**ABSTRACT**

There has been an increase in the application of Multi-dimensional models in domains like bioinformatics, image processing, video and audio processing and text categorization. Multi-dimensional approach has its advantages with regard to predictive accuracy and time taken to build the model. The search for candidate genes of Autism spectrum disorder (ASD) is complicated as it involves significant interactions among mutations in several genes. This work investigates multi- dimensional learning which builds a model to predict ASD related multiple variables simultaneously using varied features. The study explored the different methods of multi- dimensional learning. ASD related gene sequences were analysed using different characteristics and each sequence was represented by a profile of 58 features from three different categories specific to gene, substitution matrix and amino acid. By combining three different problem transformation approaches with three base classifiers and using two algorithm adaptation methods a total of 15 different configurations were constructed. The different configurations were evaluated with multiple measurements including Hamming Loss, Hamming score, Zero One loss, Exact match, Accuracy, training and testing time. The results showed that the problem transformation algorithm Nearest Set replacement together with Naïve Bayes classifier outperformed the other configurations with 93.4 % accuracy and Hamming loss of 0.06, 0.12 Zero one loss.