ISSN(Online) : 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

*(An ISO 3297: 2007 Certified Organization)*

**Vol. 2, Issue 11, November 2014**

# Cloud-Based Mobile Multimedia Recommendation System with User Behavior Information

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**ABSTRACT:** Recommendation systems mainly focus on three specific domain like that CB filtering, CF-based filtering and Context-aware filtering.In content filtering, using users publishing and Interaction with in social network to calculate the similarity between users.Then recommend items to a user. The multimedia services and contents in the Internet, People usually waste a lot of time to obtain their interests.Mobile devices used in such smart communities have limited storage and can therefore not store a number of multimedia contents for users. Online video sharing systems, out of which YouTube is the most popular, provide features that allow users to post a video as a response to a discussion topic.On multimediasharing video, audio,images websites, such as Flickr, Facebook, and Twitter, users assign tags on the resources. Analyzing the tagging information in former research studies, the users with co-tagging behaviors show high similarity on specific items.online users often click the resources recommended by their concerning users and interesting groups. Based on the implicit relationship of user–user and user–resource in social networks, the recommendation system can achieve better performance and lower time cost.The MapReduce procedure can speed up the existing recommendation algorithm, such as CB, CF, or SNF (social-network-based filter).

**KEY WORDS:** Cloud computing,Mobile user behavior analysis,multimedia service recommendation

## I. INTRODUCTION

In the recommendation system all forms of video likethat (TV, video on user demand, Internet, and P2P) will continue to be approximately 90% of global consumer traffic by 2015. Internet users post a manylarge number of audio, video clips onaudio, video-sharing websites and social network(Facebook, Twitter) applications everyday [1]. The number of audio, video may be duplicate, similar, related, or quite different. The user facing billions of multimedia web-pages, online users are usually vey hard time finding their favorites videos. This situation is very hard for mobile users because of screen limit and low bandwidth.How to help mobile users obtain their favorite content lists from millions of webpages in a short time is very challenging [2]. Some video-sharing websites recommend video lists for end users according to video classification, video description tags, or watching history.The existing recommendation algorithms,the typical system consists of two essential components: 1) a content recommender that takes charge of user interest identification, user interest recommendation, and result reranking and 2) various collectors that collect user context and activities, content attributes, and updates. In recommendation system initialization, a few contextual information, e.g., time and location, is collected [6]. To capture the interests of users in a ubiquitous environment, more and more contextual information, such as user opinions, watching times, and video ages, is logged in the recommendation system [4]. Real-time recommendation cannot be guaranteed due to inevitable increment of computations.User interests and content clustering are often used to narrow the searching range of related content.The system is implemented on the Hadoop platform to satisfy the huge computation requirements for real-time recommendation systems. The Hadoopis open-source framework uses a simple programming model to enable distributed processing of large data sets on clusters of computers. The complete technology stack includes common utilities, a distributed file system, analytics and data. The recommender systems, there are three differences: 1) the collector and user profiles are decentralized into several computing nodes; 2) the user behavior clusters are collected except for only user profiles; and 3) the graph-based optimization mechanism is introduced into the recommender to speed up the recommendation process. The Hadoop platform is used in the proposed multimedia recommendation system. On the platform, user clusters and multimedia content are collected, distributed, and stored into the Hadoop distributed file system (HDFS). During user content recommendation, those data are partitioned into several chunks, the chunks are processed simultaneously by several mapper, and then, the results are reduced and merged together . The Hadoop framework is more cost- effective for handling large, complex, or unstructured data sets than conventional approaches, and it offers massive scalability and speed.

## II. LITERATURE REVIEW

**Existing System:** Internet users post a large number of video clips on Video-sharing websites and social network applications every day. The video content may be duplicate, similar,related, or quite different. Facing billions of multimedia WebPages,online users are usually having a hard time finding theirfavorites. Some video-sharingwebsites recommend video lists for end users according tovideo classification, video description tags, or watching history. However, these recommendations are not accurate and are always not consistent with the end users' interests. To improve this, some websites also provide users with search engine to search theirdesired videos quickly. However, searching is based on the keywords. Online Trading is being hosted on Stand Alone Server.

- Very hard to reuse video-tag module.
- Payment for combination of Physical Hosting and Hardware is demanded by the Web Hosting.
- Lack of scalability in identified Servers.
- Very hard to dedicated the Spammers in online.
- Noise and inconsistencies inherent to the data, and determine the hard of the task.
- Increasing total amount by provider on the monthly basis.

**Proposed System:** Cloud-based mobile multimedia recommendation system which can reduce network overhead and speed up the recommendation process The users are classified into several groups according to their context types and values. With the accurate classification rules, the context details are not necessary to compute, and the huge network overhead is reduced. Moreover, user contexts, user relationships, and user profiles are collected from video-sharing websites to generate multimedia recommendation. That the proposed approach can recommend desired services with high precision, high recall, and low response delay**.** User clusters are collected instead of detailed user profiles. To avoid the explosion of networkoverhead, user-behavior-based clustering is performedfirst, and the collectors calculate user clusters according to the clustering rules and then report the user cluster to the recommender only.

- Proposed tag-cloud recommendation approaches.
- A mobile- computing platform distributed in number of large data center.
- Mobile-Computing and storage resources.
- A recommendation system ranked lists of top videos.
- Reusability and extensibility of this framework component.
- Private Storage space for each and every Provider.
- Detection video spammers and promoters Process is easy.

## III. RELATED WORK

In a RecommendationSystem, the systems used on a specific domain likethat Google News provides personalize information news recommendation services for a number of online readers. Amazon uses the recommender system to help users find their own choice or favorite products. YouTube uses user watching history to predict and recommend videos for users.Recommendation System have been categorized by four algorithm exploited by the recommender system: CB recommendation, CF-based recommendation, context-aware recommendation, and graph-based recommendation.In the multimedia information overload and to allow users to have easily access to relevant multimedia contents in their mobile devices, today's main focus and challenges of researchers is on how to develop multimedia recommender systemsfor mobile devices.

**CB recommendation:** The content-based systems make recommendation based on the content names, tags, or explanations.Some systems determine user-interested items based on user's individual reading history in term of content. CB recommendersystems are very easy to implement. In the content based systems are provided by automatically matching a user's interests with item contents. In content based recommendation very similar items to previous items consumed by the user are recommended which creates a problem of overspecialization.

**CF-based recommendation:** The Collaborative Filtering-based systems make filtration based on abundant user transaction histories and content popularity. In the collaborative systems, individual user's interests arepredicted by a group of similar users .CF systems obtained enough historical consumption record and feedback. On other side prediction,implicit feedback, or opinion classification methods should beadopted to solve new user issues. In collaborative filtering,The ratings of users were used to clustering users to groups, todetermine a socialcommunity.Then the similarity of users findout within the group to be used for prediction and recommendations.

**Context-aware recommendation:** The Context-aware systems provide stable recommendation without considering usercontext information. The user interests vary according tolocation, time, and emotion. Context-aware recommendationsystems complement user context sensed on smartphone andlong-time user profile to assist the user in selecting better services, photographs, or videos dynamically. Context is avery difficultconcept to capture and explain; fuzzy ontologies and semanticreasoning are used to augment and enrich the explanation ofcontext.

**Graph-based recommendation**: The Graph –based recommendation built in the systemsto determine the correlation between filtrationobjects. Thefiltration problem turns into a node selectionproblem on a graph. Incorporating conversion content and contextual information, links on video pages are converted toundirected weighted graph. With the huge increase of user numbers, user contexts, user profiles, and video contents, filtrationsystems require more and more computation capacity. To resolve the huge computation requirements, CF algorithms and context-aware algorithms have been implemented on cloud-computing platforms to improve performance and scalability of the recommender system.

## IV. ARCHITECTURE WITH DIAGRAM

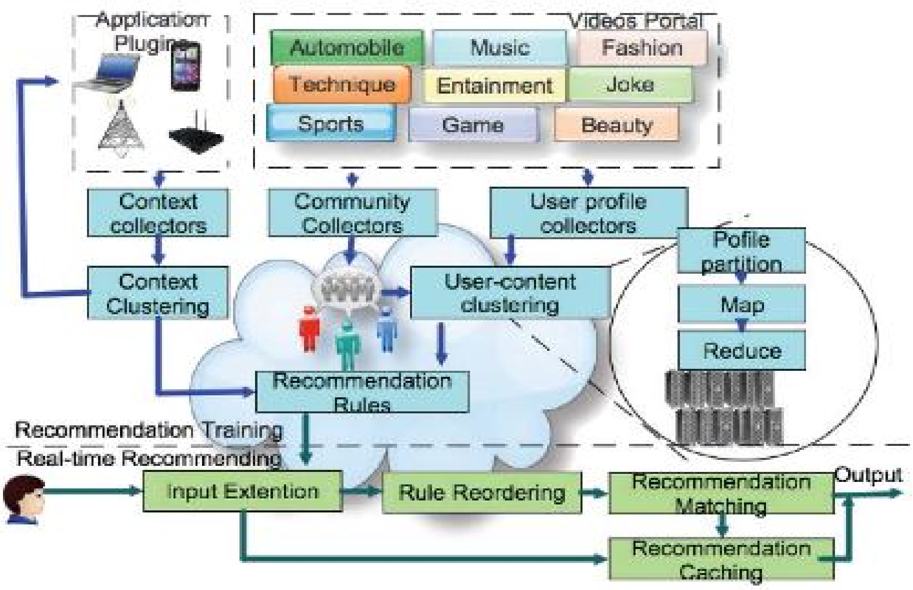


**Figure 1. Workflow of cloud-assisted mobile multimedia recommendation.**

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**Algorithm:**

**Algorithm**: Find relevant application(s) to a user's context
**Input**: user_id, location_id, device_profile,time
**Output**: download url of relevant application

```
Function
FindApp(user_id,location_id,device_profile,time)

Initialize Apps=[] //App collector
if location_id has application(s)(M) then
foreach m ¡ô M do
Initialize matchm=0 //application relevancyscore
Initialize ratingm=0 //application rating score
// retrieve application access constraints Am
if m has no absolute time constraints then
if m has open-access then
// m gets max. score
matchm =1
end
else
// retrieve user profile and credentials
Ru
Initialize matchm=0
foreachruinRu and am ¡ô Am do
// check how much ru satisfy am
matchm = matchm + F(ru, am)
end
end
end
m = 0.5 .matchm + 0.5 . ratingm
// add m to relevant Apps
Apps=Apps + m
end
end
if Apps is not null then
//choose the application with the highest score
end
return url //if null means no applicaitons
```

## V. CONCLUSION

In this review, we proposed context-aware commendation technique as a clarification to address the info overload problem that smart device users will challenge in the mobile cloud atmosphere. One distinctive piece of the proposed elucidation is its ability to syndicate dynamic context appreciationand recommendation procedures, integrated in a common background user profile facility. The context facility relies on using the context acknowledgment model to glean precise context information after smartphone built-in sensor proceedings. The proposed resolution takes advantage of the smartphone integral sensors to enhance unified and automatic recognition of the operator context information in real-time deprived of using additional bound devices.

In the future, we intend to carry out additional extensive usability challenging of the scheme, especially in live cloud atmosphere to improve its usability. Moreover, we intend to appraise other context-aware methods such as content and

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Vol. 2, Issue 11, November 2014

collaborative procedures. Finally, since the proposed explanation runs on smartphone, gathering data from its sensors, influence consumption converts a critical apprehension for the users.

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