

Optimization of Biosensor Technologies for Virus Detection Using Neural Networks and IoT Solutions

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Abstract:

Rapid and accurate virus detection is crucial for mitigating public health risks, especially in densely populated smart environments. This research proposes an integrated framework that optimizes biosensor technologies using neural networks and IoT-based solutions to enhance real-time virus detection capabilities. Biosensors are embedded in IoT infrastructures to continuously monitor biological signals, environmental parameters, and pathogen presence. Advanced neural network models—including convolutional and recurrent neural networks—are deployed to process biosensor data, identify viral signatures, and reduce detection latency. The system's performance is further enhanced through adaptive calibration algorithms that maintain sensor accuracy under varying environmental conditions. Results demonstrate high detection accuracy, minimal false positives, and robust real-time response, making this framework suitable for deployment in smart healthcare and urban surveillance systems.

Keywords:

Biosensors, virus detection, neural networks, IoT solutions, smart healthcare, real-time monitoring.

REQUEST FOR FULL TEXT

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