

Dr. UMAVATHI M.

PROFESSOR (GRANT-IN-AID CADRE) | DEPARTMENT OF ELECTRICAL & ELECTRONICS
ENGINEERING

B.M.S. COLLEGE OF ENGINEERING, BENGALURU

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ACADEMIC & RESEARCH PROFILE

Professor in Electrical & Electronics Engineering with over 19 years of teaching experience, 1 year of industry experience, and more than 12 years of research engagement. Research expertise spans Solar and Wind Energy Systems, Hybrid Energy Systems, Distributed Generation, Power Electronics, Smart Grids, Advanced Converter Design, Energy Management and Electric Mobility. Experienced in Ph.D. research guidance under VTU, interdisciplinary research, industry collaboration, consultancy, IEEE professional leadership, academic quality assurance and institutional responsibilities.

CAREER HIGHLIGHTS

19+	12+	>30	4	₹3 Lakh
Years Teaching	Years Research	International Publications	Patents	Consultancy

RESEARCH INTERESTS

Renewable and Hybrid Energy Systems; Power Electronics for Renewable Integration; Smart Grids and Distributed Generation; Advanced Converter Topologies; Energy Management; Electric Mobility; Energy Storage and EV-related applications.

EDUCATION

Ph.D. in Power Electronics, QIP Scheme, Anna University – College of Engineering Guindy, November 2019.

M.E. in Power Electronics, University Visvesvaraya College of Engineering (UVCE), Bangalore University, November 2004.

B.E. in Electrical & Electronics Engineering, Bangalore University, August 1999.

ACADEMIC & PROFESSIONAL EXPERIENCE

Professor, B.M.S. College of Engineering — 10 December 2023 to Present.

Associate Professor, B.M.S. College of Engineering — 10 December 2020 to 9 December 2023.

Assistant Professor, B.M.S. College of Engineering — 10 December 2007 to 9 December 2020.

Graduate Engineer Trainee, BEML — January to December 2001.

Lecturer, Bharat Polytechnic, Bangarpet — January to December 2000.

RESEARCH SUPERVISION & SCHOLARLY CONTRIBUTIONS

Guided 19 postgraduate projects and currently guiding two Ph.D. research scholars under Visvesvaraya Technological University (VTU). More than 30 international publications are reported in the academic profile, with publications indexed in Scopus/Web of Science as applicable to individual articles.

PATENTS

- Sun Tracking Solar Panel — Design Patent Granted, Design No. 364665-001, Journal 04/2024, 25 January 2024.
- System and Method for Renewable Energy Forecasting — Patent published, June 2023.
- Waste Management Improvement in Cities Using IoT — Patent published, January 2022.
- Economic and Environmental Controls for Smart Grids — Patent published, January 2022.

SELECTED RESEARCH PUBLICATIONS

2026

- Akshay Gowda HK, Gopika P Prasad, Umavathi M, et al. “Design, Implementation and Validation of EV Powertrain and Safety Systems,” International Journal of Engineering Management Science (IJEMS), Vol. 2026, Issue 01, 31 May 2026, ISSN 2799-1865.
- Hemavathi R, Umavathi M. “Performance Analysis of Silicon PV Array Using Infrared Thermography and Detecting Temperature Non-Uniformities,” International Journal of Latest Technology in Engineering, Management & Applied Science (IJLTEMAS), Vol. XV, Issue IV, 27 April 2026, ISSN 2278-2540, DOI: 10.51583/IJLTEMAS.
- Sneha Jayadev Ganjihal, Hemavathi R, Umavathi M. “Implementation of Incremental Conductance MPPT in Photovoltaic System with DC-DC Boost Converter,” IJLTEMAS, Vol. XV, Issue III, 25 April 2026, ISSN 2278-2540, DOI: 10.51583/IJLTEMAS.

2025

- Vijayalakshmi Sogalad, Umavathi M, Kalpana R, Umadevi D. “Design and Implementation of Dual Input Single Output Converter for Real World Applications,” Metallurgical and Materials Engineering, Vol. 31, No. 6, pp. 172–180, June 2025. **Web of Science Indexed, Q3, Impact Factor 0.9.**
- Deepak Mohanraj, Umavathi M, Rajesh Verma et al. “Enhancing Performance toward Torque and Flux Control through a Hybrid Approach of Intelligent and DTC for SRM Drives,” **IEEE Access**, Vol. 13, pp. 92168–92179, May 2025. **Web of Science Indexed, Q2, Impact Factor 3.4.**
- Umavathi M, Hemavathi R, et al. “Electroluminescence Imaging for Defect Analysis in Polycrystalline Solar Cells,” Metallurgical and Materials Engineering, Vol. 31, No. 5, pp. 1279–1288, 2025. **Web of Science Indexed, Q3, Impact Factor 0.9.**

2024

- Umavathi M, Ankur Suresh, D Abdul Kalam et al. “Digital Transformation of Agriculture: The Future of Farming,” Educational Administration: Theory and Practice, Vol. 30(3), pp. 2414–2418, 2024. **Scopus Indexed, Q4.**
- Hemavathi R, Ramyashree, Umavathi M. “Simulation Modelling of Shunt Active Power Filter to Improve Power Using I-Cos ϕ Control Algorithm,” **Journal of Electrical Systems**, Vol. 20, 11(S), pp. 3718–3729, 2024.
- Santhosh H. A., Umavathi M. “Design and Analysis of Dual Input Single Output DC-DC Converter for Domestic Application,” African Journal of Biological Sciences, Vol. 6, pp. 4066–4075, 2024.

2023

- Poornima Mernal, Umavathi M, Santosh B. L., Guthi Prakash, et al. “Design and Implementation of 30W Single Output Forward Converter for Space Application,” International Journal of Industrial Electronics and Electrical Engineering (IJIEEE), Vol. 11, Issue 9, September 2023.
- Umavathi M, Vinayak Mallikarjun Kolavi, Vishrut Sateesh Mokashi, Vishnu Prakash Bharadwaj, Ashwini V., Vamshi B. “Optimized Adaptive Noise Cancellation on FPGA,” Res Militaris, Vol. 13, Issue 3, pp. 8018–8025, 2023.

2022

- P. Ramesh, Umavathi M, C. Bharatiraja et al. “Development of a PMSM Motor Field-Oriented Control Algorithm for Electrical Vehicles,” **Materials Today: Proceedings (Elsevier)**, Vol. 65, Part 1, pp. 176–187, June 2022. **Q2 Journal.**
- Umavathi M, C. Santhakumar, K. Sathyasekar et al. “Minimum Device Usages of FPGA Verification of Multilevel PWM Inverter Drive Generation,” **Materials Today: Proceedings (Elsevier)**, Vol. 65, Part 1, pp. 313–321, June 2022. **Q2 Journal.**
- Umavathi M, Stephen J., Puneeth V., Keerthi Vardhan B., HP Sujaya, et al. “Design and Analysis of Battery Management System for Electric Vehicle Applications,” **NeuroQuantology**, Vol. 20, Issue 4, pp. 1723–1739, April 2022. **Q3 Journal.**

- Umavathi M, K. Lavenya. “Design and Analysis of Single-Phase Inverter for Avionics System,” **Lecture Notes in Networks and Systems, Springer, Singapore**, Vol. 336, 2022.
- Latha G., Umavathi M., Bhoopendra Kumar Singh, et al. “Design and Implementation of Digitally Controlled Cooler Drive Inverter for Temperature Control Sterling Based Cryocooler,” UGC-CARE Group II Journal, Vol. 8, Issue 10, pp. 121–135, October 2022.
- Latha G., Umavathi M., Bhoopendra Kumar Singh, et al. “Design and Implementation of Synchronous Buck Converter for Space Applications,” IJRASET, Vol. 10, Issue VI, June 2022.

2021

- Bashir Ahmed, Abdur Rehman, Umavathi M. “Wire Arc Additive Manufacturing,” International Journal of Early Childhood Special Education (INT-JECSE), Vol. 13, Issue 2, 2021.
- Umavathi M, Suresh S. Ekambe. “PLECS Software for UPS Application Using Isolated Bidirectional DC-DC Converter,” Lino Journal, Vol. 11, Issue 2, February 2021.

2020

- Poornima Mernal, Umavathi M., Santhosh B. L., Prakash G., B. K. Singh. “Design and Implementation of 76W Forward Converter with Dual Output to Power Up Digit Unit for Space Application,” Res Militaris, Vol. 10, Issue 1, pp. 449–458, 2020.
- Umavathi M., Suresh S. Ekambe. “Isolated Bidirectional DC-DC Converter for UPS Application,” International e-Conference on Recent Trends in Electronics, Computing and Communication Engineering (ICRTECC 2020), Saveetha School of Engineering, SIMATS, Chennai, June 2020.

2019

- Umavathi M., Udhayakumar K., Thanya D. “Investigation on Solar-Wind Hybrid Renewable Energy System Using Single SEPIC Converters,” National Conference on Advancement in Electrical Sciences, SNS College of Technology, Coimbatore, April 2019.

2017

- Umavathi M., Udhayakumar K. “Studies on Solar-Wind Energy System Using Zeta Converter Fed Brushless DC Motor,” Perspectivas em Ciência da Informação, Vol. 22, Spl. 2, pp. 315–323, November 2017. **Scopus Indexed.**
- Umavathi M., Udhayakumar K., Ishwarya K. “System with Single DC-DC (CUK) Converter and 1-Phase Inverter to Power Grid,” Journal of Electrical Engineering, Vol. 17, No. 3, pp. 118–129, September 2017. **Scopus Indexed.**
- Umavathi M., Udhayakumar K. “Simulation and Analysis of Solar-Wind Hybrid System Using an Efficient Multiport DC-DC Converter,” Journal of Advanced Research in Dynamical and Control Systems, May 2017. **Elsevier; Best Paper Award.**
- Umavathi M., Udhayakumar K. “Modelling and Analysis of Hybrid Renewable Energy System with Luo Converter Using BLDC Motor,” International Conference on Contemporary Topics in Power Engineering and Aiding Technologies (ICCPEAT’2017), Puducherry, February 2017.
- Umavathi M., Udhayakumar K. “MPPT for Standalone Hybrid System Using Multiport Converter for Domestic Application,” International Journal of Science and Innovative Engineering & Technology, Vol. 1, May 2017.

2014

- Naresh K. M., Umavathi M., Mohan H. R. “Multi Output Flyback Converter with Switching/Linear Post Regulators,” International Journal of Recent Development in Engineering and Technology, Vol. 6, Issue 6, June 2014.

AWARDS & ACHIEVEMENTS

- Inspiring Professor Award, Ministry of Micro, Small & Medium Enterprises (MSME), Government of India, 2022.
- Best Paper Award, ICCPEAT, 2017.
- 2nd Place, Throwball – Milanotsava, 2013 and 2023.

PROFESSIONAL MEMBERSHIPS & LEADERSHIP

- Senior Member, IEEE.
- Secretary, IEEE Society on Social Implications of Technology (SSIT), Bangalore Section — 2024 to Present.
- Life Member, Indian Society for Technical Education (ISTE).
- Member, AMIEE India.
- Committee Member & Reviewer, ASDF (UK).

INDUSTRY COLLABORATION & CONSULTANCY

- MoU with InnovMon Technologies Pvt. Ltd. (August 2023) — five-year collaboration focusing on EV innovations.
- MoU with Nexstem (August 2025) — collaboration in Brain-Computer Interface (BCI) research.
- Consultancy: Hybrid Energy Systems for EV Propulsion — ₹3,00,000.

INVITED TALKS & EXTERNAL ACADEMIC ROLES

- IQAC External Audit Member, DSCE — March 2026.
- Technical Talk, ISTE-sponsored programme, Dr. AIT — October 2025.
- IQAC External COE-Audit, DSCE — September 2025.
- Board of Studies (BOE) & Department Advisory Board (DAB), BNMIT — 2024–2025.
- Session Chair, ICISPES-2023 and ICIMIA-2023, DSCE.
- Advisory Committee Member, IPCSES-2022, B.M.S. College of Engineering.

INSTITUTIONAL CONTRIBUTIONS

- UTSAV 2023 & 2024 — Treasurer & Joint Secretary.
- Graduation Day Committee — Batches 2021 & 2022.
- Library Committee — 2022–2024.
- Stock Verification Coordinator and contributor to institutional sports/cultural activities.

DEPARTMENTAL & ACADEMIC RESPONSIBILITIES

- NBA & NAAC Coordinator.
- Placement Coordinator — 2022–2024.
- Academic Audit Committee — 2018–2020.
- Departmental Academic Committee — 2020–2023.
- Feedback & Test Coordinator — 2008–2012.
- Time Table Coordinator — 2008–2010.
- Student Proctor/Mentor — 2007–Present.
- AICTE Activity Points Coordinator — 2024–Present.

RESEARCHER PROFILES & IDENTIFIERS

Google Scholar: [Sy76smwAAAAJ](#)

ORCID: [0000-0002-3105-5202](#)

Scopus Author ID: [57442067200](#)

Web of Science Researcher ID: [AAV-7953-2020](#)

CONTACT & PROFESSIONAL ADDRESS

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