The Sweet Spot: Non-Invasive Blood Glucose Monitoring Using Spectroscopy and Machine Learning

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The purpose of this research was to investigate the effectiveness of non-invasive glucose monitoring using spectroscopy and machine learning. The spectral measurements were performed on a participant using a non-invasive spectroscopic technique with the AS7265X device. The data collected was then used to develop machine learning algorithms to predict glucose levels. The procedure involved the use of the AS7265X device to measure the absorbance spectra of skin tissue at different wavelengths, and then a regression model was built to predict glucose levels from these spectra. The model was trained and validated using a subset of the data, and then tested on the remaining data. The accuracy of the model was evaluated using standard regression evaluation metrics. The data collected showed that the spectroscopic technique was able to predict glucose levels in the participants. The RMSE, R^2 and other metrics of machine learning model developed for this purpose indicated its predictive power. This highlighted the potential of non-invasive spectroscopy and machine learning as promising tool for glucose monitoring. This could have far-reaching implications for individuals with diabetes who currently rely on invasive methods for glucose measurement. In conclusion, the findings of this study suggest that non-invasive glucose monitoring using spectroscopy and machine learning can provide convenient alternative to current invasive methods. This research has the potential to lead to the development of new/improved non-invasive glucose monitoring devices, which could have significant social and health impacts on the management of diabetes.

Awards Won: