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Application of artificial intelligence algorithms for diabetes prediction in Libya: A comprehensive study

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This study presents the pioneering implementation of artificial intelligence (AI) methodologies for the prediction of diabetes in Libya, utilizing a limited database. With the scarcity of available diabetes data in Libya, the primary objective of this research is to explore the potential of AI algorithms in forecasting diabetes outcomes based on fasting blood sugar (FBS) levels, HbA1c levels, and additional factors including high blood pressure, heart diseases, age, and gender. The dataset employed in this study encompasses a comprehensive array of features associated with diabetes and its related health conditions. To construct predictive models, a diverse set of AI algorithms, namely logistic regression, decision trees, random forests, support vector machines (SVM), and neural networks, were utilized. These algorithms were trained and evaluated using appropriate performance metrics such as accuracy, precision, recall, F1 score, and the area under the receiver operating characteristic (ROC) curve. Most of the applied algorithms demonstrated significant accuracy in predicting diabetes, thereby holding the potential to enhance healthcare outcomes for the Libyan population.

Biography

Esam Ali is affiliated to Department of Physics, Faculty of Science, University of Benghazi, Benghazi 9480, Libya. He is a recipient of many awards and grants for his valuable contributions and discoveries in major area of diabetes research. His international experience includes various programs, contributions and participation in different countries for diverse fields of study. His research interests reflect in his wide range of publications in various national and international journals.