

Stages Classification on Cervical Cell Images: A Comparative Study

Abstract

The cancer of the cervix is called cervical cancer. An element of a woman's womb is the cervix. Among other diseases that affect women, it came in at number four on the list. According to the World Health Organization's cancer report, there are currently roughly 10 million new cases of cancer recorded year, and by 2020, that number will have doubled to 20 million. With the right screening and awareness campaign, this number can be cut in half. A quarter of cancers are said to be brought on by infections, including hepatitis B, which is connected to liver cancer, and the human papillomavirus, which is connected to cervix cancer. Deep learning techniques have been successfully applied to a wide range of image classification tasks, and have the potential to be highly effective for cervical cell image classification as well. In this project, we propose to use a deep learning-based approach to classify cervical cell images into different categories, such as normal cells, abnormal cells, or cancerous cells. To achieve this goal, we will first pre-process the images to prepare them for analysis, and then extract relevant features. These features will be used to train a deep learning model, which will be fine-tuned and optimized for the specific task of cervical cell classification. In this project, transfer learning method will be by using pre-trained classifier such as ResNet-50, GoogLeNet and EfficientNet-b0. We will evaluate the performance of the model using metrics such as accuracy and compare our results to those obtained using traditional machine learning approaches. From this project, the highest accuracy achieved are 51.49%. The goal to develop a pre-trained classifier transfer learning can be used to accurately and reliably classify cervical cell images in a clinical setting are achieved.

Keywords

Cancer; Cell; Cervical; Classify; Image