




# MUHAMMAD SARWAR


Electrical Engineer

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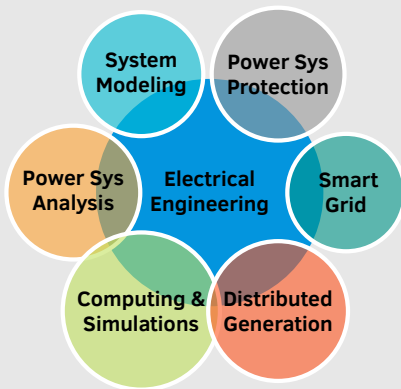
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 Room No. D-111, Nilore, PIEAS, Islamabad, Pakistan

## Skills

### Overview



### Programming

*Beginner* *Advanced*

PSSE • ETAP • PSCAD

MATLAB • LabVIEW • PST

Python • C++ •  $\LaTeX$

## Projects

**2018** - An automatic synchronizing relay for grid connection of power plants

**2017** - Grid connected operation of wind power plants

**2017** - An SVM based technique for detection of High Impedance Faults in Power Distribution Networks

**2016** - Technique for modelling Nuclear Power Plant in ETAP and its load following mode of operation

**2015** - A LabVIEW based real time controller design for coupled tank system

## Objective

To leverage my academic & research experience, teamwork skills, and practical expertise of research & development at a research group to explore and devise solutions for the future Smart Grid and sustainable energy.

## Experience

Nov 2016 - Present **Lecturer @ DEE** PIEAS

- Currently with Dept. of Electrical Engineering at Pakistan Institute of Engineering & Applied Sciences. Teaching Undergraduate & Graduate courses to Electrical Engineering students.
- **Courses taught:** Power System Analysis & Design, Power System Analysis, Calculus, Power Systems Lab I & II
- **Software:** Designed and implemented a Learning Outcome assessment software for Outcome Based Assessment
- **Lab Administration:** Currently administering Power Systems & Smart Grid (PSS&G) Lab at DEE, PIEAS. Involved in procurement of High Voltage Engg. & Real-time Digital Simulator Lab
- **MS Thesis Co-Supervision:** (5) Advised graduate students research
- **BS FYP Supervision / Co-Supervision:** (4) Supervised and managed the teams of students for design projects

Nov 2014 - Oct 2016 **M.S Electrical Engineering Fellowship @ Pakistan Institute of Engineering & Applied Sciences** PIEAS

- Was awarded fellowship by Pakistan Atomic Energy Commission at PIEAS for M.S Electrical Engineering
- **Major Courses:** Power System Analysis & Design, Power Systems Stability & Control, Digital Control Systems Analysis & Design, Fault Diagnosis & Control, Reactor Control & Instrumentation
- Completed Fellowship with Honors and was awarded President's Gold Medal
- Was awarded *Certificate of Appreciation* for Best Thesis
- Was awarded *Certificate of Merit* for the Highest CGPA in class

## Education

2014 - 2016 **M.S. Electrical Engineering** (GPA: 3.91/4.0) PIEAS, Pakistan

Awarded a Gold Medal for 1<sup>st</sup> Position in Class  
Majors: Electrical Power & Control Engineering

**Thesis:** Grid Connected Operation of Nuclear Power Plants: Fault Ride Through, Voltage Regulation and Frequency Control Aspects  
Received Best Thesis Award

2010 - 2014 **B.Sc. Electrical Engineering** (GPA: 3.87/4.0) UCET, IUB, Pakistan

Awarded a Gold Medal for 1<sup>st</sup> Position in Class  
Majors: Electrical Power Engineering

**Final Year Project:** Real Time Smart Monitoring, Analysis & Control of Lab-based Microgrid Through Hardware-in-the-Loop (HIL) Simulation Using Simulink

**Role:** Led a team of 6 group members, Acquired a funding of 100,000/- PKR and Secured 1<sup>st</sup> Position in 6<sup>th</sup> IEEE Annual Engineering Project Exhibition

# MUHAMMAD SARWAR

Electrical Engineer

## Skills

### Professional



### Soft Skills

*Beginner*

*Advanced*

Team Management

Problem Solving

Communication Skills

Emotional Intelligence

Result Oriented

Resourcefulness

## Achievements

**Teamwork** - An efficient team member of "Energy & Power Systems" and "Control Systems Theory & Applications" Research Groups at Dept. of Electrical Engg., Pakistan Institute of Engg. & Applied Sciences

**Management** - Managed and organized Faculty Development workshop at PIEAS

**Leadership** - Supervised student research projects to achieve milestones

**2017** - Attended trainings on "Outcome Based Education"

**2017** - Attended workshop on "HMI design using LabVIEW"

**2016** - A LabVIEW based real time controller design for coupled tank system

**2014** - Secured funding of PKR 100,000/- from National ICT R&D Fund for Final Year Project

## Research

Nov 2016 - **Researcher & Lecturer at Department of Electrical Engg.** PIEAS  
Present Much of my research focuses on Renewable Energy Resources, their integration to conventional grid, development of algorithms for efficient utilization of Renewable Energy.

**Research Interests:** Smart Grids, Renewable Energy and Distributed Generation, Machine Learning in Power System, Grid Integration of Power Plants and Fault Detection in Power System

## Publications

**Journal Publications:** 2 Published, 3 Submitted

**Int. Conference Publications:** 3 Published, 2 Submitted

## Theses & Design Projects (Co-)Supervision

2017 **Masters Thesis Advisor & Co-Advisor** DEE, PIEAS

- Wind turbine grid connection: issues and potential solutions
- Data driven approach for detection of high impedance faults in power distribution systems
- Design studies for Power Plant's on-site system & power protection analysis for 500KV bus bar system
- Canonical Variate Analysis for detection of high impedance faults in power distribution systems
- Grid Integration of Nuclear Power Plants and Grid Reliability Issues

2017 **B.S Final Year Design Projects Supervision** PIEAS

- Smart Switching & Control of a Distributed Generator synchronized with National Grid
- Implementation of Protection coordination schemes using various protective relays
- Integration of Distributed Generation into a distribution Network: Protection Coordination Aspects
- Modelling & validation of a Wind Power Plant model on a Lab Scale Wind Farm Emulator

## Honors & Awards

Nov 2018 **Gold Medal (MS Electrical Engineering)** PIEAS

Oct 2016 **Certificate of Merit for Best Thesis in M.S Electrical Engg.** PIEAS

Nov 2014 **Gold Medal (B.Sc Electrical Engineering)** IUB

Mar 2014 **1<sup>st</sup> position in All Pakistan G.K Quiz Competition** GCUF, Faisalabad

Oct 2013 **1<sup>st</sup> position in MATLAB Programming Competition** MUET, Jamshoro

## Other Info

Languages **English (Professional), Urdu (Bilingual), Punjabi (Native), French (Learning)**

Hobbies **Book Reading, Gaming, Badminton, Endurance Running, Trekking, Exploring & Travelling**

Memberships **IEEE, Power & Energy Society, Pakistan Engineering Council**