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Chapter 5 - Brain tumor detection from magnetic resonance imaging images using shallow convolutional neural network

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Abstract

Brain tumors are collections of malignant cells that have grown uncontrollably in the brain. A magnetic resonance imaging (MRI) scan is a standard diagnostic tool for detecting brain tumors. MRI scans of the brain can reveal information on the development of aberrant tissue. Some studies have used machine learning and deep learning to detect brain tumors. Using these algorithms on MRI scans allows us for rapid brain tumor prediction, which in turn enables quick delivery of effective treatment. Radiologists can also benefit from this forecast because it facilitates rapid decision-making. In this chapter, a deep transfer learning-based shallow convolutional neural network (CNN) model has been proposed to detect brain tumors by applying it to MRI images. The performance of a shallow CNN for detecting a brain tumor is compared and contrasted using the accuracy and loss with varying batch sizes and activation functions.