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Efficient Discovery Of Web Services Using User's Frame Of Reference.

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ABSTRACT

Web Services are the combination of implemented logic and related data available on the server and made available to users as per their requests. As per internet evaluation from past times, the number of web services with similar functionality increases rapidly. So for selection of high-quality web services from the pool of similar web services, some comparison is needed to be done based on service's quality characteristics (like performance, response time) to provide best services to users**.** In this paper, we are providing an evaluation method that evaluates the web services based on user's perspective. The idea is to collect the user's feedbacks or reviews about particular service from the internet and mine the information related to the functionality of service from collected data for evaluation. We name this evaluation method as User's Frame of Reference (UFoR).

Keywords: Quality of service, User's frame of reference, Service selection, Services Composition.

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INTRODUCTION

A web service [1] provides a medium for communication or exchange of data between various applications (available on the internet) using open standards like XML [2]. These open standards provide the platform independent communication between applications developed on different platforms like Java, Python. These open standards help in providing interoperability and enhance access to available resources and services. The web services are made available by UDDI [3] (Universal Description, Discovery, and Integration) as per user's request and also responsible for establishing interfaces for accessing services. UDDI is a specification for a distributed registry of web services. It is a platform-independent, open framework.

From past times, the internet demonstrates a tremendous increase in the number web services. This increment demands the necessity of evaluation method for selecting the suitable service from various services. Such nonfunctional quality characteristics like performance, availability, and reliability (depends upon the functionality of services) becomes an important factor for service selection. The reason is to not only focus on service's functional properties but also on non-functional properties like the platform on which that service developed, time to process sequence of activities by that service. This approach is known as Quality of Service (Qos)[4].The methods to obtain QoS information classified as Static, Dynamic. In static, service providers provides the stats of QoS information which measured on the peculiar platform. Dynamic method means an evaluation of the quality of web services at runtime, which is not an efficient way for evaluation. Another possibility is to collect the feedbacks or reviews of users about the web services they have used. So we are presenting an evaluation method known as User's Frame of Reference (UFoR) which records the user perspective about the service.

RELATED WORK

Kuyoro Shade O. Et al [5] grouped the QoS requirements into different categories based on ways to obtain QoS information: Static and Runtime. Static QoS are security, cost, and transaction support. QoS related to Runtime are scalability, performance, reliability, availability, robustness, accuracy, etc. Narayan Debnath Et al [6] proposed a QoS based evaluation method for comparison and selection of web services that meets the user's requirements. Each service offers various options for quality characteristics based on technical requirements (availability, performance, security) for comparison. This information may not be valid all the times because values of these quality characteristics may vary with time. This information does not reflect user's point of view for service selection. In our approach (UFoR) we are recording feedbacks of service users and mine the information for evaluating these quality characteristics. Shuping Ran Et al [7] proposed that Quality of Service is one of major issue factor in web services technology's evaluation. For service discovery, both functional and non-functional requirements taken into account. R.Karthiban Et al [8] proposed a technique to mine Web Service Description Language (WSDL) documents and clustered them into QoS similar groups. This paper tells about the QoS parameters with a description of each and their units and how they reflect the performance of web service.

METHODOLOGY

In this section, we are providing details of our approach for evaluating the web services by using user's views or outlook about the service. First, we collect feedbacks from the internet and then process the feedbacks through libraries [8] for mining the important information for evaluation. The mined information used for determining viewpoints and characteristics from review data and then mapping viewpoints to characteristics. The sentiment value of each viewpoint used for appropriate rating characteristics. For minimizing complexity, we are merging quality characteristics which are having the same meaning.

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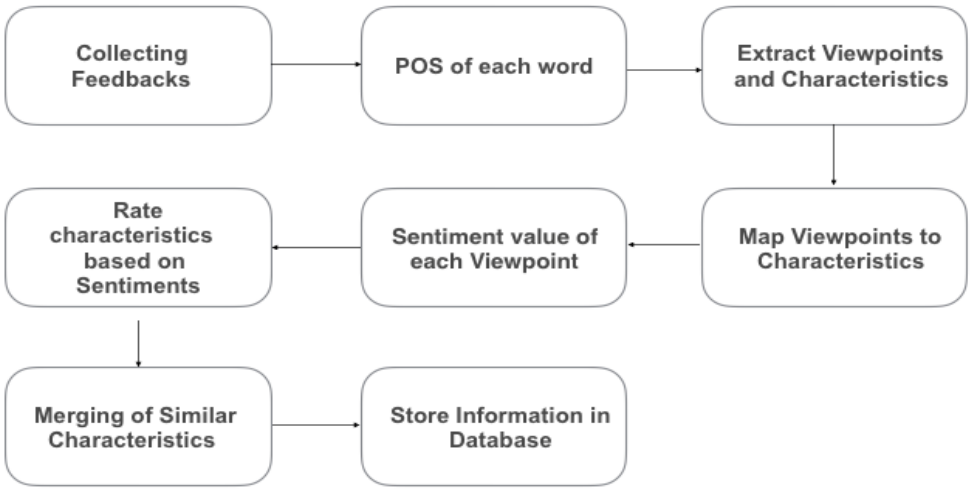

Figure 1: Architecture of the proposed system

Collecting Feedbacks

For collecting feedbacks, we have developed an application where the user can share his/her experience about service by specifying service's name. Given feedback will be sent for mining the appropriate information i.e. user's viewpoint about quality characteristics. We are using Java technology for processing the collected data.

Part of Speech of each word

After collecting feedbacks, we are focusing on two types of information one is functional and non-functional quality characteristics offered by particular service for comparison and other is user's viewpoints about that quality characteristics. For mining characteristics and views we are using Stanford natural language processing libraries. With the help of Stanford NLP POS Tagger [8] first, we find POS of each word which will help us in finding the required information.

Extract characteristics and viewpoints

Using PoS, we are determining the characteristics and viewpoints about these characteristics. We use these details for mining the information that can help us in the evaluation. The words having PoS as adjectives (JJ) represents the user's frame of reference and word having PoS as Noun (NN) represents the quality characteristics. By using this approach, we have divided the mined information into two sets: characteristics and viewpoints.

Map viewpoints to characteristics

After dividing mined data into two sets, we are mapping viewpoints to characteristics. We are using the flow of words in feedbacks given by user and sentiment value of each viewpoint.

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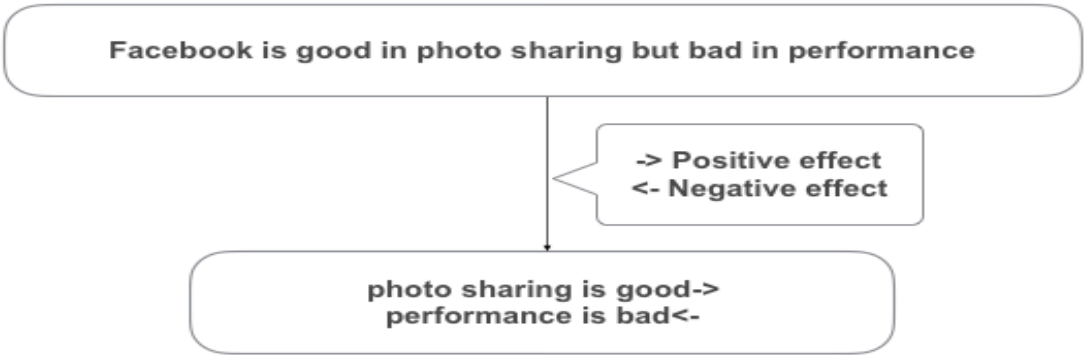

Figure 2: Mapping of viewpoints to characteristics.

We are using Stanford NLP for finding sentiment values the output of sentiment analysis will be like: Positive, Negative and Neutral. The characteristics which are having the Positive effect represented by an arrow pointing forward (->). The characteristics having a Negative effect are represented by an arrow pointing backward (<-).

If a viewpoint is having negative effect followed by keywords “not,” ”no” and other keywords with the negative impact they are said to be having a positive effect on characteristics and vice versa. If two characteristics than both follow one viewpoint are having the same effect (if feedback doesn’t contain “not,” “no” etc.).If there are n number of viewpoints and characteristics than by using the flow of words we are mapping each viewpoint to each characteristic.

Rating of characteristics based on sentiments

After mapping viewpoints to characteristics, we are using arrows which will help us in scoring each characteristic. The arrow pointing forwards carry (+1) mark for positive impact and arrow pointing backward carry (-1) mark for its negative impact. If viewpoint doesn’t contain any arrow, it is said to be neutral (e.g., -average in performance) and carry 0 marks.

```
Severe:   [http-listener-1(2)] INFO edu.stanford.nlp.pipeline.StanfordCore
Severe:   [http-listener-1(2)] INFO edu.stanford.nlp.pipeline.StanfordCore
Severe:   [http-listener-1(2)] INFO edu.stanford.nlp.pipeline.StanfordCore
Severe:   [http-listener-1(2)] INFO edu.stanford.nlp.pipeline.StanfordCore
Severe:   [http-listener-1(2)] INFO edu.stanford.nlp.pipeline.StanfordCore
Severe:   [http-listener-1(2)] INFO edu.stanford.nlp.pipeline.StanfordCore
Info:   performance is good->
Info:   photo is bad<-
Info:   called
Info:   {performance=1.0, synchronization=-1.0, photo sharing=-1.0}
Info:   first tym
```

Figure 3: Servers Computation

Merging of similar characteristics

The rated characteristics stored into a set. But set may contain two or more quality characteristics having the same meaning with different or same score values. So we are using Word Net for finding similarities between different characteristics. Word Net use graphical approach for finding the similarity between two different words, in which two words are represented by nodes and the difference between them is measured by counting the number of nodes (words) lies between their connectivity.

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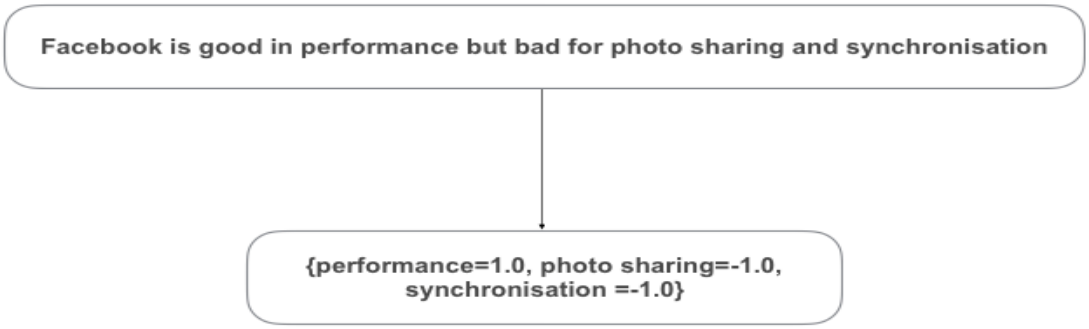

Figure 4: Rated quality characteristics.

We are giving characteristics in pairs to WordNet, and if output shows the similarity between them, we are merging them together to a single new characteristic. The value of new characteristics will be the average of both the similar (old) characteristics.

EXPERIMENTAL RESULTS

The output of our approach will be a set of unique quality characteristics with rated values representing the user's viewpoint towards the quality of characteristics of services (Figure 3.). We store the result temporarily into the database in the form of a table containing characteristics. The name will be the name of service.

attribute	value
performance	4
photo sharing	-3
synchronization	2
folder sharing capabilty	1
efficiency	0
chat online	1

Figure 5: Information stored in Database.

CONCLUSION AND FUTURE WORK

Previously service providers used to rate the services based on non-functional quality characteristics without any interception of service users' perception known as QoS. This approach select the services from a pool of services based on pre-defined characteristics values (provided by service owners at the time of registry) which may not be true all the times. So we are proposing a method through which the services will be rated based on user's feedbacks about the services. Our aim is to collect the user's feedbacks about particular service from internet and mine the information related to quality characteristics of service from collected data for evaluation. This method is known as UFoR (User's Frame of Reference).

We are storing our result i.e. scored quality characteristics into the database. In the future, we will perform configuration to the registry or build our registry like UDDI that will take input directly from our database without any further manipulation. This work will be the continuation of our present work which makes service retrieval more efficient.

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REFERENCES

[1] Web Services. http://www.tutorialspoint.com/webservices/what_are_web_services.html
[2] Extensible Markup Language. https://www.w3.org/XML/#intro
[3] Universal Description, Discovery, and Integration. http://www.tutorialspoint.com/uddi/uddi_overview.htm.
[4] Quality of service for Web services. http://www.ibm.com/developerworks/library/ws-quality.
[5] Kyoto ShadeO, AwodeleO, AkindeRonO, Okolie Samuel, "Quality of Service (Qos) Issues in Web Services," IJCSNS
[6] Narayan Debnath, Paola Martellato, Daniel Riesco, "A Method to evaluate QoS of Web Services required by a workflow,"IEEE Conference
[7] Shuping Ran "A Model for Web Services Discovery withQoS,"IJCSIS
[8] R.Karthiban,"A QoS-Aware Web Service Selection Based on Clustering," International Journal of Scientific and Research Publications.
[9] Stanford Core NLP-tool suite. http://stanfordnlp.github.io/CoreNLP.
[10] Stanford NLP POS Tagger. http://nlp.stanford.edu/software/tagger.shtml.
[11] Word Net - lexical database for English. https://wordnet.princeton.edu/.