Amit Kumar Bhattacharjee

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PROFESSIONAL EXPERIENCE:

Bloom Energy, USA

Sr. Electrical Engineer, 10/2016-Present

Worked as Product Development Engineer, responsible for design and development of power conversion modules for grid integration of fuel cells

- Designed and developed battery interface module as an add on to fuel cell module for reliability and functional improvement
- Developed grid interactive and standalone inverter modules for exporting fuel cell power
- Developed DCDC converter modules for battery integration to the Fuel cell
- Developed and tested for verification – battery module and multimode switch gear
- On site troubleshooting service for both field and manufacturing unit
- Design and development of power conversion systems in accordance to UL and NEC standards
- Design and development of switchgear for grid interactive applications

University of Central Florida, USA

Research Assistant-Department of Electrical and Computer Engineering, 08/2012 –10/2016

Worked as a research assistant in Florida Power Electronics Center and Electrical Machine and Drives group

- Designed and developed multiport converters for interfacing solar and energy storage system.
- Worked on dual active bridge converters for bidirectional battery interfacing.
- Designed a 100kW permanent magnet machine with high torque density in Matlab environment. The design was validated by Finite Element analysis done using Ansys Maxwell.
- Developed a decentralized controller for SOFC-Ultra capacitor hybrid power system with adaptive estimation of the unknown parameters. Experimentally verified in DSPACE controlled 500W hybrid system with HIL fuel cell as the primary power source and ultra-capacitor as the storage element achieving improved load following profile for the SOFC.

Indian Institute of Technology Kharagpur, INDIA

Project Assistant- Department of Electrical Engineering, 06/2011 – 07/2012

Worked as project assistant at IIT-Kharagpur on a project sponsored by DST, Govt of India, titled: A 1 MW Re-synchronizable autonomous Grid: DC-AC Conversion and Grid Side Paralleling.

- Designed control board based on TMS320F28025 for the DC-AC converter board using ORCAD packages. Controllers successfully drove a 20hp induction motor in volts/hertz mode.
- Designed and developed notebook adapter (300W) using Soft-switched Flyback Converter.

Calcutta Electric Supply Corporation Ltd., INDIA

Mains Engineer/Commercial Executive, 07/2008 – 06/2011

- Oversaw Erection & Commissioning of Distribution Transformer, Circuit Breakers, HV/MV Cables.
- Cable jointing techniques of different cross sections and different insulation types of different voltage levels.
- Maintaining liaison with purchase department and presiding approval committee for acceptance test of 11kV XLPE insulated underground cables according to IS-7098(Part-II) and IEC standards.

TRAININGS AND AWARDS:

- NFPA 70E
- Lean manufacturing.

OTHER PROJECTS:

- Power converter design for solar and battery integration
- Automation of test stands using LabVIEW
- V/F control for induction machine for given speed profile using FPGA controlled SPWM techniques.
- Gradient based Optimization Methods: Performed different optimization techniques on nonlinear non-convex functions in Matlab environment.
- Centralized and decentralized controller design of a SOFC-Ultracapacitor Hybrid power system with robustness on system uncertainties.
- Hardware-in-the-loop development of hybrid power system (SOFC-Ultracapacitor)
- Sliding Mode Observer Based Sensorless Control of Permanent Magnet Motors

EDUCATION:

PhD, Electrical Engineering (Power Electronics), University of Central Florida (Dec 2019 expected)
Research area: Design and development of multiport power converter for grid tied solar and battery systems.
Courses: Power Electronics I & II, Advanced Electrical Machines, Electromagnetic Theory-I etc.
MS, Mechanical Engineering (Control System), University of Central Florida, 2014
Research area: Decentralized power management of Microgrids.
Courses: Optimization of Engineering systems, Systems & Controls etc.
B.E, Electrical Engineering, Jadavpur University, India, 2008
Project: Relay Coordination and microprocessor based relaying in a ring main network.
Courses: Basic Power Electronics, Electrical Machines, Control system-I and II, Power Systems, High Voltage Engg, etc.

PUBLICATIONS:

Review of Multi Port Converters for Solar and Energy Storage Integration, IEEE Transactions on Power Electronics, 2018, A. K. Bhattacharjee, N. Kutkut and I. Batarseh

An Efficient ramp rate and State of Charge Control for PV-Battery System Capacity Firming, 2017 IEEE Energy Conversion Congress and Exposition (ECCE), Cincinnati, OH, 2017, pp. 2323-2329, A. K. Bhattacharjee, I. Batarseh, H. Hu and N. Kutkut.

Decentralized Power management in a hybrid Fuel Cell Ultra-Capacitor system, IEEE transaction on control system technology 2015. Omid Madani, Amit Kumar Bhattacharjee, Tuhin Das.

A Digitally Controlled ZVS-PWM Flyback Converter With a Novel ZCS-Auxiliary Circuit, Amit Kumar Bhattacharjee and Souvik Chattopadhyay, NPEC 2013, Kanpur, India.

SOFTWARE PROFICIENCY:

Orcad packages, PSpice, Matlab/Simulink, Solidworks, LabVIEW, Ansys Maxwell, C/C++, Code Composer Studio, FPGA-Xilinx, Arduino, Verilog etc.

HARDWARE PROFICIENCY:

PCB design/assembly, FPGA/DSP controller programming, LabVIEW based test stand design, lab equipment's – oscilloscope, logic analyzer etc.