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Biosensor-Based Virus Detection Optimization Using Machine Learning and IoT Network Algorithms

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Abstract:

The integration of biosensors with IoT networks and machine learning algorithms offers a promising solution for real-time virus detection, particularly in the context of public health monitoring. This study explores the optimization of virus detection systems using biosensors that are connected through IoT networks, coupled with machine learning techniques to enhance diagnostic accuracy and response time. The research focuses on leveraging advanced biosensor technologies for detecting viral biomarkers and transmitting real-time data via IoT networks to centralized processing systems. Machine learning algorithms, including supervised learning and deep learning techniques, are utilized to analyze the sensor data, classify virus-related patterns, and predict outbreaks. The optimization process involves improving the sensitivity and specificity of virus detection, enhancing system reliability, and reducing false positives/negatives. The study demonstrates how the combination of IoT, biosensors, and machine learning can provide an efficient, scalable solution for timely virus detection, crucial for controlling epidemics and ensuring public health safety.

Keywords:

Biosensors, virus detection, machine learning, IoT networks, optimization, public health.

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