronous Motor"-- by **Sonal**

Academic session-2025-26: 01

28. "Modular Inverter Approach for Energy Efficient Control of Induction Motor Drives"-- by **Amit Kumar**

Projects Supervision at Post-graduate Level (On-going): 01**Broad area:** Multi-phase IM Drive Control.**Ph.D Students Graduated: 09**

1.	<i>Title of Ph.D Thesis:</i> " Robust Energy-Efficient Operating Strategies for High Performance Induction Motor Drives "...by Goutam Goswami <i>Notified for the Award of Ph.D Degree:</i> August 18, 2025 <i>Key Publications:</i> [1] Goutam Goswami, and Sukanta Das, "Inherently robust loss model controller for energy efficient operation of indirect rotor field-oriented induction motor drives," <i>IEEE Transactions on Power Electronics</i>, vol. 39, no. 1, pp. 14951-14960, Nov. 2024. [Q1] [2] Goutam Goswami, and Sukanta Das, "An online efficient loss model controller for rotor-field oriented induction motor drives," <i>IEEE Transactions on Energy Conversion</i>, vol. 39, no. 1, pp. 578-588, Mar. 2024. [Q1]. <i>Present Engagement:</i> Joined as Assistant Professor on contract in the Dept. of Electrical & Electronics Engineering at NIT, Goa. Now, working as Post-doctoral fellow at IIT Kharagpur.
2.	<i>Title of Ph.D Thesis:</i> "Predictive Control Strategies for Speed Sensorless Induction Motor Drives "...by Adrish Bhaumik <i>Notified for the Award of Ph.D Degree:</i> September 23, 2022. <i>Key Publications:</i> [1] Adrish Bhaumik, and Sukanta Das, "Predictive torque control strategy for speed adaptive flux observer based sensorless induction motor drive in flux-weakening region," <i>IEEE Transactions on Power Electronics</i>, vol. 36, no. 12, pp. 14110-14118, June. 2021. [Q1] [2] Adrish Bhaumik, and Sukanta Das, "Virtual voltage vector based predictive current control of speed sensorless induction motor drives," <i>ISA Transactions</i>, 14-July, 2022, ISSN 0019-0578, https://doi.org/10.1016/j.isatra.2022.07.007. Early Access [Q1] <i>Present Engagement:</i> Post Doctoral Fellow, Dept. of E&CE, National University of Singapore. Assistant Professor, Dept. of Electrical Engg., IIT (BHU) Varanasi.
3.	<i>Title of Ph.D Thesis:</i> "Sensorless Speed Control of Brushless Doubly-Fed Reluctance Motor Drive Utilizing Model Reference Adaptive Controller"... by Mukesh Kumar <i>Notified for the Award of Ph.D Degree:</i> May 23, 2022. <i>Key Publications:</i> [1] Mukesh Kumar, and Sukanta Das, "Sensorless speed estimation of brushless doubly-fed reluctance generator using active power based MRAS," <i>IEEE Transactions on Power Electronics</i>, vol. 34, no. 8, pp. 7878-7886, Aug. 2019. [Q1] [2] Mukesh Kumar, and Sukanta Das, "Model reference adaptive system based sensorless speed estimation of brushless doubly-fed reluctance generator for wind power application," <i>IET Power Electronics</i>, vol. 11, no. 14, pp. 2355-2366, Nov. 2018. [Q2] <i>Present Engagement:</i> Assistant Professor, Department of Electrical Engineering, Government Engineering College Jamui affiliated with Bihar Engineering University
4.	<i>Title of Ph.D Thesis:</i> "Sensor Fault-Tolerant Control of Induction Motor Drives Using Machine Model Based Observers"...by Murli Manohar <i>Notified for the Award of Ph.D Degree:</i> February 14, 2022. <i>Key Publications:</i> [1] Murli Manohar, and Sukanta Das, "Direct torque controlled induction motor drive using modified five-level torque controller for reduction in torque ripple," <i>IET Power Electronics</i>, Vol. 13, no. 9, pp. 1885-1892, July 2020. [Q2] [2] Murli Manohar, and Sukanta Das, "Current sensor fault-tolerant control for direct torque control of induction motor drive using flux linkage observer," <i>IEEE Transaction on Industrial Informatics</i>, vol. 13, no. 6, pp. 2824-2833, Dec. 2017. [Q1] <i>Present Engagement:</i> Assistant Professor, Dept. of Electrical Engineering, BIT Sindri, Dhanbad, Jharkhand

5.	Title of Ph.D Thesis: "Energy Efficient Operation of Vector Controlled Induction Motor Drive Using Search Controller"....by Abhisek Pal Notified for the Award of Ph.D Degree: July 23, 2021. Key Publications: [1] Abhisek Pal, and Sukanta Das, "Search controller-based online efficiency optimisation strategy for induction motor drives using modified adaptive quadratic interpolation," <i>IET Power Electronics</i>, Vol. 13, no. 18, pp. 4282-4290, Dec. 2020. [Q2] [2] Abhisek Pal, Sukanta Das, and Ajit K. Chattopadhyay, "An improved rotor flux space vector based MRAS for field oriented control of induction motor drives," <i>IEEE Transaction on Power Electronics</i>, vol. 33, no. 6, pp. 5131-5141, June 2018. [Q1] Present Engagement: Assistant Professor, Dept. of Electrical Engineering, Thapar Institute of Engineering and Technology
6.	Title of Ph.D Thesis: "Limited Range Variable Speed Operation of Brushless Doubly-fed Reluctance Machine using Model Predictive Current Control Technique under Primary Flux Orientation"....by Karuna Kiran Notified for the Award of Ph.D Degree: March 15, 2021. Key Publications: [1] Karuna Kiran, and Sukanta Das, "Variable speed operation of brushless doubly-fed reluctance machine drive using model predictive current control technique," <i>IEEE Transactions on Power Electronics</i>, vol. 35, no. 8, pp. 8396-8404, Aug. 2020. [Q1] [2] Karuna Kiran, and Sukanta Das, "Implementation of reactive power based MRAS for sensorless speed control of brushless doubly-fed reluctance motor drive," <i>IET Power Electronics</i>, vol. 11, no. 1, pp. 192-201, Jan. 2018. [Q2] Present Engagement: Assistant Professor, SVERI College of Engineering Pandharpur
7.	Title of Ph.D Thesis: "Model Reference Adaptive System Based Sensorless Speed Control of Doubly-Fed Induction Machine Drive under Different Control Regimes"....by Rahul Kumar Notified for the Award of Ph.D Degree: November 11, 2020. Key Publications: [1] Rahul Kumar, Sukanta Das, and Adrish Bhaumik, "Speed sensorless model predictive current control of doubly-fed induction machine drive using model reference adaptive system," <i>ISA Transactions</i>, vol. 86, pp. 215-226, Jan. 2019. [Q1] [2] Rahul Kumar, and Sukanta Das, "MRAS based speed estimation of grid-connected doubly-fed induction machine drive," <i>IET Power Electronics</i>, vol. 10, no. 7, pp. 726-737, July 2017. [Q2] Present Engagement: Assistant Professor, Dept. of Electrical Engineering, BIT Sindri, Dhanbad, Jharkhand
8.	Title of Ph.D Thesis: "Wavelet Transform and ANN Based Fault Diagnosis Scheme for Simultaneous Detection of Broken Rotor Bars and Bearing Damages in Squirrel Cage Induction Motor"...by Ashish Kumar Sinha (as co-guide with Prof. T. K. Chatterjee, MME) Notified for the Award of Ph.D Degree: April 01, 2019 Key Publication: [1] Ashis Kr. Sinha, Sukanta Das, and Tarun Kr. Chatterjee, "Empirical relation for broken bar determination in SCIM," <i>The International Journal for Computation and Mathematics in Electrical and Electronic Engineering</i>, vol. 37, no. 1, pp. 242-265, Jan. 2018. [Q4] Present Engagement: Assistant Professor, Dept. of Electrical Engineering, Institute of Engineering & Technology, GLA University-Mathura
9.	Title of Ph.D Thesis: "Low-Region Speed Control of Vector Controlled Induction Motor Drives Using Model Reference Adaptive Controller"by Rakesh Kumar Notified for the Award of Ph.D Degree: March 14, 2017 Key Publications: [1] Rakesh Kumar, and Sukanta Das, "Eigenvalue based relative parameter sensitivity analysis

	for optimized performance of sensorless induction motor drives," <i>IET Electric Power Applications</i> , vol. 10, no. 8, pp. 723-734, Sept. 2016. [Q2]
	[2] Rakesh Kumar , Sukanta Das, and A.K. Chattopadhyay, "Comparative assessment of two different MRAS schemes for speed sensorless control of induction motor drives," <i>IET Electric Power Applications</i> , vol. 10, no. 2, pp. 141-154, Feb. 2016. [Q2]
	[3] Rakesh Kumar , Sukanta Das, P. Syam, and A.K. Chattopadhyay, "Review on model reference adaptive system for sensorless vector control of induction motor drives," <i>IET Electric Power Applications</i> , vol. 9, no. 7, pp. 496-511, July, 2015. [Q2]
	<i>Present Engagement:</i> Assistant Professor in the Dept. of ECE at Indian Naval Academy

Ph. D Supervision (On-going): 05

Sl. No.	Topic	Date of Registration
1	Methods on Induction Motor Rotor Time Constant Estimation	11.08.2021
2	Fault-Tolerant Control of Induction Motor Drives Considering Inverter Non-Linearity Effect	14.07.2023
3	Variable Speed PMSM Drives	03.01.2023
4	Control of Multi-phase IM Drives	26.11.2025
5	Control of Synchronous Reluctance Motor (SynRM) Drives	25.01.2026

Completed Projects as PI:

Sl. No.	Title of the project	Sponsored by & Project No.	Project Cost (Rs.)	Duration	Status
1.	Design and Implementation of Wavelet Transform based Notch Filter to Denoise Synchronizing Signal in Power Electronics Converters under Harmonics Polluted Environment.	IIT(ISM) Dhanbad FRS(35)/2012-2013/EE	10,00,000/-	Three years	Completed
2.	Hardware Feature Enhancement of Existing MCK28335 Kit C Pro-S (IM) for Conducting Research Activity in Industry Standard Vector Control Drive Applications	Minor Research Project under TEQIP-II (vide letter dated 22.07.2013)	1,00,000/-	One year	Completed
3.	Sensorless Speed Control of Brushless Doubly-Fed Reluctance Motor Drive Utilizing Model Reference Adaptive Controller	SERB (DST) File No. YSS/2015/001670 DST(SERB)(134)/2015-2016/458/ Electrical Engg.	30,84,750/-	Three years	Completed
4.	Execution of a Common Approach for Current Sensor Fault-Tolerant Control of Induction Motor Drives in Different Control Regimes	SERB (DST), File No. CRG/2019/00384 [DST(SERB)(249)/2019-2020/696/ EE]	46,86,264/-	Three years	Completed
5.	Development of Fast Charger for EV	IIT(ISM) Dhanbad [IIT(ISM)/2021-2022/874/INSTITUTE]	7,00,000/-	One year	Completed

6.	Development of Energy Efficient Control Scheme for Induction Motor Drive Used in EV and HEV	Department of Heavy Industries in Collaboration with Mahindra & Mahindra Ltd. [7(11)/2019-AEI (20739)]	84,37,000/-	Three years	On-going
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Ongoing Projects as PI:

Sl. No.	Title of the project	Sponsored by & Project No.	Project Cost (Rs.)	Duration	Status
1.	Power Electronics Research Facilities for Modernization of Mining Infrastructure under FIST Engineering Sciences – Project [Involves 3 Co-PIs]	DST (FIST) DST(FIST)/2024-2025/1114/EE	2,03,00,000/-	Five Years	On-going

Industrial Consultancy as Co-PI:

Sl. No.	Title of the project	Sponsored by & Project No.	Project Cost (Rs.)	Duration	Status
1.	Center of Excellence by ReNEW Power Foundation	SCOE0007I	1,00,00,000/-	One Year	Completed

Publications in Journals:

- [1] Amit Kumar Singh, Anirban Ghoshal, **Sukanta Das**, and Nguyen Gia Minh Thao, "An automatic gain correction of current sensor for multi-phase buck converter based EV charger," *IEEE Transactions on Industry Applications*, Early Access, Jun. 2026.
<https://doi.org/10.1109/TPEL.2024.3435959> [Q1].
- [2] Navneet Kumar Ray, **Sukanta Das**, and Goutam Goswami, "Active power based MRAS for estimation of inverse rotor time constant in field-oriented control of induction motor drive," *IEEE Transactions on Industry Applications*, vol. 62, no. 2, pp. 2687-2699, Mar./Apr. 2026.
<https://doi.org/10.1109/TPEL.2024.3435959> [Q1].
- [3] Goutam Goswami, and **Sukanta Das**, "Inherently robust loss model controller for energy efficient operation of indirect rotor field-oriented induction motor drives," *IEEE Transactions on Power Electronics*, vol. 39, no. 1, pp. 14951-14960, Nov. 2024.
<https://doi.org/10.1109/TPEL.2024.3435959> [Q1].
- [4] Rajarshi Chakraborty, and **Sukanta Das**, "Fault-tolerant technique against current sensors for model predictive control of induction motor drives," *IEEE Transactions on Power Electronics*, vol. 39, no. 7, pp. 8506-8516, July 2024.
<https://doi.org/10.1109/TPEL.2024.3381169> [Q1].
- [5] Goutam Goswami, and **Sukanta Das**, "An online efficient loss model controller for rotor-field oriented induction motor drives," *IEEE Transactions on Energy Conversion*, vol. 39, no. 1, pp. 578-588, Mar. 2024.
<https://doi.org/10.1109/TEC.2023.3313354> [Q1].
- [6] **Sukanta Das**, and Murli Manohar, "A resilient current sensor fault tolerant strategy for vector-controlled induction motor drive," *IEEE Journal of Emerging and Selected Topics in Power Electronics*, vol. 11, no. 4, pp. 4313-4320, Aug. 2023.
<https://doi.org/10.1109/JESTPE.2022.3179319> [Q1]
- [7] Adrish Bhaumik, and **Sukanta Das**, "Virtual voltage vector based predictive current control of speed sensorless induction motor drives," *ISA Transactions*, vol. 133, no. 2, pp. 495-504, Feb. 2023.
<https://doi.org/10.1016/j.isatra.2022.07.007> [Q1]
- [8] Mukesh Kumar, and **Sukanta Das**, "Modified active power-MRAS for limited range variable speed sensorless brushless doubly-fed reluctance machine drive," *The International Journal for Computation and Mathematics in Electrical and Electronic Engineering*, vol. 42, no. 2, pp. 425-448, July. 2022.

- <https://doi.org/10.1108/COMPEL-12-2021-0497> [Q4]
- [9] Adrish Bhaumik, and **Sukanta Das**, “Predictive torque control strategy for speed adaptive flux observer based sensorless induction motor drive in flux-weakening region,” *IEEE Transactions on Power Electronics*, vol. 36, no. 12, pp. 14110-14118, June. 2021.
<https://doi.org/10.1109/TPEL.2021.3089611> [Q1]
- [10] Abhisek Pal, and **Sukanta Das**, “Search controller-based online efficiency optimisation strategy for induction motor drives using modified adaptive quadratic interpolation,” *IET Power Electronics*, vol. 13, no. 18, pp. 4282-4290, Dec. 2020.
<https://doi.org/10.1049/iet-pel.2020.0206> [Q2]
- [11] Karuna Kiran, and **Sukanta Das**, “Variable speed operation of brushless doubly-fed reluctance machine drive using model predictive current control technique,” *IEEE Transactions on Power Electronics*, vol. 35, no. 8, pp. 8396-8404, Aug. 2020.
<https://doi.org/10.1109/TPEL.2020.2964007> [Q1]
- [12] Murli Manohar, and **Sukanta Das**, “Direct torque controlled induction motor drive using modified five-level torque controller for reduction in torque ripple,” *IET Power Electronics*, Vol. 13, no. 9, pp. 1885-1892, July 2020.
<https://doi.org/10.1049/iet-pel.2019.1027> [Q2]
- [13] Abhisek Pal, and **Sukanta Das**, “Development of energy efficient scheme for speed sensorless induction motor drive,” *International Transactions on Electrical Energy Systems*, e12448. <https://doi.org/10.1002/2050-7038.12448>, May 2020.
<https://doi.org/10.1002/2050-7038.12448> [Q3]
- [14] Mukesh Kumar, and **Sukanta Das**, “Sensorless speed estimation of brushless doubly-fed reluctance generator using active power based MRAS,” *IEEE Transactions on Power Electronics*, vol. 34, no. 8, pp. 7878-7886, Aug. 2019.
<https://doi.org/10.1109/TPEL.2018.2882473> [Q1]
- [15] **Sukanta Das**, Rakesh Kumar, and Abhisek Pal, “MRAS based speed estimation of induction motor drive utilizing machine's d- and q- circuit impedances,” *IEEE Transactions on Industrial Electronics*, vol. 66, no. 6, pp. 4286-4295, June 2019.
<https://doi.org/10.1109/TIE.2018.2860530> [Q1]
- [16] Rahul Kumar, and **Sukanta Das**, “Model reference adaptive system based sensorless speed control of grid-connected doubly-fed induction generator in wind energy conversion system,” *Iranian Journal of Science and Technology, Transactions of Electrical Engineering*, vol. 44, pp. 129-140, 25-Apr.2019.
<https://doi.org/10.1007/s40998-019-00196-5> [Q4]
- [17] Rahul Kumar, **Sukanta Das**, and Adrish Bhaumik, “Speed sensorless model predictive current control of doubly-fed induction machine drive using model reference adaptive system,” *ISA Transactions*, vol. 86, pp. 215-226, Jan. 2019.
<https://doi.org/10.1016/j.isatra.2018.10.025> [Q1]
- [18] Karuna Kiran, **Sukanta Das**, Mukesh Kumar, and Abhijit Sahu, “Sensorless speed control of brushless doubly-fed reluctance motor drive using secondary flux based MRAS,” *Electric Power Components and Systems*, vol. 46, no. 6, pp. 701-715, Dec. 2018. [Q4]
- [19] Mukesh Kumar, and **Sukanta Das**, “Model reference adaptive system based sensorless speed estimation of brushless doubly-fed reluctance generator for wind power application,” *IET Power Electronics*, vol. 11, no. 14, pp. 2355-2366, Nov. 2018. [Q2]
- [20] Abhisek Pal, **Sukanta Das**, and Ajit K. Chattopadhyay, “An improved rotor flux space vector based MRAS for field oriented control of induction motor drives,” *IEEE Transaction on Power Electronics*, vol. 33, no. 6, pp. 5131–5141, June 2018. [Q1]
- [21] Ashis Kr. Sinha, **Sukanta Das**, and Tarun Kr. Chatterjee, “Wavelet transform based ball bearing fault detection scheme for heavy duty mining electrical motors under supply frequency regulation using MCSA,” *International Journal of Technology*, vol. 9, no. 1, pp. 170-180, Jan. 2018. Scopus
- [22] Ashis Kr. Sinha, **Sukanta Das**, and Tarun Kr. Chatterjee, “Empirical relation for broken bar determination in SCIM,” *The International Journal for Computation and Mathematics in Electrical and Electronic Engineering*, vol. 37, no. 1, pp. 242-265, Jan. 2018. [Q4]
- [23] **Sukanta Das**, and Vikash Ranjan, “Wavelet transform based filter to remove the notches from signal under harmonic polluted environment,” *J. Inst. Eng. India Ser. B (2017)*, vol. 99, no. 1, pp. 71-77, Feb. 2018. [Scopus]
- [24] Karuna Kiran, and **Sukanta Das**, “Implementation of reactive power based MRAS for sensorless speed control of brushless doubly-fed reluctance motor drive,” *IET Power Electronics*, vol. 11, no. 1, pp. 192-201, Jan. 2018. [Q2]
- [25] Murli Manohar, and **Sukanta Das**, “Current sensor fault-tolerant control for direct torque control of induction motor drive using flux linkage observer,” *IEEE Transaction on Industrial Informatics*, vol. 13, no. 6, pp. 2824–2833, Dec. 2017. [Q1]
- [26] Rahul Kumar, and **Sukanta Das**, “MRAS based speed estimation of grid-connected doubly-fed induction machine drive,” *IET Power Electronics*, vol. 10, no. 7, pp. 726–737, July 2017. [Q2]

- [27] Abhisek Pal, Rakesh Kumar, and **Sukanta Das**, "Sensorless speed control of induction motor driven electric vehicle using model reference adaptive controller," *Energy Procedia*, Elsevier, vol. 90, pp.540-551, Dec. 2016. [Scopus]
- [28] Rakesh Kumar, and **Sukanta Das**, "Eigenvalue based relative parameter sensitivity analysis for optimized performance of sensorless induction motor drives," *IET Electric Power Applications*, vol. 10, no. 8, pp. 723-734, Sept. 2016. [Q2]
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Publications in Conferences:

- [1] Manirujjaman Mallik and **S. Das**, "Enhanced Sensorless Speed Control of PMSM Drives via Adaptive Observers and Evolutionary Algorithm," *2025 IEEE 5th International Conference on Sustainable Energy and Future Electric Transportation (SEFET)*, Jaipur, India, 2025.
- [2] N. K. Ray, and **S. Das**, "Model Predictive Current Control of Induction Motor Drive Integrated with Inverse Rotor Time Constant Estimator," *2025 IEEE 1st International Conference on Smart and Sustainable Developments in Electrical Engineering (SSDEE)*, Dhanbad, India, 2025.
- [3] N. K. Ray, **S. Das** and G. Goswami, "Active Power Based MRAS for Estimation of Rotor Resistance in Field-Oriented Control of Induction Motor Drive," *2024 IEEE 4th International Conference on Sustainable Energy and Future Electric Transportation (SEFET)*, Hyderabad, India, 2024.
- [4] G. Goswami and **S. Das**, "MTPA Based Energy Efficient Strategy for Scalar Control of Induction Motor Drives," *2024 IEEE 4th International Conference on Sustainable Energy and Future Electric Transportation (SEFET)*, Hyderabad, India, 2024.
- [5] K. Kiran, **S. Das**, A. Pal and S. Anand, "Sensorless Speed Control of Brushless Doubly-fed Reluctance Machine Drive: A Simplified Model Predictive Control Approach," *2024 IEEE 4th International Conference on Sustainable Energy and Future Electric Transportation (SEFET)*, Hyderabad, India, 2024.
- [6] A. Pal, **S. Das** and K. Kiran, "Optimized Power Control Strategy for Sensorless Induction Motor Drive Used in Electric Vehicle Applications," *2024 IEEE 4th International Conference on Sustainable Energy and Future Electric Transportation (SEFET)*, Hyderabad, India, 2024.
- [7] Deepak Kumar, **S. Das**, and Rajarshi Chakraborty, "Fault-Tolerant Strategy against Current Sensor Failures for DTC-SVPWM based Induction Motor Drives," *IEEE 3rd International Conference on "Sustainable Energy and Future Electric Transportation (SEFET-2023)*, SOA-Bhubaneswar, Odisha, India during 9th – 12th August, 2023.
- [8] R. Chakraborty and **S. Das**, "Sensor Fault Tolerant Strategy for Model Predictive Control of Induction Motor Drive," in *IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES)*, Jaipur, 2022.
- [9] M. Kumar, and **S. Das**, "Speed Control of Brushless Doubly-Fed Reluctance Generator under MTPIA and UPPF Conditions for Wind Power Application," *International Conference on Computational Performance Evaluation (ComPE)*, NEHU Meghalaya, India, 1-3 December 2021.
- [10] M. Kumar, and **S. Das**, "Design and Finite Element Analysis of Brushless Doubly-Fed Reluctance Machine for Variable Speed Application," *2nd IEEE International Conference on Electrical Power and Energy Systems (ICEPES 2021)*, MNIT Bhopal, India, 10 -11 December 2021.
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 - [13] M. Kumar, **S. Das**, and Sinha, A. K., “Sensorless Speed Control of Brushless Doubly-Fed Reluctance Machine for Pump Storage and Wind Power Application,” in *Proceedings of IEEE IEEMA Engineer Infinite Conference (eTechNxT)*, Delhi, India, 13-14 Mar. 2018.
 - [14] K. Kiran, **S. Das**, and Singh, D., “Model predictive field-oriented speed control of brushless doubly-fed reluctance motor drive,” in *Proceedings of IEEE International Conference on Power, Instrumentation, Control and Computing (PICC-2018)*, Thrissur, India, 18-20 Jan., 2018.
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 - [17] M. Manohar, **S. Das**, and Kumar, R., “A robust current sensor fault detection scheme for sensorless induction motor drive,” in *Proceedings of 9th IEEE Asia Pacific Power and Energy Engineering Conference (APPEEC’17)*, Bangalore, India, 8-10 Nov. 2017.
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 - [22] A. Pal, and **S. Das**, “A new sensorless speed estimation strategy for induction motor driven electric vehicle with energy optimization scheme,” in *Proceedings of IEEE First International Conference on Power Electronics, Intelligent Control and Energy Systems (ICPEICES 2016)*, DTU, Delhi, India, 4-6 July, 2016.
 - [23] A. Pal, R. Kumar, and **S. Das**, “A new sensorless speed control technique for induction motor driven electric vehicle using model reference adaptive controller,” in *Proceedings of 5th International Conference on Advances in Energy Research (ICAER 2015)*, IIT Bombay, Powai, India, 15-17 December, 2015.
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 - [25] **S. Das**, A. Pal, R. Kumar, and A.K. Chattopadhyay, “An improved rotor flux based model reference adaptive controller for four-quadrant vector-controlled induction motor drives,” in *Proceedings of IEEE TENCON*, Macau, 01-04 November, 2015.
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 - [27] M. Manohar, and **S. Das**, “Combined speed and rotor resistance estimation for speed sensorless induction motor drive using reactive power based MRAS,” in *Proceedings of Michael Faraday IET International Summit-2015*, Kolkata, 12-13 September 2015.
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Book Chapter:

- [1] **Sukanta Das**, and Rajarshi Chakraborty, “Current Sensor Fault-Tolerant Control for Model Predictive Control of Induction Motor Drives,” *CRC Press, Taylor & Francis*, Chapter 11, April 2025, DOI: 10.1201/9781003480822-11.

Patent Filed/ Published/ Granted

- [1] Title: “Model-Predictive-Current-Control for Speed Regulation of Brushless Doubly-Fed Reluctance Generator”
 Inventors: **Sukanta Das**, and Karuna Kiran
 Indian Patent Application No. 201731030886, dated 31.08.2017.
 Date of Filing: August 31, 2017.
 Date of Publication: March 01, 2019.
 Date of Grant: March 15, 2024.
 Patent Number: 527930.
- [2] Title: “Low-Cost 10 kVA Intelligent-Power-Module Based Inverter for AC Machines”
 Patentee: CIIE, IIT(ISM) Dhanbad.
 Inventors: **Sukanta Das**, Abhisek Pal, and U. Sarkar
 Indian Patent Application No. 202131000212.
 Date of Filing: January 04, 2021.
 Date of Publication: July 08, 2022.
 Date of Grant: December 18, 2023.
 Patent Number: 484624.
- [3] Title: “A System for Volt/Hertz Speed Control of Squirrel Cage Induction Motor for Minimum Current Operation”
 Inventors: Goutam Goswami, and **Sukanta Das**
 Indian Patent Application No. 202331002547.
 Date of Filing: January 12, 2023.
 Date of Publication: June 23, 2023.
- [4] Title: “Multi-Phase Synchronous Buck Converter for the Charging Stage of an Offboard Electric Vehicle Charger”
 Inventors: Amit Kumar, A. Ghoshal, and **Sukanta Das**
 Indian Patent Application No. 202331074730.
 Date of Filing: November 02, 2023.
 Date of Publication: February 23, 2024.

- [5] Title: "A System of Current Sensor Fault Resilient Modified DTC-SVM Controlled Induction Motor Drive and Method of Operation"
 Inventors: **Sukanta Das**, and Deepak Kumar
 Indian Patent Application No. 202531077630.
 Date of Filing: August 14, 2025.
 Date of Publication: September 05, 2025.

Short Term Course/ Seminar Attended:

- A Seminar on *Evolution in Electrical Systems*, Department of EE, National Institute of Technology, Durgapur, West Bengal, 1st April - 2nd April, 2008.
- IEEE One-day Outreach Programme On *Recent Trends In information & Communication Technology*, Birbhum Institute of Engineering Technology, Suri, Birbhum, West Bengal, 11th April, 2008.
- A short term course on *Digital Signal Processing*, Jadavpur University, Kolkata, West Bengal, 7th July-12th July, 2008.
- 15th National Power System Conference, 2008, IIT Bombay, Powai, 16th December-18th December, 2008.(paper was presented).
- Two-days Workshop on "Operation, Control, Stability and Power Quality Issues in Modern Power Systems" , Department of EE, National Institute of Technology, Durgapur, West Bengal, 26th March-27th March, 2009.
- Three-days "Workshop on "Wavelets and its Applications", PDPM IIIT DM, Jabalpur, 13th July-15th July, 2012.
- One-day Tutorial Course on "WAVELET TRANSFORM", BESU, Shibpur, Howrah, 26th November, 2012.
- PEDES 2012, CPRI, Bangaluru, 16th December-19th December, 2012.
- International Conference & Expo on Coal Beneficiation, New Delhi, 18-19 April, 2013.
- *IEEE International Conference on Signal Processing and Communication Engineering Systems (SPACES)*, 2015, Vaddeswaram, AP, India, 2-3 January, 2015.
- *IEEE TENCON*, Macau, 01-04 November, 2015.
- *IEEE INDIN*, Emden, Germany, July 24-26, 2017.
- *IEEE SEFET-2023, Bhubaneswar*, India, August 09-12, 2023.
- 12th International Conference on Power and Energy Systems Engineering (CPESE 2025) held at Kyushu University (Ito Campus), Fukuoka, Japan during September 12-14, 2025.

Short Term Course/Special Lectures/ PDP/EDP Organized:

- Four-Day Executive Development Program for the executives of NALCO, MCL, IREL, CIL on "Energy Efficient Operation of Mine Electrical Systems" Organized by the Department of Electrical Engineering, IIT (ISM) Dhanbad During May 21-24, 2025.
CI: Prof. Sukanta Das, Co-CI: Prof. B. K. Naick. **Total Value: Rs. 6.40 Lakhs.**
- Five-Day Online Workshop on "*Intelligent Electric Vehicle: The future of E-mobility (IEV-2024)*" Organized by the Department of Electrical Engineering, IIT (ISM) Dhanbad During July 15-19, 2024.
 Coordinator: **Prof. Sukanta Das**, Co-Coordinator: Prof. Sukanta Halder. **Total Value: Rs. 0.83 Lakhs.**
- Two-Day Workshop on "Implementation Aspects of Induction Motor Drives: Theoretical & Experimental Approach" Funded by SERB under SSR scheme during January 5-6, 2022.
 Coordinator: **Prof. Sukanta Das**. **Total Value: Rs. 0.60 Lakhs.**
- Two-Day Online Lecture Series on the topic: "*Mechanistic Interactions and Analytics Challenges in Energy Storage*" on September 28 & 30, 2021.
 Instructor: *Dr. Partha P. Mukherjee, Professor of School of Mechanical Engineering & University Faculty Scholar, and Director of Energy Transport Sciences Laboratory. Purdue University, West Lafayette, IN 47907-2088, USA.*
- Professional Skill Development Program on "*MATLAB & Simulink for Engineering Application*" during June 22- 27, 2015 in the Department of Electrical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad as Co-coordinator.

- Certificate Course on “MATLAB & Simulink for Engineering Application” during December 5-10, 2014 in the Department of Electrical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad as Co-coordinator.
- Professional Skill Development Program on “MATLAB Based Soft Computing Techniques” during June 27 – July 2, 2014 in the Department of Electrical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad as Co-coordinator.

Teaching/ Training Expertise & Invited Talks:

- Acted as Course Instructor for the Professional Development/Certificate Courses as arranged by Department of Electronics and Communication and Fuel and Mineral Engineering, IIT (ISM).
- Delivered a Technical Talk on "Energy Efficient Operation of Variable Speed Mine Electrical Drives – Possible Strategies” dated May 22, 2025 for a Four-Day Executive Development Program for the executives of NALCO, MCL, IREL, CIL on “Energy Efficient Operation of Mine Electrical Systems” Organized by the Department of Electrical Engineering, IIT (ISM) Dhanbad.
- Delivered a Technical Talk on "Energy Efficient Control of Induction Motor Drives used in Electric Vehicle” dated March 15, 2024 for an One-week National High-End Workshop (Karyashala) sponsored by SERB, Govt of India during March 11 - 17, 2024 and Organized by the Dept. of Electrical Engg. NIT Jamshedpur.
- Delivered a Technical Session on "Fundamentals of Control Strategies of AC Induction Motor Drives” dated December 12, 2023 for a Four-Day Professional Development Program during December 4-7, 2023 Organized by the Dept. of Electrical Engg. IIT (ISM) Dhanbad at IIIF-Kolkata.
- Conducted and Delivered Lecture sessions on "Electrical Engineering Basics and Electrical Safety" and "Power Electronics in Mining" for Graduate Engineers (87 nos.) of Adani Natural Resources (ANR) on October 19, 2023 organized by TexMIN, IIT (ISM) Dhanbad.
- Delivered a Technical Webinar on "Future of Electric Vehicles, Charging Scenario and Its Opportunities and Challenges In India” dated September 09, 2021 on the Occasion of "World EV Day" organized by Gargi Memorial Institute of Technology, Kolkata, WB in collaboration with NDLI.
- Delivered an Invited Talk on "Electric Vehicle: A Smart Choice for a Better Tomorrow" on May 26, 2021 with regard to a Five-day Faculty Development Programme (FDP) held during May 25-29, 2021 on Smart Practices towards Tomorrow’s Electric Power Paradigm organized by Gargi Memorial Institute of Technology, Kolkata, WB in collaboration with IEEE-PES, Kolkata Section.
- Delivered Lecture on "Induction Motor-Theory, Operation & Control" with regard to a Professional Development program for Coal India Limited organized by Department of Fuel and Mineral Engineering, IIT (ISM) Dhanbad in March 2016.
- Delivered Lecture & Conducted Practical session on "Application of DSP in Electrical Power Systems" with regard to a Five-day Short-Term Certificate Course on DSP Systems: Applications and Implementation organized by Department of Electronics Engg., IIT (ISM) Dhanbad during March 20-24, 2013.

Awards:

- “Fault-Tolerant Strategy against Current Sensor Failures for DTC-SVPWM based Induction Motor Drives” authored by Deepak Kumar, Sukanta Das, Rajarshi Chakraborty is bestowed 3-RD POSITION for the **Best Paper Award** in the IEEE 3rd International Conference on “Sustainable Energy and Future Electric Transportation” (SEFET-2023), organized by Department of Electrical Engineering, Institute of Technical Education & Research, Faculty of Engineering & Technology, Siksha ‘O’ Anusandhan Deemed to be University, Bhubaneswar, Odisha, India during 9th – 12th August, 2023.
- Felicitated by IIT(ISM) on its 96th Foundation Day (Celebrated on December 9, 2021) for Making It to the Top 2% of Scientists in the Survey Conducted by Stanford University and Published by Elsevier (Elsevier’s Database, 2021).
- IET Premium Award 2017 for the **Best Paper during 2015-17**.
- MHRD Fellowship (Govt. of India) for qualifying GATE in 2002 during 2002-2004.

Members of Professional bodies:

- Fellow of Institution of Engineers (FIE), FIE: F-1314390

- Senior Member IEEE- Membership No.: 90328531
- Senior Individual Member INAE- Membership No: INAE/Ind M/093
- Life Member of The Indian Society for Technical Education (ISTE), Life Membership No.: LM-88459
- Life Member of System Society of India (SSI), Life Membership No.: LM-32066