Enhancing Multi-Cancer Classification with VGG and EfficientNet : Evaluating CNN Performance for Automated Detection in Medical Imaging

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Abstract

We propose a robust cancer classification system to predict the presence or absence of several different types of cancer including cervical, brain, kidney, lymphoma, lung, colon, oral and breast. Convolutional Neural Networks (CNN) are used to develop an approach that compares VGG and EfficientNet architectures in diverse medical imaging datasets through their performance. In extensive experimentation of hyperparameter optimization and training techniques, performance is shown to improve significantly over all classification accuracy, precision and recall and computations. To make practical integration to clinical workflows, the system is deployed via a Flask based web application. The methodology leverages advanced deep learning techniques to present a reliable and automated tool to help improve early cancer detection and other diagnostic outcomes.

Keywords:

Convolutional Neural Networks, VGG, EfficientNet, Medical imaging, Cancer classification, Multi-class classification, Automated diagnosis, Deep learning, Flask deployment.