Phase Identification in medium voltage network

Project type:	☒ Semester project	☒ MSc thesis	☒ Internship
Project responsible (email):	hugo.delesalle@zaphiro.ch		

Project description and objectives:
Distribution System Operators (DSOs) can lack accurate information about phase connectivity in secondary substations, which limits their ability to run advanced algorithms such as Distribution System State Estimation (DSSE).   The goal of this project is to develop and evaluate algorithms for **automatic phase identification** in medium-voltage networks using **real PMU measurements**: voltage and current phasors at the primary substation, and current phasors in secondary substations.

Tasks:
• Review existing phase identification methods.   • Develop and implement new or improved algorithms in Python.   • Test and validate the algorithms using real PMU datasets with ground truth.   • Evaluate performance under scenarios with distributed generation.

Required skills:
• Understanding of electrical distribution grids   • Proficiency in Python   • Basic knowledge of DSSE

Other benefits and/or compensation:
Depending on the final project type, scope and deliverables, Zaphiro may consider providing additional adequate compensation.

About Zaphiro:
Zaphiro is an innovative smart grid company based in Lausanne, Switzerland, and Milan, Italy, that was founded in 2017 as a spin-off from EPFL and is backed by well renowned international groups such as ABB and CDP Ventures.   Our product, SynchroGuard, is the first distribution grid monitoring & automation system based on D-PMU (Distribution-Phasor Measurement Unit) technology, specifically designed to easily retrofit distribution substations and integrate with existing control room solutions (e.g., SCADA, DMS). SynchroGuard helps utilities increase grid observability, particularly in presence of high DER penetration, and improve grid resiliency by reducing the impact of blackouts on their consumers.