

Differentially Private Online Learning for Cloud-Based Video Recommendation with Multimedia Big Data in Social Networks

OBJECTIVE:

The aim of the project is to present a differential private distributed learning framework for video recommendation for online social networks.

ABSTRACT:

With the rapid growth in multimedia services and the enormous offers of video contents in online social networks, users have difficulty in obtaining their interests. Therefore, various personalized recommendation systems have been proposed. However, they ignore that the accelerated proliferation of social media data has led to the big data era, which has greatly impeded the process of video recommendation. In addition, none of them has considered both the privacy of users' contexts (e.g., social status, ages and hobbies) and video service vendors' repositories, which are extremely sensitive and of significant commercial value. To handle the problems, we propose a cloud-assisted differentially private video recommendation system based on distributed online learning. In our framework, service vendors are modeled as distributed cooperative learners, recommending videos according to user's context, while simultaneously adapting the video-selection strategy based on user-click feedback to maximize total user clicks (reward).

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INTRODUCTION:

In recent years, online social networks (OSNs) have been massively growing, where users can share and consume all kinds of multimedia contents. As a result, given the numerous different genres of videos in social media, how to discover the videos of personal interest and recommend them to individual users are of great significance. Recommendation is foreseen to be one of the most important services that can provide such personalized multimedia contents to users

There are several successful video recommendation algorithms and systems that have been developed and exploited. For example, Google has adopted content-based filtering (CB) recommender system in its AdWords services. The Google search engine returns search results with keyword related advertisements. However, those advertisements are always neglected by end users. This is mainly because of the biased decisions of users' favorite content. Unfortunately, Google AdWords had been removed from the right side of the page. Amazon and Taobao have achieved great success in recent years.

Several companies have demonstrated initial successes in multimedia recommendation system design. That reported that YouTube won its first Emmy for video recommendations. Actually, most OSNs recommend video content to their users based on the user's rich context information (e.g., social status, ages, professions, health conditions and hobbies) contained in their released multimedia data. Regarding this way, several recommendation systems have been proposed

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