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Database Extract Information using Genetic Algorithm and Sending Message in HL7 Formatted using Back Propagation

By Kanika Sharma & Asst. Prof. Hardeep Singh Kang
RIMT College, Mandi Gobindgarh

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Kanika Sharma [α] & Asst. Prof. Hardeep Singh Kang [σ]

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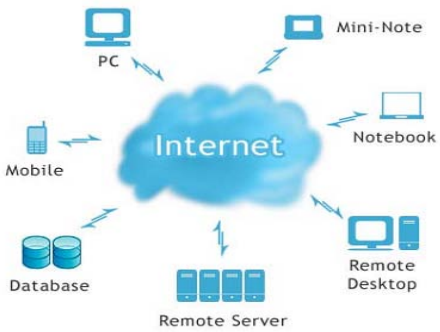
I. Introduction

Medical Informatics is the sub-discipline of health informatics that directly impacts the patient–physician relationship. It focuses on the information technology that enables the effective collection of data using technology tools to develop medical knowledge and to facilitate the delivery of patient medical care. The goal of medical informatics is to ensure access to critical patient medical information at the precise time and place it is needed to make medical decisions.

Cloud Computing is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet). Cloud computing entrusts remote services with a user's data, software and computation. In the cloud computing using genetic algorithm to extract the meaningful information from a large database.



Author α : M-TECH in Computer Science and Engineering RIMT–IET, Mandi Gobindgar. E-mail : kannu90.s@gmail.com
Author σ : Asst. Prof., C.S.E Department, RIMT-IET college, mandi Gobindgarh. E-mail : hardeep_kang41@rediffmail.com

Cloud computing are used for storing large amount of data in a single sever in a network which can easily and faster transfer to all other connected systems. With the use of Genetic algorithm extract meaningful and needed data from a large database.

Genetic Algorithm is used to calculate the fitness value and probability of occurrence. It is used to generate useful solutions to optimization and search problems.

II. Healthcare Standards

Healthcare standards provides framework for exchanging, integration, sharing and retrieval's of EHR. These standards define how information is packed and communicate from one party to another, setting the languages, structure and data types.

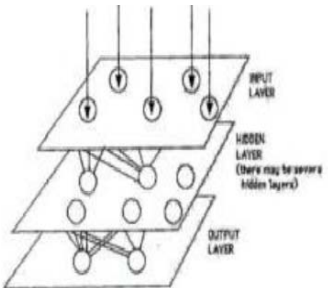
Healthcare standard 7 are mainly used to exchange information and data between systems. The OSI seventh layer application is used in this standard and also provides various application protocols to communication between system and also exchanging data.

These rules cover two broad areas:

- The formation of messages (what elements constitute a message and how these elements are put together).
- The communication of messages (how systems send messages back and forth, and how they verify the receipt and custody of the data in the messages).

Back propagation is an abbreviation for "backward propagation of errors" is a common method of training artificial neural network. It is an error function and supervised learning method and generalisation of the delta rule. For better understanding, the back propagation learning algorithm can be divided into 2 phases:-

1. Phase1- Propagation
2. Phase 2- Weight updates



Backpropagtion is a method which is used in neural network. It can be used in various methods to improve the speed of the system. Neural network using three layers that are input, hidden and output layers. Various algorithms are defined in back propagation algorithms that are genetic algorithm, simulating algorithm, simplex algorithm and train LM algorithm. The Train LM algorithm is the best algorithm from all these algorithms. It can be easily calculate the system performance and also provide conversions feature.

III. Methodology

Healthcare data are used in medical field. The healthcare standards are defined some standard formats for those data. Healthcare seven standards are defined. We can use the last standard means latest standard seven that are based on OSI network seventh layer means application layer. These standard are mainly used for transmitted or exchange data between systems. These standard are mainly used the purpose of communication between sender and receiver. When we can send the HL7 formatted data with the use of some software we can check their speed, efficiency and accuracy of data. HL7 used logical formatted data with the set of rules. The healthcare data send between systems. Firsly we proposed that create a cloud which store large number of medical patient data after that we can use genetic algorithm to extract information from the large number of data stored in cloud. Then sending HL7 formatted data between the systems. Back-propagation algorithm used when sending data to improve the speed and accuracy of the system. Back propagation is neural network algorithms that are used for fast convergence. In the neural network consist of a set of neurons that can send or transmit data between neurons. It consist of three layers input, hidden and output layers. To improve the speed and accuracy of sending message we can change the weight value in the hidden layers. Various algorithms are used in back propagation to improve speed and accuracy. These algorithms are gradient decent, simulating annealing, simple algorithm and train LM algorithm. All these algorithms are training algorithms used for convergences purposes and analyzing speed. The Train LM algorithm is the best one all of these algorithms. With this we can improve the efficiency of software and send efficiently and accurately HL7 formatted data.

IV. Conclusion

Genetic algorithm is mainly used to provide an optimal solution for a specific search problem. It is used to calculate the fitness value. In a cloud computing used with genetic algorithm we can extract information from a large database and send these information in the HL7 format in one system to another. To improve the speed of the system we can use the back propagation train LM algorithm to improve the speed and accuracy of the system it can be easily calculate the performance of the system.

V. Future Scope

Back-propagation is used to improve the performance of the system. If we can use this algorithm in any medical or other software then it can be improve the performance of the system. It can be provide better result as compare to the other algorithm used in the system. It can be improve system performance, efficiency and accuracy.

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