ABSTRACT

Recommendation systems are gaining high popularity as they suggest the products or services based on the user preferences. One of the important issues in recommendation systems is the cold start problem. The cold start problem occurs when there are not enough data about the user preferences, or when the service is new and not many have used or rated the service. Though many methods and algorithms have been proposed to overcome the cold start problems like content based filtering or collaborative filtering, etc. these methods also have certain limitations and do not address the hard core cold start problem in recommending domain specific cloud services. This research work proposes a method to overcome the cold start problem in recommending new type of cloud services by recommending services in three different stages using an integrated approach. The integrated approach proposed is based on the combination of these algorithms: a) knowledge based filtering, b) Multi Criteria Decision Making methods and c) re-ranking of services based on QoE (Quality of Experience) ratings of users. The new type of cloud services called Rendering-as-a-Service or cloud renderfarm services that provides a platform for the animators to render their animation files online has been selected to implement the proposed methodology for generating recommendations based on the QoS (Quality of Service) and QoE (Quality of Experience) of the animators. A cloud renderfarm services, domain specific ontology has been developed to gain the animation and visual effects domain knowledge. Another major challenge in recommending new services is identifying the right Quality of Service (QoS) attributes, monitoring and collecting the QoS and QoE data about the new services and the users respectively, hence a cloud broker service framework has been considered to aggregate and store the data required for the recommendation system. In this work, we have identified and selected some of the QoS and QoE attributes that are important and specific to the cloud renderfarm services domain. A prototype has been implemented to test the methodology using real time data sets obtained and the methodology has been compared with the existing methods. The results show that the proposed methodology helps to overcome the cold start problem effectively.