

Optimal Personalized Advertisement for Virtual Reality Environments

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Advertisements can be in everywhere, even in the virtual environments such as social networks, digital games and applications of smart phones. The virtual places have changed the advertisement word rapidly in recent years. Advertisements are called personalized ones which are in those places different from conventional ones. Opportunities of advertising in the virtual places has been started to notice by innovative companies. The owner of the virtual environments can display the different advertisements to the users from their websites based on the specifications demanded by their advertisers, which is a significant advantage of advertising in virtual places over conventional ones. Though personalized advertisement has ensured substantial advantages to the companies, it has also brought some problems to the owners of the places. Assigning advertisements to proper users in accordance with the contract between companies and the owner of the places is a noteworthy problem for the owners to earn the maximum income from advertisements.

The study applies three different approaches to assign advertisements to the proper users in one mathematical reference that is dynamic programming with Markov process. The first approach is a direct application of dynamic programming with Markov process to assign advertisements to the users in finite time horizon. It is the main skeleton of assigning system. Second one is a finite difference approach which is constructed on first approach with adding small time intervals. Third one covers four different heuristics for the assignment transaction. The performance of these systems is compared as a result of this study. The most effective one may be selected and extended for large scale problems. Thus it may be suggested to owners of virtual places to maximize their incomes from advertisements.

Keywords: Advertisement, Personalized Advertisement, Virtual Environment, Assignment, Advertisement Assignment System.