Game Theory-based Approach for Autoimmune Disease Diagnosis using Network-on-Chip

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ABSTRACT

Autoimmune diseases are a group of disorders that arise when the immune system attacks the body's own cells. The diagnosis of autoimmune diseases often involves complex and time-consuming processes that require the integration of multiple sources of information. Network-on-Chip (NoC) is a promising technology for the development of biomedical systems. Game theory provides a framework for modeling decision-making processes and has been used to improve the efficiency and accuracy of diagnosis. However, the use of game theory in the context of NoC for autoimmune disease diagnosis has not been explored. This article proposes a game theory-based approach for autoimmune disease diagnosis using NoC. The literature review examines the current state of autoimmune disease diagnosis, the challenges faced by NoC, and the potential benefits of game theory. The research methodology involves the development of a game theory-based approach for autoimmune disease diagnosis using NoC. The results show that the proposed approach can improve the efficiency and accuracy of autoimmune disease diagnosis. The conclusion discusses the implications of these findings for future research and the potential for game theory-based approaches to improve diagnosis in other healthcare domains.

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

1.0 INTRODUCTION

Autoimmune diseases are a group of disorders that arise when the immune system attacks the body's own cells. The diagnosis of autoimmune diseases often involves complex and time-consuming processes that require the integration of multiple sources of information. Network-on-Chip (NoC) is a promising technology for the development of biomedical systems. Game theory provides a framework for modeling decision-making processes and has been used to improve the efficiency and accuracy of diagnosis. However, the use of game theory in the context of NoC for autoimmune disease diagnosis has not been explored. This article proposes a game theory-based approach for autoimmune disease diagnosis using NoC [1-18].

2.0 LITERATURE REVIEW

The current state of autoimmune disease diagnosis involves the use of various diagnostic tools, including medical history, laboratory tests, and imaging studies. However, the process of autoimmune disease diagnosis can be challenging due to the complexity of the diseases and the need for the integration of multiple sources of information. NoC is a promising technology for the development of biomedical systems due to its scalability and flexibility. However, the performance of NoC can be affected by dynamic changes in the environment, such as changes in the availability of data sources or changes in the distribution of the disease. Game theory provides a framework for modeling decision-making processes and has been used to improve the efficiency and accuracy of diagnosis. Game theory-based approaches can be used to optimize resource allocation and improve the efficiency of diagnosis [19-29].

3.0 RESEARCH METHODOLOGY

A game theory-based approach was developed for autoimmune disease diagnosis using NoC. The approach involved the development of a NoC-based system for data acquisition and processing, and a game theory-based algorithm for resource allocation. The system consisted of multiple nodes, each representing a different data source, including medical history information, laboratory test results, and imaging studies. The algorithm used was the Iterative Prisoner's Dilemma (IPD) algorithm [30-39].

4.0 RESULT

The results of the study showed that the proposed game theory-based approach can improve the efficiency and accuracy of autoimmune disease diagnosis using NoC. The use of game theory allowed for the optimization of resource allocation, leading to a reduction in the time required for diagnosis and an increase in the accuracy of the diagnosis. The performance of the system was also shown to be robust to changes in the availability of data sources and changes in the distribution of the disease.

5.0 CONCLUSION

The proposed game theory-based approach for autoimmune disease diagnosis using NoC can improve the efficiency and accuracy of diagnosis. Game theory provides a framework for modeling decision-making processes and can be used to optimize resource allocation. NoC is a promising technology for the development of biomedical systems and can be used to facilitate the integration of multiple sources of information. Future research should explore the potential for game theory-based approaches to improve diagnosis in other healthcare domains and the potential for other game theory algorithms to improve NoC-based systems.

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