St.Xavier's College(Autonomous), Kolkata

Predictive Modelling for Coronary Heart Disease Risk Assessment: Empowering Healthcare Strategies

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Session - **2021-24**

Semester - **6**

Project Synopsis

In an era where heart disease stands as one of the foremost causes of premature mortality worldwide, claiming nearly 18 million lives in 2019 *(src: WHO fact sheet, 2021)*, this work aims to identify individuals at high risk of coronary heart disease, a challenge especially pronounced in low- and middle-income countries. Utilizing a dataset comprising 3,657 records, this study employs *logistic regression* and intricately examines impact of -

- ***demographic factors*** such as age, sex,
- ***behavioural factors*** like smoking status, daily cigarette consumption
- ***medical history*** (including stroke, hypertension, and diabetes), alongside
- ***current medical records*** such as cholesterol levels, blood pressure, body mass index (BMI), heart rate, and glucose levels on the potential risk of CHD.

And extract the most prominent factors for CVD from this analysis.This statistical method is particularly suited for binary outcomes, such as the presence or absence of CVD risk, allowing for the calculation of risk probabilities through a linear combination of above-mentioned predictors. The logistic regression model's coefficients are estimated using maximum likelihood estimation (MLE) and then fine-tuned for optimal prediction accuracy.

This initiative does not only aim to predict; it strives to empower healthcare professionals and policymakers with a tool for early identification of individuals at risk, facilitating targeted preventive measures by improving the accuracy of prediction. It underscores the pivotal role of addressing modifiable risk factors and enhancing preventive healthcare strategies, ultimately improving health outcomes for those susceptible to several cardiac diseases.

Student Signature