Early detection of fetal brain abnormalities in MRI images using Convolutional Neural Networks

Abstract

In recent days, the fetal brain abnormalities are considered as a major problem. To overcome this problem the detection of fetal brain abnormalities in MRI images using Convolutional Neural Network (CNN) is proposed in this paper. Early detection of fetal brain abnormalities can help to enhance the planning and quality of diagnosis and treatment. Most brain abnormalities are present in the first trimester, but only a few are detected so early. But the majority of brain abnormalities remain undiagnosed until the mid trimester. CNN models are well-suited for detecting anomalies at the early stage in fetal brain imaging. These method uses CNN models in medical image classification and segmentation. These models can analyse the images to detect anomalies like ventriculomegaly, absent corpus callosum and cerebellar abnormalities that are not visible to human eye. The custom CNN or pretrained models are used as datasets for comparing the MRI images. The output will be a comparison between normal vs abnormal, so that abnormalities can be detected accurately. The main contribution of this paper is to detect the fetal brain abnormalities in early stage, before the fetal is born. It has shown promising results by accurately detecting the fetal brain anomaly at the early stage. The use of CNN offers the potential for faster and more accurate detection compared to traditional methods, leading to better prenatal care and improved outcomes for both mother and child.