

**APPLICATION OF MULTISTAGE ARTIFICIAL IMMUNE SYSTEM FOR
OPTIMAL NETWORK RECONFIGURATION IN DISTRIBUTION SYSTEM**

This project is presented in partial fulfillment for the award of the Bachelor of Electrical
Engineering (Honour).

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ABSTRACT

A power distribution system normally is designed as a weakly meshed network but the system is operated as radial because of the protective problem. To make the system radial, several sectionalizing switches of the network must be opened. In order to determine which switches should be opened is referred to as “Network Reconfiguration Problem”. The loss minimum reconfiguration problem for the open loop radial distribution system is formulated as a combinational optimization problem, and is hard to solve. Many solutions have been proposed to mend the problem.

This project presents a new technique approach using Multistage Artificial Immune System (MAIS) in determining the optimal network reconfiguration for minimizing total losses in a distribution power system. The purpose of using this approach is to find the best possible combinations of network configuration that will reduce the total losses in an electric distribution power system. The proposed technique was tested on the IEEE 69-bus reliability test system and the result shows that the proposed technique is able to determine the optimal network configuration of 69-bus system in order to meet the objectives.

Keywords:

Power Distribution, Loss Minimum Reconfiguration, Optimization Methods, Network Configuration, Multistage Artificial Immune System (MAIS), Clonal Selection.

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