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NIT Rourkela develops AI-powered model to improve blood sugar predictions for diabetes management

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It could help patients and doctors make better treatment decisions and integrate with smart health devices, including mobile phones



A research team at National Institute of Technology (NIT) Rourkela has developed a new artificial intelligence (AI)-driven approach to improve blood sugar predictions for people with diabetes.

The research presents a machine-learning model that enhances the accuracy of blood glucose level prediction, helping individuals and healthcare providers make better and personalised treatment decisions.

Managing diabetes can be difficult due to a lack of specialists, unequal access to healthcare, low medication adherence, and poor self-care. These challenges make it harder for patients to keep their blood sugar levels under control, increasing the risk of serious health problems.

New digital health technologies, especially those that use Artificial Intelligence (AI), offer a way to improve diabetes care and reduce costs. Machine learning (ML) has been used in many areas of diabetes research, from basic studies to predictive tools that can help doctors and patients make better and timely decisions. However, AI learning models, especially predictive AI models, have a few drawbacks. Many of these models work like a “black box,” meaning their predictions are difficult to understand. This lack of transparency makes it hard for doctors and patients to fully trust them. Furthermore, traditional models, such as statistical forecasting methods or basic neural networks, often fail to recognise long-term glucose fluctuations and require complex fine-tuning.

The researchers at NIT Rourkela focused on improving glucose forecasting using deep learning techniques. Their approach incorporates a specialised AI model that learns from past blood sugar trends and predicts future levels more accurately than existing methods. Unlike traditional forecasting models, which often struggle with long-term trends and require manual adjustments, this model processes glucose data automatically, identifying key patterns and making precise predictions.

In the long run, this AI-driven approach has the potential to enhance diabetes care through various applications. It could be integrated into smart insulin pumps to automate insulin delivery, incorporated into mobile health apps for real-time glucose tracking, or used in clinical settings to support doctors in making personalised treatment plans.

Currently, the researchers are planning on testing the developed technology through extensive clinical trials at hospitals, in collaboration with senior diabetologists in Odisha.