Constructing a Neural Network To Classify Lung Cancer

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Lung cancer is the leading cause of cancer death, accounting for nearly 25% of all cancer-related deaths. Lung cancer kills more people annually than colon, prostate, and breast cancer combined. The work conducted by the researcher is of utmost importance to modern-day applications by creating a framework for what AI-aided diagnosing could look like. Firstly, the images were acquired, allowing the bulk of the work to be done. The first part of the code concerns the normalization of the data. The images were in many different sizes and could have a little bit of color. This form of images is not conducive to machine learning applications, as it serves to confuse the computer more. To counteract this, the images were normalized to a 200px by 200px size, and put through a grayscale filter that eliminated any outstanding non-black/white colors. Now, a four layer convolutional network was constructed. This essentially is a filter of specified size that passes over an image and looks for outstanding features. These features are then compiled by a max pooling layer that simply picks the ‘highest’ value feature of the set, and the process continues until the specified layer amount has been reached. After testing the model on an unseen dataset, the researcher was able to get roughly 75-85 percent accuracy. To further test the model, it was put on an alternating dataset, of which it was able to get a 90 percent accuracy. This data shows how computer models could be used in future applications to assist radiologists in diagnosing lung cancer cases, and could possibly be expanded to fit all types of cancer.

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