An E-negotiation Agent for an E-tourism Platform

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ABSTRACT

The article presents an electronic negotiation agent, integrated within a multiagent system for an electronic tourism platform. The e-negotiation process is based on a winner-winner approach, using a bargaining protocol. However, with the proliferation of services, the task of searching for relevant services becomes more and more difficult. Thus, the authors also propose a search agent to find tourism services corresponding to the client request and profile. The discovery process uses a quantitative similarity measure.

KEYWORDS

E-Negotiation, E-Tourism, Multi-Agent System, Service Discovery, Similarity Measure, Tourism Service

1. INTRODUCTION

Gradually, web technologies have enabled developers to make the web more useful and more attractive. Today, the Web is a universe in perpetual expansion, composed of webpages and applications that handle data and information, making users more and more dependent.

Business is one of the most concerned areas by this development and the web is a good support for business activities. On the one hand, it offers solutions to providers to propose and display their different offers and on the other hand it proposes tools to clients to search for services according to their needs. Responding to e-consumers expectations, e-commerce covers multiple sectors. In this paper, the authors are particularly interested by the e-tourism.

In the domain of tourism, competition is very hard and travel agencies offer a wide range of services like package tours and booking plane tickets. These solutions allow users to prepare, organize and book their plane tickets via Internet. These processes integrate efficient technologies thereby attracting more clients.

However, despite all the mentioned benefits, some weaknesses still exist. First, with the large number of services offered, it becomes more and more difficult for customers to find offers corresponding to their needs. It is therefore necessary to implement search mechanisms, considering the client profile in order to have results adapted to his profile.

Second, the lack of opportunities for the customer to haggle or negotiate the offers proposed on agencies’ websites. Indeed, no means are provided to the client to have a remote negotiation of one or more parameters of the proposed offer.

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The purpose of this article is to overcome these disadvantages. Thus, authors propose an e-tourism platform based on the concept of agents. The role of these agents is the automation of the various features of the system (services description, services publication, services search, etc.).

Authors will emphasize two agents: (1) The search agent: Its role is to search for offers/services adapted to the client profile. The search process is based on the use of a similarity measure and adopt a two-phase search approach. (2) The negotiation agent: Its role is to allow the client to negotiate the different offers proposed by travel agencies. The process is based on the use of an automaton to guide the e-negotiation between the customer and the provider.

The paper is organized as follows: Section 2 is dedicated to generalities about e-tourism. In section 3, authors define the e-negotiation, its different approaches and protocols. In section 4, authors present a multiagent system for an e-tourism platform. First, researchers introduce the architecture of the system, then the search process and finally the negotiation agent. Section 5 is dedicated to the evaluation of the proposed approach. In section 6, authors conclude the paper and present some perspectives.

2. FROM E-TOURISM TO E-NEGOTIATION

Web 2.0 is providing a new way of thinking and the concept of service is in the core of this paradigm. Moreover, the user is not passive anymore and static web, with a one side content diffusion, does not attract him anymore. Thus, the customer becomes producer and consumer of this information.

However, one of the consequences of the new producer role assigned to customers is the proliferation of contents making the search process very difficult, especially if we seek to propose the most relevant services/contents to users, while reducing the number of necessary clicks.

Nowadays, there is more and more websites of travel agencies, offering several possibilities to customers to make easier the choice of their destination, booking of hotel rooms as well as buying plane tickets. In the next section, authors present three Web sites among the most used.

2.1. TripAdvisor

TripAdvisor is an American Web site created in the years 2000. It gathers feedbacks from clients (about hotels, restaurants, etc.) and allows them to book hotel rooms and plane tickets after comparing the offers of hundreds of Web sites in order to find the best prices. Moreover, TripAdvisor has a version called TripAdvisor for Business which facilitate contact between tourism professionals.

The principal functions of TripAdvisor are:

- Searching for best prices and available offers for hotels and flights through several online reservation sites and travel agencies;
- Management of feedbacks (comments, photos, etc.) left by clients;
- Online travel guides created by tourists;
- Annual publication of best hotels/restaurants, best destinations, etc., according to feedbacks.

2.2. Trivago

Trivago is a German company that propose a price comparator for hotels. Its search engine compares reservation offers of 200 sites over 700,000 hotels in the world. To find a hotel on Trivago, the user starts by writing the name of his destination in the search bar and indicating his date of stay. Several hotels corresponding to the client search criteria are proposed, with various suggested prices proposed by travel agencies. The user must click on the offer appropriated to him in order to be redirected towards the Web site of the travel agency.
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