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Profile

Electrical and mechanical engineer with a PhD in Electrical Power Systems. My professional experience ranges from distribution network modelling to grid compliance studies for offshore windfarms and includes the delivery of technical feasibility studies for community-energy projects. I am passionate about continuing my career in the energy industry and using my knowledge and experience to support our transition towards a carbon-neutral economy.

Professional Experience

 **Distribution System Planning Engineer (DSO and Future Networks)** **Jan 2021 – Present**
 **Scottish and Southern Electricity Networks (SSEN)**

RESPONSIBILITIES

- Leading the development and maintenance of network models (132/33/11kV) in DlgSILENT PowerFactory, which are suitable for power flow and optimal power flow analysis to inform flexibility requirements.
- Assessing impact and benefits of DSO flexibility services, as part of the [LEO](#) and [TRANSITION](#) projects.
- Developing Python scripts for the pre- and post-processing of network data (PI historian, network asset databases, network connectivity) and for the automation of power system studies in DlgSILENT PowerFactory.

 **Power System Consultant** **Feb 2020 – Dec 2020**
 **ABB Power Grids UK**

RESPONSIBILITIES

- Delivered grid connection studies (reactive power requirements, energy losses, short-circuit, harmonics, flicker) for several offshore wind park projects to ensure compliance with the Grid Code under different scenarios.
- Developed Python scripts for the automation of large-scale simulations in DlgSILENT PowerFactory and PSCAD and for subsequent analysis and data processing.
- Contributed to the preparation of reports for clients based on grid compliance studies.

 **Technical Officer** **July 2017 – July 2018**
 **Repowering London**

RESPONSIBILITIES

- Completed a range of solar feasibility studies for various community energy projects in London.
- Developed 3D CAD models of buildings to estimate solar resource availability and onsite energy consumption.
- Analysed data to support the development of financial models and delivered reports for management review.

 **Internship - Renewable Energy** **Apr 2014 – Sept 2014**
 **Abengoa Mexico**

RESPONSIBILITIES

- Worked within the proposal department throughout the planning, assessment, and bidding process for both photovoltaic and wind power plants, as well as reviewing contracts and permits for grid connection.

Education

 **PhD in Electrical Power Systems with a focus on distribution networks** **Oct 2016 – Sept 2020**
Thesis: Active network management for improved flexibility in distribution networks
 **Imperial College London**

RESEARCH

Investigated the main factors affecting the hosting capacity in distribution networks and proposed active network management (ANM) schemes, coupled with power electronic devices, to optimise the overall utilisation of the network. Proposed high-level control schemes based on optimisation and machine learning.

PUBLICATIONS

- [Self-learning Control for Active Network Management](#), IEEE Madrid PowerTech 2021
- [Active network management in LV networks: a case study in the UK](#), IEEE PES GM 2020
- [Using Multi-Terminal DC Networks to Improve the Hosting Capacity of Distribution Networks](#), IEEE ISGT 2018

SUPERVISION AND TEACHING

Supervised two MSc students on their final project focused on using data analytics for distribution networks

 **MSc in Electrical Power Systems (Distinction)**
 **University of Birmingham**

Sept 2014 – Sept 2015

FINAL PROJECT

Stochastic modelling of a Micro Grid for reliability assessment in a distribution network.

NOTABLE MODULES

Power systems operation and control; Power systems economics; HVDC and FACTS; Intelligent systems.

 **Bachelor's Degree in Mechanical and Electrical Engineering**
 **Tecnologico de Monterrey (ITESM), Mexico**

Sept 2009 – May 2014

NOTABLE MODULES

Transformers and electric machinery; Power electronics and converters; Renewable energy.

Achievements and Projects

- **EV Charge Challenge Finalist – UK Power Networks**

Led a team of 3 on the delivery of a study aimed at forecasting the most likely location of public charge points in supermarkets across the UKPN region, using a combination of open-source data and geospatial analysis.

- **OpenLV project – Imperial College London/Western Power Distribution**

Analysed large volumes of data coming from several low-voltage substations in the UK. The goal of the analysis was to identify the state of the networks and evaluate the potential benefits of active network management schemes.

- **Analytics & Data Science Summer School – Institute for Analytics and Data Science, University of Essex**

During the summer school, I completed a one-week course on neural networks and deep learning, as well as an introductory course on TensorFlow. Also, I established a research collaboration with an academic at the university.

- **Global Fellows Programme participant – Imperial College London/Tsinghua University**

I attended a one-week development programme to develop self-awareness and team working skills. This was followed by a three-week research visit at Tsinghua University, Beijing, during which I explored potential research collaborations.

Technical Competencies

- Advanced user of DigSILENT Power Factory, PSCAD and OpenDSS (EPRI) for modelling realistic transmission and distribution networks to assess the impact of low-carbon technologies and renewable generation.
- Advanced user of Python, Git and data analysis libraries (e.g., Pandas, Scikit-Learn, NumPy, Geopandas, Matplotlib) for scripting, optimization, large-scale data analysis, and for the implementation of machine learning algorithms.
- Intermediate user of MATLAB/SimPowerSystems libraries to analyse dynamics of power network components and to perform optimal power flow analysis.
- Competent user of Microsoft Visio to produce diagrams for new processes and dataflows.

Professional Memberships

- CIGRE UK Member and part of the CIGRE UK NGN steering committee, supporting the communications team with the organisation of events and by keeping the website up to date.
- IEEE Graduate Student Member and Member of the Power and Energy Society (PES)
- IET Member and working towards chartership (CEng)

Languages

English – Proficient Level

Spanish – Native

German – Intermediate Level