

## **Relevant Subnetwork Identification for Topology Error Detection in Power Systems**

**Research name : Eng. Ahmed Hanae Kassem**

**Mechatronics department**



**The development of methods based on representing parts of the electrical network at the bus-section level has brought about new perceptions for topology error identification in modeling power system in real-time. This work addresses the problem of determining the noteworthy portions of the network to be represented in details so as to guarantee satisfactory topological conditions for topology error identification. Starting from the reduced network model, the proposed methodology executes error analysis and defines correlation factors from which suspicious branches are identified. Binary Bat algorithm is then used to enlarge the suspicious branches into a significant subnetwork to be represented in details. This subnetwork contains all uncertain substations and shows the essential properties for topology error identification. Simulation results for the proposed methodology using IEEE 14-bus and 30-bus test systems proved its effectiveness.**