An Effective Web Service Ranking Algorithm based on Quality of Experience of Users

Vandan Tewari[1], Nirmal Dagdee[2] and Aruna Tiwari[3]

[1] Dept. of Comp. Tech. & Appl. , S.G.S.I.T.S
Indore- 452003,MadhyaPradesh,India

[2] Dept. of Computer Engg., S.D. Bansal College of Technology, Umaria
Indore, MadhyaPradesh, India

[3] Dept. of Computer Sc.,IIT, Indore,
Indore, MadhyaPradesh, India

Abstract

With the increasing number of Web services, discovering and selecting best services for a client is becoming very significant. While discovering a user can benefit from experiences of other users. This can actually be exhibited through a collaborative filtering mechanism where a user is able to rate a service based on his experiences. A user can be offered services based on the Quality of Experience (QoE) of all the users which have used the given services in past. The service ratings given by all the users can be aggregated into a single list to prepare the overall service ranking which can be rendered to a client to help him in selection of better service. Further if a user wants to see the service ranking on other aspects such as its popularity etc., an aggregate ranking of services is presented using different ranking parameters. This paper presents a client oriented approach of Service rating and rank aggregation based on user oriented QoE based rating as well as popularity.

Keywords: *Web Service, Quality of Experience, Service Rating, Service Ranking.*

1. Introduction

In the age of globalization, day by day business to business and business to consumer operations are finding huge importance in internet computation around the world. Web services [1] are one means by which we can fulfill all these demands in an easy and efficient way.

Web Services are based on Service Oriented Architecture[2] which enables application-to-application communication over the internet and easy accessibility to heterogeneous applications and devices. As web services become more popular model for Internet computing, the issues of effective and appropriate service discovery become of utmost importance. The web service search using search techniques supported by existing UDDI[3] APIs may not result in the search results that are appropriate to service requestor's needs.

Current proposals for web service discovery presents the same search results to all clients for the similar query. However evidently the different users have different needs and an objective for web service discovery and therefore it is essential that these differences are accounted for while discovering services for a client. Therefore there is an urgent need of identifying the needs of a client for discovery for rendering him the services which he actually desires.

There will be a large pool of discovered services which fulfills the functional requirements of a user. However to select an appropriate service from this pool is still an issue. To help a user in finding a 'good' service, the past experiences of other users might be used. The users may be asked to give their feedbacks in terms of service's overall behavior such as 'value for money', 'satisfaction level', 'trustworthiness' etc which actually represent its Quality of Service (QoS) behavior. These parameters collectively can be thought as Quality of Experience (QoE) and can be used for ranking a service in its pool.

In this paper an Effective Web Service Ranking Algorithm based on Quality of Experience of Web Service users has been proposed.

2. Service Rating and Ranking

A ranking list of n services is just a vector of permutations of integers 1 through n. In contrast a rating of services is assigning a numerical score to each service. A sorted rating list creates a ranking list. The rank of a web services is its relative importance