

Paper ID:	1571072968
Paper Title:	Integrating Magnetic Resonance Imaging and Deep Learning Networks for Brain Tumor Classification
Authors:	Sasipatcha Hanmanop, Tatpol Jongsiri, Manatsanan Khongtan, Sasithorn Tengjongdee, Chanapa Chaitan, Suejit Pechprasarn and Pichit Boonkrong (Rangsit University, Thailand)
Email:	sasipatcha.h65@rsu.ac.th

Abstract

This study evaluated the performance of MobileNetV2 and ResNet50 deep learning networks for brain tumor detection and classification using MRI scans. The research examined four data splitting ratios: 60/40, 70/30, 80/20, and 90/10, across 8 different scenarios. The classification task focused on four brain tumor categories: glioma, meningioma, pituitary tumors, and non-tumorous cases. The numerical results indicate that MobileNetV2 outperformed ResNet50 in classification efficacy and it demonstrated better CPU time efficiency. Both models maintained high overall classification accuracy, even with minor performance decreases as training dataset sizes increased. Notably, the 70/30 ratio for MobileNetV2 proved sufficiently effective for the given classification task as it demonstrates all performance metrics more than 95% and reasonable computational time. The study emphasizes the importance of effectively classifying brain tumor types for early identification, precise diagnosis, and tailored treatment planning. The promising results suggest that these deep learning models, particularly when optimized, can significantly contribute to improving patient outcomes in brain tumor management.
