

Master Thesis:

Faster Big Data generation and analysis for AI-assisted design of MVDC control and protection system

Context:

High-voltage dc (HVDC) power transmission development has had significant growth in the last decades taking into account the advantage of enabling long-distance bulk power transmission cost-effectively and reliably. In the same way, medium voltage DC (MVDC) system has gained increasing interest in recent years to enhance power distribution capacity, improve operational flexibility and increase power quality in distribution grids.

However, with the new concept of DC grids in the distribution system, the new modern power system is a large, nonlinear, and complex system and it is subject to many kinds of events, which lead to many uncertainties on the control and protection aspect. It is necessary to deal with large data sets to ensure robust design and assure a stable and reliable system.



One of the most exciting developments that are gaining a lot of popularity is Artificial intelligence (AI) assisting the design of converter and control and protection. AI techniques are considered effective tools to solve many complex problems and have achieved acceptable results. Any AI has to be fed with good quality data and good quality data is often a larger hurdle than the actual AI development. Therefore, this master thesis focuses on the efficient generation of this data.

Student task:

- Simplify a Simulink model for data generation and analysis
- Explore efficient data generation and simulation using Matlab/Simulink
- Analysis of Big Data using Neural Network

Your profile:

- Master student in electrical engineering, computer science, or similar
- Experience with MATLAB /Simulink
- Desirable but not mandatory: Python, experience with power systems and/or power electronics

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