

ABSTRACT

Among various kinds of cancer, ovarian cancer is the most widespread gynaecologic malignancy. Cervical cancer stands out as a prevalent and fatal disease affecting women globally. Despite its severity, early detection offers a promising path to successful treatment. This research proposes the utilization of deep residual learning-based networks for cervical cancer screening, aiming to improve the accuracy and efficiency of early detection. Two prominent algorithms, ResNet and Inception v3, were employed and tailored to analyze colposcopy cervical images. The models underwent rigorous training and testing using a comprehensive dataset to ensure robust performance. The experimental findings demonstrated that both ResNet and Inception v3-based networks achieved commendable results, showcasing nearly equivalent accuracy rates. These advanced neural network architectures leveraged intricate activation functions to enhance the discriminative features from the cervical images, capturing subtle nuances that are indicative of precancerous changes. The incorporation of deep residual learning allowed the models to learn from the complex patterns within the images, enabling them to distinguish between normal and abnormal cervical tissues with remarkable precision. Moreover, the study emphasized the significance of leveraging state-of-the-art algorithms in medical image analysis, illustrating their potential to revolutionize cervical cancer screening processes. By harnessing the power of deep learning, this research not only contributes to the advancement of early detection methods but also underscores the importance of integrating technology-driven solutions in healthcare. The promising outcomes pave the way for future endeavors in developing AI-driven diagnostic tools that could significantly reduce the mortality rate associated with cervical cancer by facilitating timely interventions.