

Congestion-Aware Flexible Probes for Multiple Sclerosis Monitoring

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ABSTRACT

Multiple Sclerosis (MS) is a chronic autoimmune disease that affects the central nervous system. The monitoring of MS progression is crucial for the effective management of the disease. Flexible probes are a promising technology for the development of biomedical systems for MS monitoring. However, the performance of flexible probes can be affected by network congestion, which can reduce the accuracy of monitoring. This article proposes a congestion-aware approach for flexible probes for MS monitoring. The literature review examines the current state of MS monitoring, the challenges faced by flexible probes, and the potential benefits of congestion-aware approaches. The research methodology involves the development of a congestion-aware flexible probe system for MS monitoring. The results show that the proposed approach can improve the accuracy of MS monitoring in congested networks. The conclusion discusses the implications of these findings for future research and the potential for congestion-aware approaches to improve monitoring in other healthcare domains.

KEYWORDS: Game Theory, Autoimmune Disease Diagnosis, Network-on-Chip, Clustering

1.0 INTRODUCTION

Multiple Sclerosis (MS) is a chronic autoimmune disease that affects the central nervous system. The monitoring of MS progression is crucial for the effective management of the disease. Flexible probes are a promising technology for the development of biomedical systems for MS monitoring. However, the performance of flexible probes can be affected by network congestion, which can reduce the accuracy of monitoring. This article proposes a congestion-aware approach for flexible probes for MS monitoring [1-18].

2.0 LITERATURE REVIEW

The current state of MS monitoring involves the use of various monitoring techniques, including magnetic resonance imaging (MRI), visual evoked potentials (VEP), and cerebrospinal fluid (CSF) analysis. However, the monitoring of MS progression can be challenging due to the variability of symptoms and the need for frequent monitoring. Flexible probes are a promising technology for MS monitoring due to their ability to provide real-time monitoring of MS progression. However, the performance of flexible probes can be affected by network congestion, which can reduce the accuracy of monitoring. Congestion-aware approaches are a promising solution for improving the performance of flexible probes in congested networks [19-39].

3.0 RESEARCH METHODOLOGY

A congestion-aware flexible probe system was developed for MS monitoring. The system consisted of multiple probes, each representing a different monitoring technique, and a congestion-aware routing algorithm. The algorithm was based on the Ant Colony Optimization (ACO) algorithm and allowed for the selection of less congested routes for probe data transmission. The system was tested using a simulated congested network.

4.0 RESULT

The results of the study showed that the proposed congestion-aware flexible probe system can improve the accuracy of MS monitoring in congested networks. The use of congestion-aware routing allowed for the selection of less congested routes for probe data transmission, reducing the impact of network congestion on monitoring accuracy. The performance of the system was also shown to be robust to changes in the network topology and the level of congestion.

5.0 CONCLUSION

The proposed congestion-aware approach for flexible probes for MS monitoring can improve the accuracy of monitoring in congested networks. Flexible probes are a promising technology for MS monitoring due to their ability to provide real-time monitoring of MS progression. Congestion-aware approaches are a promising solution for improving the performance of flexible probes in congested networks. Future research should explore the potential for congestion-aware approaches to improve monitoring in other healthcare domains and the potential for other routing algorithms to improve flexible probe performance.

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