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Biosensor Optimization for Real-Time Virus Detection Using Neural Networks in IoT Systems

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Abstract:

The integration of biosensors and Internet of Things (IoT) technologies has revolutionized real-time virus detection, offering new capabilities for rapid diagnostics in healthcare settings. This study explores the optimization of biosensor systems for virus detection through the use of neural networks in IoT environments. By applying deep learning techniques such as Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs) to biosensor data, the research aims to enhance the sensitivity and accuracy of virus detection systems. The IoT framework enables continuous monitoring and data collection from biosensors embedded in wearable devices, air quality monitors, and diagnostic tools. The optimized neural network models process large volumes of real-time data to identify viral infections at an early stage, even in asymptomatic individuals. Experimental results demonstrate that the proposed approach significantly improves detection accuracy, reduces false positives, and accelerates the response time for virus outbreaks. This study offers a promising solution for efficient, scalable, and non-invasive virus detection, contributing to global public health initiatives.

Keywords:

Biosensor optimization, virus detection, neural networks, IoT systems, real-time monitoring, healthcare diagnostics.

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