Glucose Monitoring System Using Machine Learning Algorithms

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Abstract : The bio-medical analysis is an indispensable procedure for identifying health-related diseases like diabetes. Monitoring the glucose level in our body regularly helps us identify hyperglycemia and hypoglycemia, which can cause severe medical problems like nerve damage or kidney diseases. This paper presents a method for predicting the glucose concentration in blood samples using image processing and machine learning algorithms. The glucose solution is prepared by the glucose oxidase (GOD) and peroxidase (POD) method. An experimental database is generated based on the colorimetric technique. The image of the glucose solution is captured by the raspberry pi camera and analyzed using image processing by extracting the RGB, HSV, LUX color space values. Regression algorithms like multiple linear regression, decision tree, RandomForest, and XGBoost were used to predict the unknown glucose concentration. The multiple linear regression algorithm predicts the results with 97% accuracy. The image processing and machine learning-based approach reduce the hardware complexities of existing platforms.

Keywords : artificial intelligence glucose detection, glucose oxidase, peroxidase, image processing, machine learning
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