Chapter 45
An Efficient E-Negotiation Agent Using Rule-Based and Case-Based Approaches

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ABSTRACT

The research in the area of automated negotiation systems is going on in many universities. This research is mainly focused on making a practically feasible, faster and reliable E-negotiation system. The ongoing work in this area is happening in the laboratories of the universities mainly for training and research purpose. There are number of negotiation systems such as Henry, Kasbaah, Bazaar, Auction Bot, Inspire, Magnet. Our research is based on making an agent software for E-negotiation which will give faster results and also is secure and flexible. Cloud Computing provides security and flexibility to the user data. Using these features we propose an E-negotiation system, in which, all product information and agent details are stored on the cloud. This system proposes three conditions for making successful negotiation. First rule based, where agent will check user requirements with rule based data. Second case based, where an agent will see case based data to check any similar previous negotiation case is matching to the user requirement. Third bilateral negotiation model, if both rules based data and case based data are not matching with the user requirement, then agent use bilateral negotiation model for negotiation. After completing negotiation process, agents give feedback to the user about whether negotiation is successful or not. Using rule based reasoning and case based reasoning this system will improve the efficiency and success rate of the negotiation process.

INTRODUCTION

Negotiation is basically a type of interaction in which a group of agents, with conflicting interests and a desire to cooperate try to come to a mutually acceptable agreement on the division of scarce resources. These resources do not only refer to money but also include other parameters like product quality features, guaranty features, mode of payment, etc. Electronic negotiations have gained heightened importance due to the development of the web and e-commerce. The rapid success of online auctions clearly shows that e-negotiation will eventually become the basis of e-commerce. Whether it is a case of B to B purchase or a case of online shopping, it is required to make the traditional negotiation pricing mechanism automated and intelligent. The automation saves human negotiation time and computational negotiators are better at finding deals in combinatorial and strategically complex settings. (Mukun, 2010)

Cloud Computing is technology for next generation Information and Software enabled work that is capable of changing the software working environment. It is an interconnection between the large-scale computing resources to effectively integrate and to computing resources as a service to users. Cloud computing allows users to use applications without installation of any application and easier access to their personal files and application at any system with internet or intranet access. Cloud computing is effectively the actual separation of physical and virtual services, a number of business services reduced costs, improved utilization of network resources. Cloud computing is a technology that uses the internet or intranet and central remote servers to maintain the data and applications. This technology allows for efficient computing by centralizing storage, memory, processing and bandwidth (Singh, Kumar and Khatn 2012).

Cloud Computing is innovation that uses advanced computational power and improved storage capabilities. Cloud computing is a new processing scheme in which computer processing is performed in the network. This means that users need not concern themselves with the processing details. Although Cloud computing enables more flexible, easier and faster computing. (Singh, Kumar and Khatn 2012).

Amazon, Microsoft, OpenStack, Google all these are cloud providers. Google Apps, Google Driver are the examples of cloud.

Case-based reasoning (CBR) is a problem solving paradigm where solution of new problem is based on solution of similar past problem. We use Rule based reasoning (RBR) concept, where there are some rules such as discount, festival offers etc.

In this paper, we are introducing an E-negotiation agent based system using rule based reasoning and case based reasoning. Due to the use of rule based reasoning and case based reasoning, system should improve the efficiency and success rate of the negotiation process. For making system faster and secure cloud computing concept is used.

The product details, Agent details, rule based data, case based data would be stored on the cloud. Seller and buyer select their respective agents through the cloud for negotiation. In this E-negotiation system agent act as a negotiator. Agent has user's (seller and buyer) details and their requirements for a particular product.

For making successful negotiation we use three ways for doing negotiation. The first way is rule based. In this way, agent checks users' requirement with rule based data which is stored on the cloud. If any rule is matched with users, then seller's agent and buyer's agent start negotiation through rule based data. The second way is case based. In this way, agent checks users' requirement with case based data which is stored on the cloud. If any similar case is matched with

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