addition, fusion strategies [23],[24] were also added and made an experimental setup. As a result, experiments carried out by feature-level fusions yield up to 64.00% (see table IV and V), which is competitive results without using many additional computational resources. The comparison is tabulated in Table VI.

TABLE V
COMPARISON OF BEST PERFORMANCES

Methods	#Feature	Acc (%)
CNN1_SVM	384	50.00
CNN2_SVM	384	52.55
Fusion: concat	768	58.50
Fusion: sum	384	51.50
Fusion: Single	384	55.00
Fusion: Multi	384	56.50
Concat_Fusion_PCA	50	64.00
Sum_Fusion_PCA	50	60.50
Single_Fusion_PCA	50	64.00
Multi_Fusion_PCA	50	60.00

TABLE VI
STATE-OF-THE-ART-METHOD COMPARISON

Method	Accuracy (%)
Proposed: Concat Fusion	64.00%
Proposed: Single Fusion	64.00%
Ref [22] CNN1 model	52.63%
Ref [22] CNN2 model	55.97%
Ref [22] CNN3 model	57.96%

IV. CONCLUSION

This paper proposes a technique for automatically classifying MRI slices as normal or abnormal with deep features extraction through designed discriminative CNN models and feature level fusion strategy. This approach combines CNN1 and CNN2 models used for feature extraction, and then we employed serial fusion and fusion operator's strategies. In addition to that, the principal component analysis (PCA) for diminishing the features and classifying MR images, the Support Vector Machine binary classifier, has been used. The experimental results provide a good classification accuracy of 64.00% by utilizing only as low as 50 features for the classifier input. Although the approach was created for only axial T2-weighted images, the same method can reasonably be applied to other types of MR images in the future.

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