FINAL YEAR PROJECT REPORT

AUTOMATIC DETECTION OF DIABETIC RETINOPATHY

In fulfillment of the requirement
For degree of
BS (COMPUTER SCIENCES)

By

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SUPERVISED

BY
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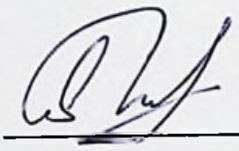
BAHRIA UNIVERSITY (KARACHI CAMPUS)

SPRING-2025

DECLARATION

We declare that this project report is based on our original work except for citations and quotations, which have been duly acknowledged. We also declare that it has not been previously and concurrently submitted for any other degree or award at Bahria University or other institutions.

Signature: 

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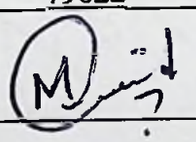
Signature: 

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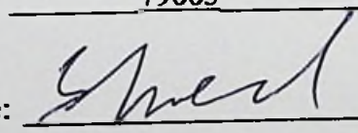
Signature: 

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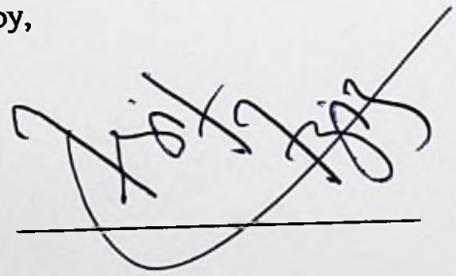
APPROVAL FOR SUBMISSION

We certify that this project report entitled **"AUTOMATIC DETECTION OF DIABETIC RETINOPATHY"** was prepared by **MUHAMMAD MOHID SAJID , SAHEAL ATTA & SHOAIB AHMED** has met the required standard for submission in partial fulfilment of the requirements for the award of Bachelor of **COMPUTER SCIENCE** at Bahria University.

Approved by,



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ACKNOWLEDGEMENTS

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AUTOMATIC DETECTION OF DR

ABSTRACT

Diabetic retinopathy (DR) is the leading reasons for people losing their sight across the world, particularly for those suffering from diabetes. Traditional diagnosis processes are slow and rely heavily on human interaction which can lead to errors. Advances in technology have made it possible to develop systems that automate processes, much like the one this project aims to create. Through great research in neuroimaging data processing, CNNs (Convolutional Neural Networks) can now scan retinal images and categorize the extent of DR damage [4].

This project will first integrate both AI image Processing and deep learning techniques to achieve maximum accuracy when developing algorithms. After refining and testing them extensively, Such evaluation with performance indicators will be used for the final model as accuracy, sensitivity, specificity, and many more, by taking advantage of the vast repositories available online. Some of the datasets provided online include the EyePACS database on Kaggle and Messidor [2].

In the most effective and optimal use of this DR detection project, less populated regions lacking ophthalmologists will have improved accuracy of diabetic patient treatment prior to them reaching a stage needing eyesight surgery. With this non-invasive system, patients will be able to receive timely treatment, greatly reducing the risk of blindness. On a larger scope, abundant possibilities for deeper research will be provided.

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