Preface

Computer-aided systems when combined with machine learning algorithms often found useful in medical informatics. Such systems may also be employed for classifying malignant tumors. This helps oncologists and radiologists to plan effective treatment strategies. In today's context, Deep Learning has almost outperformed other machine learning techniques, especially in the domain of computer-assisted visualization. Deeper hidden layers may lead to more accurate feature extraction and classification of the target set of tumor images. The present research work has used different datasets to prepare a non-uniform collection of multi-modal tumor images which are not organ-specific. After reviewing the existing literature, research gaps are identified. Tumor classification has been done in two varieties: semi-automated and fully automated. In a semi-automated method, images are pre-processed, segmented, and then features are extracted. Important attributes are selected and classified by using available clinical information as the class variables successively. In the case of a fully automated method, no manual preprocessing, segmentation, feature extraction, and selection are required. Image pixel arrays combined with clinical information are directly fed into the model. Results are evaluated by using different statistical parameters. A new technique has been developed where non-sequential branches of convolutional layers with occasional re-injection of input acts as pre-processor followed by bidirectional recurrent layers. The model performed satisfactorily and expected to contribute significantly to automated tumor prognosis.

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