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SUMMARY

I am pursuing PhD in Electrical Engineering Department at IIT Delhi. My PhD is sponsored by the Department of Science and Technology (DST), Government of India, through a joint India-UK project named Community Scale Energy Demand Reduction in India (CEDRI).

Under the project, I am working on developing a framework for the power utility companies which can help in knowing their consumers better based on their energy consumption behavioural aspects. The framework enables an efficient implementation of the demand side management (DSM) measures. Consumers benefit by receiving a customized set of instructions to be followed under the DSM scheme based on their energy usage patterns. Accompanying web and mobile applications are developed which can directly be used by the utility companies and their consumers.

I am also developing the market clearing framework for the power distribution system, integrated with renewable energy resources, electric vehicles and batteries.

ACADEMIC DETAILS

Examination	University	Institute	Passing Year	CGPA/%
Doctor of Philosophy (PhD)	IIT Delhi, New Delhi (*Specialization: Electric Power Systems*)	IIT Delhi	Pursuing	9.0
Post Graduation (M.Tech)	IIT Delhi, New Delhi (*Specialization: Construction Technology and Management*)	IIT Delhi	2018	9.124
Graduation (B.Tech)	MPUAT Udaipur, Rajasthan (*Specialization: Electrical Engineering*)	CTAE Udaipur	2016	7.86
Senior Secondary	RBSE, Ajmer, Rajasthan	MNA, Barmer	2011	93.69%
Secondary	RBSE, Ajmer, Rajasthan	MNA, Barmer	2009	91.83%

FIELDS OF INTEREST

- Non-Intrusive Load Monitoring, Data Analytics for Power Distributon System, Distribution System Analysis and Optimization, Power System Analysis and Optimization, and Power Markets.

TECHNICAL SKILLS

- Python, Matlab, R, C, Rust, Julia, GAMS, PSS/E, Non-linear Optimization, Data Analytics, HTML, CSS, JavaScript, jQuery, Bootstrap, SQL, Git, Microsoft Excel, GUI development, LaTeX, and Algorithmic Trading.

MAJOR PROJECTS AND SEMINAR

- **Community Scale Energy Demand Reduction in India (CEDRI)**
  (Supervisor:Prof. Abhijit R. Abhyankar , July'18 - till date)

  CEDRI is a joint India-UK project funded through the Newton-Bhabha scheme, and supported by the Department of Science and Technology (DST) Government of India and UK Engineering and Physical Sciences Research Council (EPSRC).

  Objectives

  - Define grid characteristics of local networks at regional level.
  - Aggregate demand profiles of regions with future scenario-morphing techniques.
  - Provide tailored, qualified demand-side options for Indian households informed by survey responses.
  - Detailed guidance for required response to future demand pathways for Indian communities.

- **Load Flow Studies for Power Distribution Network** (M.Tech Dissertation)
  (Supervisor: Prof. Abhijit R. Abhyankar , July'17 - June'18)

- An algorithm is developed which solves the three phase unbalanced distribution system load flow problem efficiently.
- The algorithm takes into account the modeling of voltage dependent three phase loads and other distribution system components i.e., transformers, voltage regulators, distribution system lines and shunt capacitors.

- **Power Quality Improvement using Hybrid Power Filters** (B.Tech Dissertation)
(Supervisor: Prof. Naveen Jain , June'15 - May'16)
  - A shunt hybrid power filter is designed for an ac-dc supply system with non-linear unbalanced loads.

TECHNOLOGIES DEVELOPED

- *DemRed* **mobile application for data acquisition and reporting**
Developed a hardware setup for power consumption data acquisition from dwelling/community load point. An accompanying mobile application named *DemRed* is developed for visualization of the data collected from the dwelling/community load point.
- *DetActApp* **web application for load synthesis of dwelling/community loads**
Developed a non-intrusive load modeling (NILM) framework for performing load synthesis for dwelling/ community load. An accompanying web application named *DetActApp* is developed for analytics and visualization of the NILM results.
- *VoltSense* **software for evaluating voltage sensitivity of dwelling/community loads**
Developed a model for voltage sensitivity calculation for community load. An accompanying software application named *VoltSense* is developed for evaluating the voltage sensitivity factors based on community load details provided by the user.

INTERNSHIPS

- **Larsen & Toubro (L&T) Construction, Chennai**
(May'17 - June'17)
Modelling and analysis of an existing electric distribution system on the ETAP software was part of this training.
- **Jaipur Metro Rail Corporation (JMRC), Jaipur**
(June'15 - July'15)
Introduction to metro train components, rail assembly, work management at various JMRC departments, and overall operation and control of the metro train-based transportation system were parts of this training.
- **Giral Lignite Power Plant (GLPP), Barmer**
(June'14 - July'14)
Introduction to a coal-based 250MW capacity electricity generation plant, its various processes, departments and their functioning, and overall work management at the site were parts of this training.

HONORS & AWARDS

- **Best Paper Award (ICPS 2019, Jaipur)**
(December'19)
Received best paper award for a conference paper titled "A linearized optimal power flow framework for a balanced active distribution network" at 8th International Conference on Power Systems (ICPS 2019), Jaipur.

TEST SCORES

- **Graduate Aptitude Test in Engineering**
(April'16)
Score: 700. Secured 1156 rank out of 125859 candidates appeared for the test.

PUBLICATIONS

- P. Kumar, S. R. Vaishya, and A. R. Abhyankar, "A linearized optimal power flow framework for a balanced active distribution network," 8th International Conference on Power Systems (ICPS 2019), Jaipur, Dec 2019.

- B. Couraud, P. Kumar, V. Robu, D. Jenkins, S. Norbu, D. Flynn, and A. R. Abhyankar, "Assessment of Decentralized Reactive Power Control Strategies for Low Voltage PV Inverter," 8th International Conference on Power Systems (ICPS 2019), Jaipur, Dec 2019.

HOBBIES & INTERESTS

- Reading, learning web development, coding, develop web applications for algorithmic trading, stocks technical analysis and listening to music.