JAVALKAR SANDEEP RAO

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Objective

- I aspire to work on innovative projects.

Areas of Knowlege

- Computer Science
- Power Systems and Automation
- Electrical and Electronics Engineering
- Economics

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
  Summary: Designed and implemented a LAN-based, real-time dashboard to visualize live energy data, enabling temporal comparison of AC consumption patterns for administrators and students. Actively working on Non-Intrusive Load Monitoring (NILM) using machine learning and signal processing tech niques to disaggregate individual AC loads from aggregate meter data, enabling device-level energy profiling without dedicated sub-meters. The research aims to detect inefficient or faulty units, identify abnormal consumption patterns, and support data-driven energy optimization and sustainability initiatives across the campus.

- **M.Tech. Project-** Designing and Simulation of Hybrid DC-DC Boost Converter for A Fuel Cell System**.**
  Summary: Successfully designed and simulated a hybrid DC-DC boost converter for a fuel cell system, incorporating advanced control algorithms to optimize power conversion efficiency and enhance the overall system's performance. This involved seamless integration of the converter into the fuel cell system, which ultimately resulted in remarkable improvements in energy conversion and the system's overall efficiency.

- **B.Tech. Project-** Plugging and Speed Reversal of Slip-Ring Motor Using PLC.
  Summary: Successfully designed a reliable system for the smooth control of a slip-ring motor using Programmable Logic Controllers (PLCs). This involved extensive research, hardware integration, and PLC programming to achieve smooth motor plugging, starting, controlled braking, and precise speed reversal.

Publications

- Published a paper entitled "Designing and Simulation of Hybrid DC-DC Boost Converter for a Fuel Cell System" in the Journal of Emerging Technologies and Innovative Research.

Presentations

- Introduction to 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 Cells Applications.

Education
- Pursuing PhD (Junior research Fellow) in Computer science at BITS Pilani, Goa
  January 2025 – Present

- Pursuing Master of Economics (MEC) from Indira Gandhi National Open University (IGNOU) through open and distance learning mode.

  A) MEC : Jan 2023 to December 2025 (expected)
  Specialization: Economics
  Grade: NA

- Completed B.Tech. + M.Tech. Integrated program in Electrical & Electronics Engineering at Andhra University College of Engineering, Visakhapatnam, India.

  A) M.Tech : Sep 2019- Nov 2022,
  Specialization: Power Systems and Automation,
  Grade: 7.67/10 CGPA

  B) B.Tech : Jul 2015- Jan 2022,
  Specialization: Electrical and Electronics Engineering,
  Grade: 6.69 /10 CGPA

Skills
- Proficient in programming languages including Python, HTML, CSS, JavaScript, Bootstrap, React and SQL.
- Spreadsheet, Data Cleansing, Data Analysis, and Data Visualisation.
- Proficient in simulation tools like MATLAB.
- Solid foundation in fundamental principles of Network Programming, Advance Computer Architecture
- software such as Microsoft Office, Postman API and Tableau.

Certifications
- Google Data Analytics Professional Certificate (Coursera)
- Junior Software Developer Course with Grade A+ from Career Labs Technologies
- Certificate Course in First Aid (CFAID) from Indira Gandhi National Open University (IGNOU)
- Certificate course in Computer Office Automation under the State Board of Technical & Training
- Participated in a program under APSSDC - SIEMENS
- Summer course on 'Power Electronics' at the CITD

English Language Proficiency Scores
- TOEFL iBT test score – 90,
Reading–24	Listening–26
Speaking–22	Writing–18

Teaching Assistantship (BITS Pilani, Goa): Served as a Teaching Assistant for multiple undergraduate courses, including:
  Data Structures and Algorithms (January 2025 – May 2025)
  Deep Learning (July 2025 – December 2025)
  Microprocessors and Interfacing (January 2026 – Ongoing)