

Dr. K.Dhananjay Rao



Designation : Assistant Professor (Selection Grade)
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Contact at : EE201A, Department of Electrical and Electronics Engineering, Velagapudi Ramakrishna Siddhartha Engineering College, Kanuru, Vijayawada, Andhra Pradesh 520007.

Education

Post Doc (AI/ML-Based Lithium-Ion Battery Diagnosis and Performance Analysis)
National Institute of Advanced Industrial Science and Technology (AIST), Japan

Ph. D (Electrical Engineering)
National Institute of Technology, Raipur

M.E (Electrical Engineering - Control systems)
Jadavpur University, Kolkata

B.Tech (Electrical and Electronics Engineering)
Biju Patniak University of Technology, Odisha

Experience

Period	Designation	Institution / Organization	Key Responsibilities
2025-Present	Assistant professor (Selection Grade)	SAHE-Deemed to be University	Teaching and R&D, Members- University Research Advisory Committee, Seed Money Review Committee Member, Lab Incharge, Club Incharge

2021-2025	Assistant professor	Velagapudi Ramakrishna Siddhartha Engineering College	Teaching and R&D Members- University Research Advisory Committee, Lab Incharge, Club Incharge, Professional Society Coordinator
2014-2017	Assistant professor	Centurion University	Teaching and R&D MTech Coordinator, NAAC Coordinator, HOD-EEE
2009-2012	Lecturer	Centurion University	Teaching and Project management, NAAC Coordinator
2008-2009	Maintenance Engineer	GPIL, Bhubaneswar	Maintenance of Electrical Equipments in Plant

Research Interests

Broad Area of Research:

Electric Vehicles

Battery modeling and State estimation

AI/ML Applications in Lithium Ion Batteries

Battery fault diagnosis

Honors and Awards

- Received first prize award in poster presentation at IEEE international conference.
- Received Ministry of Human Resources Development (MHRD) fund for PhD from 2017 to 2021.
- Acted as **Conference Chair** for IEEE International Conference (ICCIGST-2024) Conference date: July 18-19, 2024.
- Selected for “Global Distinguished Young Scientists Awards” by a high-level International Nomination Committee of IEEE Industry Applications Society USA, Global Conference on Renewable Energy and Hydrogen Technologies at Maldives National University, Male City (Maldives), March 11-12, 2023.
- Ratified as Assistant Professor by JNTU, Kakinada.

Courses Taught

S.No	Course Name	Level (UG/PG)
1	Electric Vehicles	UG
2	Control Systems	UG
3	Advanced Control System	UG
4	Smart Grid	UG
5	Electrical machines	UG
6	Modern Control Systems	PG
7	Transmission and Distribution	UG
8	Renewable Energy Systems	UG

Research Profile

Publications (Total-52)

Selected Publications

1. **K. Dhananjay Rao**, Kuna Dhanunjaya Rao, P. Pavani, Kapu V. Sri Ram Prasad, Damarla Indira, and B. Phaniteja. "A critical review on lithium ion battery modeling, battery management system and thermal runaway issues." *Electrical Engineering* (2025): 1-37. **(Springer) (SCI) Q2**
2. **K. Dhananjay Rao**, A. H. Chander and S. Ghosh, "Robust Observer Design for Mitigating the Impact of Unknown Disturbances on State of Charge Estimation of Lithium Iron Phosphate Batteries Using Fractional Calculus," in *IEEE Transactions on Vehicular Technology*, vol. 70, no. 4, pp. 3218-3231, April 2021. **(SCI) Q1**
3. **K. Dhananjay Rao**, S. Ghosh and R. Keshri, "A Resilient Temperature Suppressed Optimal Charging Strategy for Ultracapacitors to Attain Desired State of Charge," in *IEEE Transactions on Energy Conversion*, vol. 37, no. 3, pp. 1600-1610, Sept. 2022 **(SCI) Q1**
4. **K. Dhananjay Rao**, S. Ghosh and M. R. Kumar, "Optimal Charging Profile Design for Attaining Desired State of Charge in Symmetric Electrochemical Capacitor With Efficiency Analysis," in *IEEE Transactions on Industry Applications*, vol. 57, no. 5, pp. 5264-5273, Sept.-Oct. 2021. **(SCI) Q1**

5. **K. Dhananjay Rao**, S. Ghosh, S. Das, and M. R. Kumar, "Transient Behavior Modeling-Based Hysteresis-Dependent Energy Estimation of Ultracapacitor," in *IEEE Transactions on Instrumentation and Measurement*, vol. 69, no. 9, pp. 6455-6464, Sept. 2020 (SCI) Q1
6. **K. Dhananjay Rao** et al., "A Hyperparameter-Tuned LSTM Technique-Based Battery Remaining Useful Life Estimation Considering Incremental Capacity Curves," in *IEEE Access*, vol. 12, pp. 127259-127271, 2024 (SCI) Q1
7. **K. Dhananjay Rao**, N. V. Anand, T. K. S. Pandraju, F. Alsaif and T. S. Ustun, "Optimally Tuned Gated Recurrent Unit Neural Network-Based State of Health Estimation Scheme for Lithium Ion Batteries," in *IEEE Access*, vol. 12, pp. 58597-58607, 2024 (SCI) Q1
8. **K Dhananjay Rao**, Subhojit Ghosh, Shantanu Das, and Mano Ranjan Kumar. "A fractional calculus based generalized design scheme for very low-frequency oscillator using spline interpolation with sensitivity analysis." *Communications in Nonlinear Science and Numerical Simulation* 79 (2019): 104917. (Elsevier) (SCI) Q1
9. **K. Dhananjay Rao**, N. Naga Lakshmi Pujitha, MadhuSudana Rao Ranga, Ch Manaswi, Subhojit Dawn, Taha Selim Ustun, and Akhtar Kalam. "Fault mitigation and diagnosis for lithium-ion batteries: a review." *Frontiers in Energy Research* 13 (2025): 1529608. (SCI) Q2
10. K. V. Sri Ram Prasad, **K. Dhananjay Rao** and F. Alsaif, "Induction Motor Structure Design to Reduce Vibrations With Numerical (FEA) and Experimental (VA) Techniques," in *IEEE Access*, vol. 12, pp. 40894-40904, 2024, doi: 10.1109/ACCESS.2024.3374785. (SCI) Q1

The recent publications and research contributions can be viewed from the following URLs

Google Scholar	https://scholar.google.com/citations?user=bDUjRjwAAAAJ&hl=en
Scopus	https://www.scopus.com/authid/detail.uri?authorId=56136948300
ORCID	https://orcid.org/0000-0003-2738-7316
Research Gate	https://www.researchgate.net/profile/K-Rao-33
LinkedIn	https://www.linkedin.com/in/dr-k-dhananjay-rao-28708b50/

Recognized Research Supervisor

S.No.	Department	University
01.	Electrical and Electronics Engineering	SAHE-Deemed to be University

Funded Research Projects

S. No	Title	Cost (Rs)	Agency	Status
1	Real-Time Detection and Diagnosis of Internal Short Circuits in Lithium-Ion Battery Packs for Safer Electric Vehicles	78,01,440	ANRF	Under re-view
2	Development of a Digital Twin Framework for Predicting Degradation and Assessing Secondary Life Suitability of Lithium-ion Battery Packs	1417000.	MNRE	Under re-view
3	Fault Diagnosis and Protection of Machines to Meet Industrial Application 5.0	88,32,400	ANRF	Under re-view
4	Dual & Triple output, Short Circuit Protected, Soft-switching, Isolated DC-DC converters with Wide Input Voltage range and built-in EMI Filter for launch vehicles/orbital vehicles.	22,87,320	RESPOND, ISRO	Under review
5	Profit Enhancement and Emission Reduction of a Renewable Integrated Power System by V2G Integration A Climate-Resilient Approach in the Indian Power Sector	4732600	DST-SYS	Under review
6	Circularity-Driven Profit Expansion and Carbon Footprint Reduction in Solar-PV Integrated Power Systems through Second-Life Batteries and Smart Grid Support”.	151000	DST	Under review
7	Circularity Driven Profit Maximization and reduction in carbon emissions in Solar PV integrated power System through second life of the batteries and smart grid support in India	954520	MNRE	Under review

Administrative Roles

S.No.	Role	Institution	Duration	Responsibilities
1	Members-University Advisory Committee	SAHE	2023-Present	Community Product development monitoring commercialization
2	Student Professional Society Coordinator	EEE, SAHE	2021-Present	Event Planning and Coordination Communication and Outreach Membership Management

Certifications/MOOC Courses Completed

S.No.	Title	Platform	Duration	Year
1.	Cloud Computing	NPTEL	12 Weeks	2024
2.	Joy of computing Python	NPTEL	12 Weeks	2024
3	Neuromorphic Engineering	K- Combinator, USA	2 months	2025

Consultancy / Industry Projects

Completed	00
On-going	01
Applied	01

Patents

S.No	Title	Status	Application No.	Year
1.	ARCHITECTURE OF A POWER MANAGEMENT DEVICE FOR SMART GRID INNOVATION	Published	202241026737	2022
2	DESIGN AND IMPLEMENTATION OF A SMART SOLAR PANEL WITH AUTO RECTIFICATION AND SELF PHASED MANAGEMENT FEATURES	Published	202221036570	2022

Ph.D

Awarded	00
Guiding	01

Invited Talks

No. of Invited Talks	08
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1. Delivered a talk as a Resource Person in a one week FDP on the topic "Machine learning based battery analytics for EV applications" jointly organized by JNTU, Kakinada and Sri Vasavi Engineering College (23/06/2025 to 27/06/2025).
2. Delivered a talk as a Resource Person in a one week FDP on the topic "Energy storage devices for Electric Vehicle" jointly organized by JNTU, Kakinada and MIC engineering College (18/08/2025 to 22/08/2025).
3. Delivered a talk in 10 days ATAL FDP on a topic "Energy storage for Drones and challenges" at Dhanekula Institute of Engineering & Technology (DIET), Vijayawada (December 2nd to 14th , 2024)

4. Delivered a talk as a Resource Person on the topic “EVs and future trends” at PB Siddhartha College, Vijayawada in collaboration with MYTEGEN Company.
5. Delivered a talk as a Resource Person on the topic “Batteries and BMS” at CIET, Guntur in collaboration with MYTEGEN Company.
6. Delivered a talk as a Resource Person on the topic “Electric Vehicles, Challenges and Job Opportunities” at Usha Rama College Of Engineering And Technology, Vijayawada (Dt: 13/08/2024)
7. Delivered a talk in one week FDP (Title: Hybrid Electric Vehicles) jointly organized by GMR Institute of Technology, Rajam and VR Siddhartha Engineering College, Vijayawada (21/11/22 to 25/11/22)
8. Delivered a talk in one week FDP (Title: Electric Vehicle Technology :) organized by Sasi Institute of Technology & Engineering, Tadepalligudem, Andhra Pradesh (19/12/22 to 23/12/22)

Professional Service / Reviewer

- Active Reviewer in IEEE Transactions on Transportation Electrification
- Active Reviewer in IEEE Transactions on Industrial Electronics
- Active Reviewer in IEEE Transactions on Industry Applications
- Active Reviewer in IEEE Access
- Active Reviewer in many Springer Journals
- Active Reviewer in many Elsevier Journals

Professional Development Activities - Participations

Faculty Development and Training Programmes (at least 5 Days)	20
International Conferences	06
Webinars	10

Professional Bodies Membership Details

S.No.	Membership No.	Society Name
1.	M-1736501	Institution of Engineers (IE)

Dr.K Dhananjay Rao

(Your Name & Signature with Date)
