**LIST OF FIGURES**

|  |  |  |
| --- | --- | --- |
| **Figure No.** | **Name** | **Page No.** |
| 1.1 | Building Blocks of Electric Power System | 2 |
| 1.2 | The studied system with sources at both ends | 5 |
| 2.1 | Classification of Short Circuit faults | 7 |
| 2.2 | Symmetrical Faults | 7 |
| 2.3 | Unsymmetrical Faults | 7 |
| 3.1 | Subsets of Artificial Intelligence | 16 |
| 3.2 | Artificial Neural network | 17 |
| 3.3 | A biological Neuron | 18 |
| 3.4 | Perceptron | 19 |
| 3.5 | Deep Neural Network | 23 |
| 3.6 | Impact of data available on the performance of networks | 24 |
| 3.7 | Recurrent neural network and the unfolding in rime | 25 |
| 4.1 | MATLAB | 27 |
| 4.2 | Simulink Model | 29 |
| 4.3 | Classification breadboard | 30 |
| 4.4 | Training curves fault detection and classification | 30 |
| 4.5 | Training curves for fault location identification | 31 |
| 4.6 | Application of the proposed method in smart grids | 34 |