Zabol University
M. Sc. Thesis
on Power Engineering

Subject

Coordinated control of FACTS devices using artificial intelligence in multi-machine power system environments

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Abstract:

The development of power systems and the increasing use of new technologies will lead to complex and unexpected interactions in the power system. Today, artificial intelligence has been widely used in human life, and this has made many things simpler, more accurate and faster, and has led to the mechanization of many things. One of the important applications of artificial intelligence is the use of its different algorithms in the coordinated control of FACTS devices. Noting that power system stabilizers (PSS) are designed to damp the fluctuations of disruptive modes and in large systems they cannot adequately dampen the fluctuations of inter-regional modes, in order to improve the damping of inter-regional modes. In addition to using PSS, FACTS devices can also be used in series and parallel, which have considerable flexibility and controllability. Based on this, in this project, by simulating the multi-machine power system in MATLAB software, and then using PSS along with FACTS tools, to improve the stability of the power system by determining the optimal coefficients of PSS and FACTS by the JS optimization algorithm will be paid.

Keywords: artificial intelligence, coordinated control, FACTS devices, multi-machine power system