Universidad Carlos III de Madrid

OO/UC3M/28 - RECOMMENDER SYSTEM BASED ON REPUTATION OF PERSONAL AND SUBJECTIVE OPINIONS

University Carlos III of Madrid offers a new automated process to manage reputation. It will make customized recommendations easier in electronic commerce interactions. One of the most significant points to trust recommendations and providers is to consider subjective and personal criteria. We are looking for companies that want to have a personal recommender system included in their business. The recommendations may be the main provided service, or just a complementary service.

Description of technology
Contributions that lead to produce trust of users in electronic commerce are nowadays a priority. The usual approach consists of focusing in cryptography uses. However, other factors also influence users, such a different behaviour from the one he is used to. In other words, updating and computing information about others should be similar to human decision making when it is carried out by agents.

Therefore many commercial sites as *ebay, mystrands*, and *amazon*, have included personal recommendations into their model of business. The way to combine and show recommendations from different sources drove to different mathematical equations that were studied by several research institutions such as *SPORAS* by Massachussets Institute of Technology (M.I.T.), *REGRET* by the Spanish AI Research Institute (IIIA-CSIC) and IM. Singh with B. Yu from North Carolina University.

The user would even trust much more the selection of providers if this selection is implemented in a distributed way, for instance if user is proactive directly exchanging particular opinions among other users without the participation of those agents that represent providers. In this way, the selection is ruled out by users rather than providers.

Additionally users would trusted even more if their agents that act on behalf of them, apply decisions based on a personal preference model and similarities with others, rather from the advertisements of providers.

Finally, the main features of our model of reputation management in recommender systems are:
- Adaptability of the agent's behaviour to the external perceptions, to the elapsed time, to the number of evaluations, and the difference with the previous reputation. And furthermore, to the internal mental state produced by all the previous interactions of a given agent with the others.
- Uncertainty reasoning involved in a subjective evaluation of services that reputation updating procedure receives as input.

The comparison of the results in different scenarios has showed the performance of our model compared to the most known reputation management models.

Innovative aspects
The computations related to reputation of recommendations are computed in a distributed way, an agent or autonomous process per user, managing in a right way the vague and subjective nature of opinions about others through fuzzy logia. Both, agent technology and fuzzy logic belong to Artificial Intelligence research area, and their application to reputation management is a remarkable innovation of recommender systems.

Competitive advantages
A greater customer satisfaction with provided services, due to the customization of the selection process.

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Keywords
Artificial Inteligence; Electronic Commerce, Electronic Payment; CRM, Customer relationship Management

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