

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Belgaum- 590 010, Karnataka



A PROJECT REPORT

ON

**“INTELLIGENT FAULT IDENTIFICATION SYSTEM FOR
TRANSMISSION LINES USING ARTIFICIAL NEURAL
NETWORK”**

Submitted in partial fulfilment for the award of the degree of

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IN

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By

C Prathiba

1BY09EC015

Mamta Devi

1BY09EC039

Mohanakalyani B N

1BY09EC044

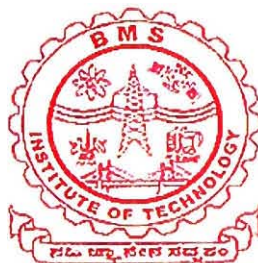
Nagashree K Rao

1BY09EC047

Under the guidance of

Mrs. Seema Singh
Associate. Professor
Dept. of ECE

Mrs. Mamatha K R
Assistant Professor
Dept. of ECE



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

B. M. S. INSTITUTE OF TECHNOLOGY

YELAHANKA, BANGALORE-560064

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ABSTRACT

Transmission and distribution lines are vital links between generating units and consumers. They are exposed to atmosphere, hence chances of occurrence of fault in transmission line is very high, which has to be immediately taken care of in order to minimize damage caused by it.

Any abnormal flow of current in a power system's components is called a fault in the power system. These faults cannot be completely avoided since a portion of these faults also occur due to natural reasons which are way beyond the control of mankind. Hence, it is very important to have a well-coordinated protection system that detects any kind of abnormal flow of current in the power system.

The ANN based methods are used for the identification of faults over the other intelligence based methods because of its robust nature. The prime motive behind this work is that very accurate fault detection could be made, if employed in a power transmission and distribution system, in terms of the amount of money and time that can be saved. The main goal of Fault Identification is to detect a fault in the power system with the highest practically achievable accuracy.

This thesis focuses on detecting the faults on electric power transmission lines. Fault detection has been achieved by using artificial neural networks. Feed forward neural networks have been employed with backpropagation algorithm used for training of the network. Analysis on neural networks with varying number of hidden layers and neurons per hidden layer has been provided to validate the choice of the neural networks in each step. Simulation results have been provided to demonstrate that artificial neural network based methods are efficient in detecting faults on transmission lines and achieve satisfactory performances. Detection of fault is successfully done for single line to ground and double line to line ground for all the three phases.