FINAL YEAR PROJECT REPORT

HEART DISEASE PREDICTION & AI CHATBOT

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

By

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SUPERVISED

BY
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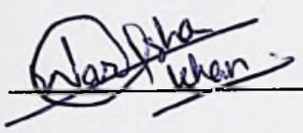
BAHRIA UNIVERSITY (KARACHI CAMPUS)

FALL-2024

DECLARATION

We hereby 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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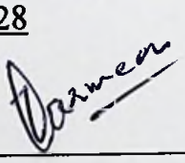
Signature : 

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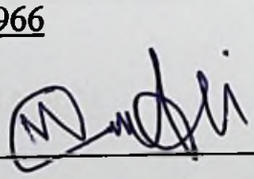
Signature : 

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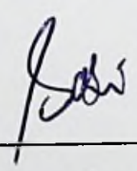
APPROVAL FOR SUBMISSION

We certify that this project report entitled **"HEART DISEASE PREDICTION & AI CHATBOT"** was prepared by **WARISHA KHAN, ZARMEEN SOHAIL, and MUZAMIL ALI** 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,

Signature : 

Supervisor : Sir Saghir Ahmed

Date : 10-12-2024

Specially dedicated to

my beloved grandmother, mother and father

Warisha Khan

my beloved grandmother, mother and father

Zarmeen Sohail

my beloved grandmother, mother and father

Muzamil Ali

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We would like to thank everyone who had contributed to the successful completion of this project. We would like to express my gratitude to my research supervisor, Sir Saghir Ahmed for her invaluable advice, guidance and his enormous patience throughout the development of the research.

In addition, we would also like to express my gratitude to our loving parent and friends who had helped and given us encouragement.

HEART DISEASE PREDICTION & AI CHATBOT

ABSTRACT

The prevalence of heart diseases is increasing at an alarming rate, underscoring the critical need for accurate and timely diagnosis. Predicting the likelihood of heart disease is a challenging task that demands precision and efficiency. This study focuses on identifying patients at higher risk of developing heart diseases based on various medical attributes. To address this, we developed a Heart Disease Prediction System capable of determining whether a patient is likely to be diagnosed with heart disease by analyzing their medical history. The system leverages multiple machine learning algorithms, including Convolutional Neural Networks (CNN) and XGBoost to predict and classify heart disease cases. The proposed model emphasizes the accurate prediction of four major types of heart diseases: Coronary Heart Disease, Heart Failure, Peripheral Artery Disease, and Heart Attack. CNN was employed for ECG signal processing, and XGBoost for achieving notable accuracy, powered an AI Chatbot designed to assist users with queries related to heart health. The performance of the model demonstrated promising results, successfully identifying the likelihood of heart disease with high accuracy and reliability. By reducing the complexities associated with diagnosis, this system significantly alleviates the burden on healthcare providers, enhances medical care quality, and minimizes associated costs. This project has provided valuable insights into the application of advanced technologies for predicting heart disease and improving patient outcomes.

CHAPTERS