

Student project proposal

Project title

Testing Fault Location Algorithms

Project type MSc thesis BA semester project MSc semester project

Project responsible and e-mail

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Project description

Zaphiro uses different algorithms for faulted area identification and fault distance estimation based on the type of grids and types of faults. Zaphiro's algorithms are based on power system protection principles such as differential, directional and distance relaying and they are adapted to include PMUs.

The objective of the project is to generate datasets and to test the fault location approaches on several practical grids to identify gaps in the algorithms.

Tasks of the student

- Understand the algorithms implemented by Zaphiro for fault location.
- Import the model of the electrical network and develop scripts in PowerFactory to create multiple fault scenarios.
- Collect the faulty waveforms and feed them to our fault location algorithms. Collect in a structured manner the fault locator outputs.
- Analysis of the results to identify the strengths/weaknesses of each approach.
- Perform a literature survey to identify remedies for the gaps.

Requirements

- Strong understanding of distribution grids, especially fault analysis.
- Knowledge of Power Factory.
- Knowledge of Python for scripting faults.

Literature

- [1] M. M. Saha, J J Izykowski, and E Rosolowski, “Fault location on power networks,” Springer Science & Business Media, 2009