World Academy of Science, Engineering and Technology
International Journal of Computer and Information Engineering
Vol:10, No:09, 2016

A Multi-Agent System for Accelerating the Delivery Process of Clinical Diagnostic Laboratory Results Using GSM Technology

Authors : Ayman M. Mansour, Bilal Hawashin, Hesham Alsalem

Abstract : Faster delivery of laboratory test results is one of the most noticeable signs of good laboratory service and is often used as a key performance indicator of laboratory performance. Despite the availability of technology, the delivery time of clinical laboratory test results continues to be a cause of customer dissatisfaction which makes patients feel frustrated and they became careless to get their laboratory test results. The Medical Clinical Laboratory test results are highly sensitive and could harm patients especially with the severe case if they deliver in wrong time. Such results affect the treatment done by physicians if arrived at correct time efforts should, therefore, be made to ensure faster delivery of lab test results by utilizing new trusted, Robust and fast system. In this paper, we proposed a distributed Multi-Agent System to enhance and faster the process of laboratory test results delivery using SMS. The developed system relies on SMS messages because of the wide availability of GSM network comparing to the other network. The software provides the capability of knowledge sharing between different units and different laboratory medical centers. The system was built using java programming. To implement the proposed system we had many possible techniques. One of these is to use the peer-to-peer (P2P) model, where all the peers are treated equally and the service is distributed among all the peers of the network. However, for the pure P2P model, it is difficult to maintain the coherence of the network, discover new peers and ensure security. Also, security is a quite important issue since each node is allowed to join the network without any control mechanism. We thus take the hybrid P2P model, a model between the Client/Server model and the pure P2P model using GSM technology through SMS messages. This model satisfies our need. A GUI has been developed to provide the laboratory staff with the simple and easy way to interact with the system. This system provides quick response rate and the decision is faster than the manual methods. This will save patients life.

Keywords : multi-agent system, delivery process, GSM technology, clinical laboratory results
Conference Title : ICCSCN 2016 : International Conference on Communication Systems and Computer Networks
Conference Location : Rome, Italy
Conference Dates : September 15-16, 2016