

## Tracing the real power transfer of individual generators to loads using least squares support vector machine with continuous genetic algorithm

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### ABSTRACT

This paper attempts to trace the real power transfer of individual generators to loads in pool based power system by incorporating the hybridization of Least Squares Support Vector Machine (LS-SVM) with Continuous Genetic Algorithm (CGA)- CGA-LSSVM. The idea is to use CGA to find the optimal values of regularization parameter,  $\gamma$  and Kernel RBF parameter,  $\sigma^2$ , and adapt a supervised learning approach to train the LS-SVM model. The technique that uses proportional sharing principle (PSP) is utilized as a teacher. Based on converged load flow and followed by PSP technique for power tracing procedure, the description of inputs and outputs of the training data are created. The CGA-LSSVM will learn to identify which generators are supplying to which loads. In this paper, the 25-bus equivalent system of southern Malaysia is used to illustrate the effectiveness of the CGA-LSSVM technique compared to that of the PSP technique.

### KEYWORDS:

continuous genetic algorithm (CGA); least squares support vector machine (LS-SVM); proportional sharing principle (PSP); pool based power system

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