

A comparison between all the three algorithms used in the above study is as shown below. Based on the accuracy of the models, the model created using two-class neural network has the highest accuracy of 99 % and hence has been selected for deployment. Table III shows that the MNN, TCSVM and MDF models based on results are able to successfully predict the treatment techniques with the MNN model showing superior performance in comparison.

TABLE III. ACCURACY METRIC OF THE THREE CLASSIFICATION MODELS.

Model	Two classes support vector machine	Multiclass decision forest	Multiclass neural network
Accuracy	0.93	0.968	0.99

V. CONCLUSION

In this study, opportunities for machine learning techniques for flexible pavement maintenance in tropical regions have been examined. The aim of this paper was to find the optimal prediction for treatment techniques, classification of machine learning-based models and compare the quality of different machine learning techniques. Classification analysis and three different supervised machine learning algorithms such as two-class support vector machine, multi-class decision jungle, multi-class decision forest, and multi-class neural network, for flexible pavement distress, based on their treatment technique classes have been utilized. This database was collected from various sources by the qualitative surveying from expertise. In general, a neural network achieved a better classification performance with an accuracy score of 0.99. The accuracy score for the decision forest was 0.968 and 0.935 for the two-class support vector machine. The current study demonstrates the suitability of machine-learning methods for rapid identification of treatment technique class for flexible pavement maintenance in certain areas.

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