

Title: Predicting Diabetes in Women through Machine Learning

Author: Rakib Hasan; Muksitul Islam; Md. Mamun Hosen; Md Abdullah-Al-Kafi; Niranchana Radhakrishnan

Abstract: Diabetes, a predominant non-communicable illness, presents a significant worldwide open well-being concern with rising incidence rates and noteworthy mortality around the world. Timely determination is essential in moderating the weakening impacts of diabetes. This study utilized the Pima Indian Diabetes Dataset to form a predictive model for diabetes discovery through the application of machine learning strategies. In-depth investigation is done, carefully comparing Logistic Regression (LR), K-Nearest Neighbors (KNN), Decision Trees (DT), Random Forests (RF), Ada Boosting (AB), and Gradient Boosting (GB). In terms of accuracy, precision, recall, and the F1 score, among other vital assessment measurements, they reliably and powerfully illustrate Random Forest's extraordinary performance, and it is clearly the most excellent choice for diabetes forecasting, according to this study, giving medical experts an important instrument for exact, convenient, and timely identification of this common and serious sickness.

Keywords: Healthcare, Predictive modeling, Diabetes prediction, Machine learning, Women

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