

FACULTY MENTOR

Ghoudjehbaklou, Hassan

PROJECT TITLE

Locating Oscillation Source, Using PMU Measurements

PROJECT DESCRIPTION

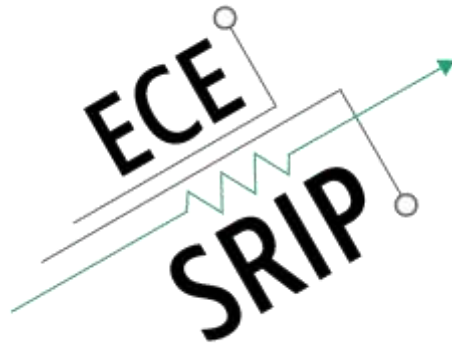
There are many causes for oscillations in the power systems and there are many types of oscillations in power system. The objective of this research project is to review available techniques and select or propose practical methods that work with PMU measurements of power system utilities and implement it in Matlab, Python, or other popular scripting languages. The outcome of the project should identify the direction and magnitude of the forced oscillations in the system, based on historical data of the past oscillation events.

INTERNS NEEDED

1BS Student and 1 MS Student

PREREQUISITES

Students need to be self driven, mathematically competent, experienced in Matlab programming, with good knowledge of power systems, control systems. Some knowledge of signal processing techniques and ECE-180 Dynamic and Stability would be a big plus.



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PROJECT TITLE

Multi-terminal lines impedance estimation

PROJECT DESCRIPTION

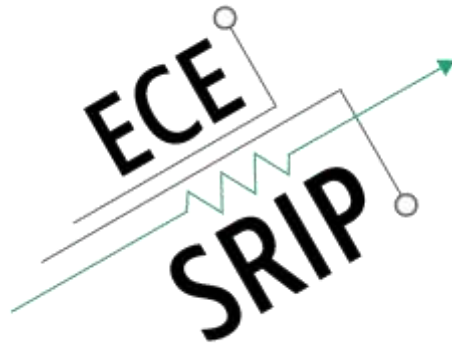
The theory of impedance estimation for two terminal lines are straight forward and many researchers have worked on some variations of it. However, in each utility, several 230 kV lines might have 3-terminal configuration and some utilities might even utilize higher number of terminals for several of their 138 kV or 69 kV lines. The idea of this research project is to estimate line impedance of multi-terminal lines in real-time, using PMU measurements. The initial focus of this project would be 230 kV 3 -terminal lines.

INTERNS NEEDED

1 BS Student and 1MS Student

PREREQUISITES

Some power system knowledge, at the level of ECE121A, proficiency in Matlab programming, and strong background in control system & estimation theory, such as time series ARMA and Kalman filters, are required.



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PROJECT TITLE

Power System Dynamic Network Reduction

PROJECT DESCRIPTION

The objective of this research project is to review available techniques and select or propose practical methods for fast power system dynamic network reduction. When reducing a large network, the definition of Area Frequency and estimation of Area Inertia could play important roles. PMU measurements would be employed for near real-time dynamic equivalences.

INTERNS NEEDED

1 BS Student and 1 MS Student

PREREQUISITES

At a minimum, some Power system dynamic modeling knowledge, at the level of Swing Equations are required. In addition, proficiency in Matlab programming and strong background in control system & estimation theory would be a plus.