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Ramya

A dedicated and hardworking Electrical Engineer with 3+ years of research experience in electrical engineering, aspiring to pursue a challenging career and contribute to an organization that offers opportunities for knowledge enhancement and skill utilization towards organizational and personal growth.

Work Experience Summary

2021 – PRESENT

Research Associate - PES University, Bengaluru, Karnataka

- Developed peer-to-peer energy sharing models for optimized local distribution, integrating EVs as constant power loads and renewables, with loss allocation, schedule optimization, and imbalance management.
- Programmed and implemented embedded solutions using STM32 ARM and MSP430 microcontrollers for real-time applications.
- Developed and verified digital designs using Verilog RTL and implemented ASIC design flows for efficient hardware synthesis and optimization.
- Advanced models in MATLAB/Simulink, including closed-loop control systems for DC-DC and DC-AC-DC converters, PMSM motor drives, and renewable energy integration for power management and optimizing performance and energy efficiency.
- Designed and developed DC-DC converters, switching device drivers, and AC-DC-AC converter systems
- Designed 10+ innovative PCB boards and fabricated 50+ high-precision boards using LPKF Protomat S6
- Performed reflow soldering and troubleshooting to optimize circuit functionality and reliability.

Projects Undertaken

- **Optimization of Cumulative Cost in Peer-to-Peer Energy Sharing in Distributed System:** Developed peer-to-peer energy sharing models to optimize local distribution, integrating EVs and renewables, with loss allocation and schedule optimization based on demand, distance, and cost.
    - **Tools Used:** MATLAB/Simulink R2023b, STM32, Visual Studio Code (Python)
    - **Achievement:** Published a Scopus indexed journal in International Journal of Electrical and Computer Engineering (IJECE) titled ‘A comparative analysis of constant impedance and constant power loads in a distribution network’.
- **Testbench for Electric Vehicle Motor testing:** The test motor, a Permanent Magnet Synchronous Motor (PMSM) mechanically coupled to a Permanent Magnet Synchronous Generator (PMSG), was mathematically modeled to verify its torque-speed characteristics.
    - **Tools Used:** MATLAB/Simulink R2023b
- **Design and development of Closed-loop Constant Power Load Model:** Designed and developed a

MOSFET driver providing isolation between the power circuit and digital circuit. This led to the creation of a closed-loop control system for a boost converter, which involved designing key components such as the inductor and capacitor.
    - **Tools Used:** STM32 Microcontroller, MATLAB/Simulink R2023b
- **AI-Powered Resistor Prediction:** Implemented Python-Arduino communication to predict resistor values using AI models, integrating PySerial for data transfer and analysis. This project combined AI with electronics for a hands-on learning experience.
    - **Tools Used:** Visual Studio Code
- **Design of IC Testing Unit:** A very basic logic gate verifying circuit based on selecting from the multiple input signals and validating it.
- **Spot Welding Setup:** Set up to provide high impulse current at low voltage level to weld pouch battery module.
- **Power Management in Microgrid and Fault Analysis**: This project aims in managing different electrical sources like Solar PV Panel, Wind Energy Source etc. by switching. Suitable algorithm is adopted to have efficient and economic operation. Faults are created in different region of the system and its responses are analyzed and isolated from the non-faulty areas.
    - **Tools Used:** MATLAB/Simulink R2017a, Arduino Uno
    - **Achievement: '**Best Poster Paper Award' in International Conference on Advances in Materials, Ceramics and Engineering Sciences (AMCES -2020) in Bengaluru
- **Single Phase Shunt Active Filter:** The project focuses mainly on removing current harmonics present in the single-phase system by using active filter which will improve the quality of power.
    - **Tools Used:** MATLAB/Simulink R2017a, ST Embed Software
    - **Achievement:**
        - Secured funding for the 44th KSCST project, demonstrating innovation and technical excellence.
        - Achieved Top 3 Project Award in EXPO'18 for outstanding design and execution.

Skills and Hobbies

Programming Languages	MATLAB, C, Python
Hardware/Embedded Systems Skills	MSP430, STM32 F4 Discovery Board, AMD Spartan 7 XC7S50 FPGA Board, Arduino Uno
Other Tools	KiCad, MATLAB/Simulink, Vivado, Arduino, IAR Embedded Workbench, Code Composer Studio, Keil-uVision, PSpice, Git
Hobbies	Sketching, Painting, Singing, Playing Ukulele, Gardening
Other skills	Good oral and written communication skills

Activities and Achievements

- Gold medalist in M-Tech & B.E. in Electrical and Electronics Engineering
- Organized Hackathon event in Department of Electrical and Electronics Engineering, PES University, Bengaluru in November 2021
- Organized Guest Lecture on 'Modeling of Machines and Power Electronics' in April 2022

Education

FEBRUARY 2021-Present
Ph.D. in Electrical and Electronics, PES University, Bengaluru

OCTOBER 2018-JUNE 2020
M-Tech in Electrical and Electronics with specialization in Smart Power Control, PES University, Bengaluru, CGPA - 9.55

AUGUST 2014-JULY 2018
B.E. in Electrical and Electronics, NMAM Institute of Technology,Nitte, CGPA - 9.5

JUNE 2012-MAY 2014
Class XII, Mahatma Gandhi Memorial PU College, Udupi - 92.67%

JUNE 2002-MAY 2012
Class X, B. M. E. M. High School, Parkala - 94.08%

Declaration

I hereby declare that the information provided above is accurate and I take full responsibility for its correctness.

RAMYA