MULTI AGENT SYSTEM FOR EVOLVING BUSINESS ENVIRONMENTS

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Degree of Master of Science in Artificial Intelligence

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List of Abbreviations

Abbreviations	Meaning
API	Application Programming Interfaces
ECA	Electronic Commerce Association
GA	Genetic Algorithms
GB	Gigabyte
GUI	Graphical User Interface
JADE	Java Agent DEvelopment Framework
JDK	Java Development Kit
JPA	Java Persistence API
JSP	Java Server Page
MAS	Multi Agent System
MASCB	Multi Agent System for Customer Bargaining
RAM	Random Access Memory
SCM	Supply Chain Management
SET	Secure Electronic Transaction
SSL	Socket Layer Protocol

Abstract

There are numerous online merchants and digital payment systems with loyalty offers for customers. However, limited research has been conducted to introduce customer driven bargaining based on profile of the customer. This matter is of great importance since some customers are more important than others and cannot be treated equally with common rewards. We have conducted a research to implement Multi Agent Based merchant-customer bargaining solution for online transactions.

This solution comprises of four types of Agents, namely, Customer Agents, Manager Agent, Search Agent and Merchant Agents. Upon the request by a customer agent with the product name, customer location, history of purchase pattern of the customer, multiple merchant agents will be activated. A genetic algorithm process is used for selecting the most suitable merchant in the echo system by considering the distance and previous customer reviews for the merchants. Consequently, agents start communication on the product and start negotiations to relax the constraints and finally agreed upon a bargain price acceptable to both customer and the successful merchant. The solution has been implemented on JADE. It has been tested since developing the system and found some encouraging results, which has generated experience for a formal evaluation.

Even though there are lots of merchant controlling bargaining systems in the market this system introduces a customer driven bargaining system. This customer driven bargaining system may make people life easier and may bring more advantages for both customers and merchants in an echo system. MAS based solution is ideal for this kind of complex system and it handles the complexity of negotiation, coordination and communication of the dynamic environment. Platform may provide ideal solutions and recommendations based on the past data system keeps and the APIs of developed system, can be used to connect with any existing mobile and e-commerce App to bring this feature as a value added service to their customers. This can inevitably lead to greater levels of customer satisfaction and help the merchants achieve a competitive edge over other competitors.