Next Generation Medical Data Processing in Cloud Using Deep Learning Algorithm

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Abstract

Diseases of the brain, such as tumors and similar disorders of the brain, are a significant health challenge and require early diagnosis for successful treatment. Diseases of the brain are usually diagnosed by someone manually reviewing medical images of an individual's brain using imaging techniques such as MRI or CT, a relatively labor intensive, error-prone, time-consuming, and subjective approach, whereby, ultimately, the accuracy of the diagnosis depends greatly on the training, experience, and expertise of individual radiologists. To address this problem, we put forward the idea of using a deep learning-based framework that uses the RexNet-150 convolutional neural network to automatically classify diseases of the brain. The deep learning-based system can extract important characteristics from a medical image of an individual's brain and classify medical images into multiple categories of the disease with high accuracy. Analysis of dataset es and datasets visualization techniques are performed to provide interpretability, and optimization strategies, including early stopping and F1-score evaluations, are used to provide the most robust model possible. Results of preliminary experiments show that the proposed deep-learning framework based on the RexNet-150 architecture can assist medical professionals in the timely and accurate diagnosis of brain disorders, possibly leading to improved patient outcomes.

Keywords

Brain Disease Classification, Deep Learning, RexNet-150, Medical Image Analysis.