

Paper Review 04

Performance Analysis of Glaucoma Detection Using Deep Learning Models

Md. Alahi Almin Tansen (190321028)

Department of Computer Science and Engineering, European
University of Bangladesh

CSE – 459: Internet of Things

Date: 31-03-2023

Purpose of This Research

This research is done to analyze the performance of three deep learning architectures includes two CNN models and the Xception model, in glaucoma detection. The study used public datasets containing thousand plus images. The outcome of this research demonstrate the potential of deep learning in detecting glaucoma for early prevention of blindness.

Proposed System

This paper proposes a system for detecting glaucoma. The study involved data collection, dataset preprocessing, and augmentation, which included generating augmentations, resizing, creating numpy arrays, and labeling. Then used three different CNN models: Max pooling layer, Average Pooling Layer, and Xception Model. The performance of the models was then measured carefully for accurately detecting and diagnosing glaucoma using deep learning techniques.

Architecture

The study proposed three different Architecture for detecting glaucoma, Max Pooling 2D, and Average Pooling 2D layers & Xception model that replaced the standard Inception Architectures with depthwise divisible convolutions.

Max Pooling layer authors used three Relu activation and at the end to get output Sigmoid activation is used.

In Average Pooling layer authors used similar approaches as Max Pooling layer.

In Xception model authors used their trainable layer on top of first base layer which is being frozen for this research. They used images of size 256x256 .For optimization Adam is used and at the end Softmax activation is used in output layer.

All those method used by authors to get the best possible result to detect glaucoma accurately.

Experimental Procedure

In training authors used a several number of epochs where 21 number get the result that include each of the models to compare the best. This shows the percentage accuracy of Xception get the best result compare to others two which is 97.63% at 18 epoch. Authors also did several experiment at the end Xception get the best result.

In validation authors get the best result of 98.11% accuracy in Xception model. Confusion matrix also observe on Xception model which also get a good result.

Future Plan

The authors get the best result in Xception model compared to others two model. In future they planned to work with wider range of data to compare with more powerful models.

References

1. [Performance Analysis of Glaucoma Detection Using Deep Learning Models by Nazmus Shakib Shadin, Silvia Sanjana, Sovon Chakraborty, Nusrat Sharmin](#)