

## A Unique Multi-Class Support Vector Machine Algorithm Using MapReduce

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**Abstract :** With data sizes constantly expanding, and with classical machine learning algorithms that analyze such data requiring larger and larger amounts of computation time and storage space, the need to distribute computation and memory requirements among several computers has become apparent. Although substantial work has been done in developing distributed binary SVM algorithms and multi-class SVM algorithms individually, the field of multi-class distributed SVMs remains largely unexplored. This research seeks to develop an algorithm that implements the Support Vector Machine over a multi-class data set and is efficient in a distributed environment. For this, we recursively choose the best binary split of a set of classes using a greedy technique. Much like the divide and conquer approach. Our algorithm has shown better computation time during the testing phase than the traditional sequential SVM methods (One vs. One, One vs. Rest) and out-performs them as the size of the data set grows. This approach also classifies the data with higher accuracy than the traditional multi-class algorithms.

**Keywords :** distributed algorithm, MapReduce, multi-class, support vector machine

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