World Academy of Science, Engineering and Technology
International Journal of Electrical and Computer Engineering
Vol:8, No:08, 2014

Voltage Problem Location Classification Using Performance of Least Squares Support Vector Machine LS-SVM and Learning Vector Quantization LVQ

Authors : M. Khaled Abduesslam, Mohammed Ali, Basher H. Alsdai, Muhammad Nizam Inayati

Abstract : This paper presents the voltage problem location classification using performance of Least Squares Support Vector Machine (LS-SVM) and Learning Vector Quantization (LVQ) in electrical power system for proper voltage problem location implemented by IEEE 39 bus New-England. The data was collected from the time domain simulation by using Power System Analysis Toolbox (PSAT). Outputs from simulation data such as voltage, phase angle, real power and reactive power were taken as input to estimate voltage stability at particular buses based on Power Transfer Stability Index (PTSI).The simulation data was carried out on the IEEE 39 bus test system by considering load bus increased on the system. To verify of the proposed LS-SVM its performance was compared to Learning Vector Quantization (LVQ). The results showed that LS-SVM is faster and better as compared to LVQ. The results also demonstrated that the LS-SVM was estimated by 0% misclassification whereas LVQ had 7.69% misclassification.

Keywords : IEEE 39 bus, least squares support vector machine, learning vector quantization, voltage collapse
Conference Title : ICEE 2014 : International Conference on Electrical Engineering
Conference Location : Istanbul, Türkiye
Conference Dates : August 18-19, 2014