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Effect of Different Modalities of Facial Images on ASD Diagnosis using Deep Learning-Based Neural Network

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Abstract

Author keywords

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Abstract

This paper aims to investigate the effectiveness of different modalities of facial images for diagnosing Autism Spectrum Disorder (ASD) using deep learning-based neural networks. The motivation behind this study is the potential of advanced technologies to aid in accurately diagnosing ASD. The research revolves around the need to explore the performance of deep learning models on different modalities of facial images and to identify the challenges and potential solutions associated with each modality. The methodology involves training and testing the models on the respective datasets and analysing their accuracy and performance. ResNet50V2 achieved a 100% accuracy on the 2D test dataset, while Xception achieved an accuracy of 93.75% on the 3D test set. The detection accuracy suggests that neural networks-based deep learning methods have the potential to diagnose ASD using facial images accurately. However, the models perform better on 2D data, highlighting the need for additional training on larger 3D datasets to improve accuracy on 3D images. The study contributes to the field by

providing insights into the performance of different modalities of facial images, emphasizing the need for robust datasets, and suggesting future research directions to enhance the accuracy and efficiency of ASD diagnosis using deep learning techniques.

Author keywords

Autism Spectrum Disorder; Deep Learning; depth image; explainable AI; facial image

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