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| **Title:** | An Unsupervised Protection Scheme for Overhead Transmission Line with Emphasis on Situations During Line and Source Parameter Variation | | |
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| **Abstract:** |  |
| Quick removal of the short circuit faults in a power transmission and distribution system solely depends on an accurate characterization of them. Characterization of short circuit fault demands continuous monitoring of the electrical signals residing with the power transmission lines that change with the operating conditions. Taking the deficiencies as a research challenge, this paper introduces an unsupervised learning framework for fault detection and classification (FDC) based on the capsule neural network. The proposed framework learns from the unlabeled dataset and captures more extra target-oriented attributes. The Gramian angular field (GAF) image representations of the sampled signals are fed as input to the proposed model. The performance of the proposed method is verified in terms of errors due to the source and line parameters variation. Furthermore, to acquire more intuitive insight, a comparison analysis among the existing commensurate methods and the proposed architecture is carried out. The results found from the verification indicates that the proposed method has the ability to provide more than 99% classification accuracy. | |