SANDEEP JAVALKAR

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Technical Interests

Machine Learning, Non-Intrusive Load Monitoring (NILM), Energy Informatics, IoT, Web development, Computer Architecture, Power Electronics

Research Experience

PhD Research Project – Real-Time Monitoring of ACs and Building Energy Consumption to Reduce Carbon Footprint of BITS Campuses

Supervisor: Prof. Vinayak Naik

Designed and implemented a LAN-based real-time energy monitoring dashboard. Working on NILM using machine learning and signal processing to disaggregate AC-level consumption from aggregate smart meter data. Focused on fault detection, abnormal usage patterns, and data-driven energy optimization for campus sustainability.

M.Tech Project – Designing and Simulation of Hybrid DC-DC Boost Converter for a Fuel Cell System

Designed and simulated a hybrid DC-DC boost converter incorporating advanced control algorithms to improve power conversion efficiency and overall system performance through seamless integration with a fuel cell system.

B.Tech Project – Plugging and Speed Reversal of Slip-Ring Motor Using PLC

Developed a PLC-based control system for smooth motor plugging, controlled braking, and precise speed reversal, involving hardware integration and PLC programming.

Education

PhD in Computer Science (Junior Research Fellow) Jan 2025 – Present
BITS Pilani, Goa

Master of Economics (MEC) Jan 2023 – Dec 2025 (Expected)
Indira Gandhi National Open University (IGNOU), Open and Distance Learning
Specialization: Economics

Integrated B.Tech + M.Tech in Electrical & Electronics Engineering
Andhra University College of Engineering, Visakhapatnam
M.Tech (Power Systems and Automation): 7.67/10 CGPA Sep 2019 – Nov 2022
B.Tech (Electrical and Electronics Engineering): 6.69/10 CGPA Jul 2015 – Jan 2022

Skills

- Programming: Python, SQL, HTML/CSS, JavaScript, React
- Machine Learning: Regression, Classification, Clustering
- Deep Learning: CNN, LSTM (Time-Series)
- Data: Cleaning, Feature Engineering, Visualization
- Libraries: NumPy, Pandas, Scikit-learn, TensorFlow
- Signal Processing & NILM Analytics
- MATLAB Simulation
- Tools: Tableau, Postman, MS Office

Publications

- Designing and Simulation of Hybrid DC-DC Boost Converter for a Fuel Cell System, *Journal of Emerging Technologies and Innovative Research.*

Presentations

- Introduction to Non-Intrusive Load Monitoring (NILM)
- Pine Needle-Based Renewable Power Generation
- Harnessing Solar Energy Along India's Canals: Solar Canals and Micro Hydrokinetics Integration

- Efficiency and Performance: Hybrid Boost Converter Simulation for Fuel Cell Applications

Certifications

- Google Data Analytics Professional Certificate
- Junior Software Developer, Career Labs Technologies (Grade A+)
- Certificate in First Aid
- Computer Office Automation, State Board of Technical & Training
- APSSDC – SIEMENS Program
- Summer Course on Power Electronics, CITD

English Language Proficiency

TOEFL iBT Score: 90
Reading: 24 Listening: 26 Speaking: 22 Writing: 18

Teaching Assistantship (BITS Pilani, Goa)

- Microprocessors and Interfacing — Jan 2026 – Present
- Deep Learning — Jul 2025 – Dec 2025
- Data Structures and Algorithms — Jan 2025 – May 2025