**Abstract**

Most of the supervised learning task has been carried out using single label classification and solved as binary or multiclass classification problems. The hierarchical relationship among the classes leads to Multi- Label (ML) classification which is learning from a set of instances that are associated with a set of labels. In Tamil language, phonemes fall into different categories according to place and manner of articulation. This motivates the application of multi-label classification methods to classify Tamil phonemes. Experiments are carried out using Binary Relevance (BR) and Label Powerset (LP) and BR’s improvement Classifier Chains (CC) methods with different base classifiers and the results are analysed.