

LEVERAGING MACHINE LEARNING FOR EARLY PREDICTION OF LIFESTYLE DISEASES: A DATA- DRIVEN APPROACH

A PROJECT REPORT

Submitted by,

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in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE AND ENGINEERING (BLOCKCHAIN)

Under the guidance of,

Mr. PAKRUDDIN .B

Assistant Professor, School of CSE



PRESIDENCY UNIVERSITY, BENGALURU

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PRESIDENCY UNIVERSITY

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that the Project report “**LEVERAGING MACHINE LEARNING FOR EARLY PREDICTION OF LIFESTYLE DISEASES: A DATA-DRIVEN APPROACH**” being submitted by “**SUKRUTHI RAO, S HARISH, R SAISARAN**” bearing roll number “**20201CBC0004, 20201CBC0008, 20201CBC0024**” in partial fulfillment of requirement for the award of degree of Bachelor of Technology in Computer Science and Engineering (Blockchain) is a bonafide work carried out under my supervision.



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DECLARATION

We hereby declare that the work, which is being presented in the project report entitled **“LEVERAGING MACHINE LEARNING FOR EARLY PREDICTION OF LIFESTYLE DISEASES: A DATA-DRIVEN APPROACH”** in partial fulfilment for the award of Degree of **Bachelor of Technology in Computer Science and Engineering (Blockchain)**, is a record of our own investigations carried under the guidance of **Mr. Pakruddin B, Assistant Professor, School of Computer Science Engineering, Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

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ABSTRACT

This innovative approach addresses global challenges posed by lifestyle-related illnesses, focusing on diabetes, heart diseases, and Parkinson's. Current healthcare approaches relying on retrospective data analysis prove limited in managing these conditions. Therefore, the study adopts a data-centric methodology, utilizing machine learning to analyze diverse patient datasets, encompassing demographic information, lifestyle preferences, genetic predispositions, and biomarkers.

The traditional healthcare system's reliance on retrospective data analysis impedes early identification and proactive management of lifestyle diseases. The reactive nature of these methods leads to interventions only after symptoms emerge, underscoring the need for a shift to predictive and preventive models. The project aims to overcome these limitations by employing machine learning to discern patterns in datasets, enabling early detection and personalized interventions.

The study involves the development of predictive models using machine learning, including support vector machines and logistic regression with targeted accuracy enhancements. Techniques like feature engineering are explored to improve interpretability and integrate domain knowledge. The ultimate goal is to contribute to an efficient early prediction system, enabling healthcare professionals to identify at-risk individuals before symptoms emerge. This proactive approach has the potential to revolutionize healthcare in addressing the impact of lifestyle diseases on public health systems, with targeted accuracy rates of 77.27% for diabetes, 85.12% for heart diseases, and 87.17% for Parkinson's.

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