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User Ranking In WSNs Service

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Abstract

Web Services that allows the software system to exchange the data over the internet. Wireless sensor networks (WSNs) are used for monitoring and gathering dynamic information via lots of sensors. The WSN is built of several sensor nodes. For improving the internet usage in WSN, Web service is considered as the most important technology to arrange the sensor functionality to form WSN service. By using WSN services, making service ranking that will helps the user to select the best services becomes more important. However the earlier one is the traditional service ranking that considers only the user's perspective does not suit for WSN service any more due to the dynamic environment and slow rating from users. In order to address this problem, the propose scheme is the context-aware WSN service ranking approach by combining the user rating and WSN service context.

Keywords: Context-aware, User ranking, Context ranking, QoS.

1. Introduction

Web service is considered as the most wanted technology to include WSNs into the internet. The combination of wireless sensor networks with internet service is called WSNs services. The quest for selecting the service with best performance promotes service ranking technology. With the boom of WSN services, one immediate challenge is to find appropriate services that satisfy user's requirements. Context-aware services[1] are a computing technology which incorporates information about the current location of a mobile user to provide more relevant services to the user. The information can be updated by the user or from communication with other devices and applications or sensors on the mobile device. The important part of context is to store the historical information.

In order to provide services in WSN environment, we propose a context-aware WSN service ranking approach by combing both the user rating and WSN service context rating. First, the user rating can be done by collecting the feedback from user for the particular queries (i.e.,) User QoS Assessment (UQA) and also getting feedback information from dynamic environment (i.e.,) Context QoS Assessment (CQA) are proposed, respectively. Then Fuzzy based mechanism is further developed to aggregate the UQA and the CQA.

In this paper, as follows section2 provides the survey of this techniques, in section3 the methodology is given, section4 provides existing system, section 5 provide proposed work and their result and then concluded the paper

2. Literature review

Context is the approach about the whole situation relevant to an application and its set of users. There are three categories of features that a context-aware application can support: presentation of information and services to a user, automatic execution of a service for a user and tagging of context to information to support later retrieval.The increase in usage of wireless networks and mobile devices implies that devices and services are entering and leaving the network with increased frequency. This results in a more dynamic computing environment and increases the need to

allow a client device or service (hence referred to as client) to discover other devices and services in the network. This is referred to as service discovery[2][3]. Devices are hardware that typically provide a service. For example, a printer is a hardware device that provides a print service. In this case, a printer is both a device and a service. Not all services are devices, For example, a service may be software running on a server that has many other services running on it e.g., address book.

3. Methodology

Contexts involved in WSN services can be categorized into the non-QoS context and the QoS context. The non-QoS context has no direct relationship with the service QoS attributes, while the QoS context has direct impact on service QoS attributes, such as service load percentage, remaining energy percentage, etc.
The framework consists of four components: Service user, Service provider, Service ranking middleware and Service registry. Among them, the service user can query the middleware for the ranked results of satisfied services, and can also rate the service he has experienced. The service registry is a UDDI-like service repository that maintains the functional descriptions of services using languages such as web service description language (WSDL), etc. Moreover, the service registry also provides a service matchmaking engine. By finding the matching degree between the services, then the candidate services will be returned to the middleware. The service providers register the WSN services into the service registry, and every successfully registered service will be assigned with a unique service ID. Five modules exist in the service ranking middleware:

1) Request Handler: It is an interface provided to users. When receiving the user's service queries, the Request Handler module will extract the corresponding user requirements, and forward them to the service registry.

2) Pre-filtering: It can be used to filter out the poorly performing WSN services.

3) Rating Manager: After experiencing a specific WSN service, a user can provide a rating value to reflect the Quality of Experience (QoE).

4) Context Manager: In this Context Manager module, physical-level factors of the service will be periodically collected and stored.

5) Aggregation Manager: The Aggregation Manager module is responsible for the ranking of candidate services based on both the user perspective as well as the service contexts perspective. The input for the ranking process includes the user assessment value, the context assessment value, and the output is the final comprehensive assessment value.

4. Existing System

4.1User ranking

The user ranking will make an overall user experience-oriented calculation to assess the list of services. Since users may have different QoS experiences at different time on the same WSN service, Pearson Correlation Coefficient algorithm is employed to assess the QoS performance of a WSN service for an active user by employing historical QoS information from other similar service users, who have similar historical experience on the same set of commonly invoked Web services

4.2 Formula

$$P(1,2) = \frac{\mathrm{N}\sum \mathrm{xy} - (\sum \mathrm{x})(\sum \mathrm{y})}{\sqrt{[\sum \mathrm{x}^2 - (\sum \mathrm{x})^2]\,[\mathrm{N}\sum \mathrm{y}^2 (\sum \mathrm{y})^2]}}$$

N - List of Services

$\sum xy$ - sum of product of paired service

$\sum x$ - sum of first service ranking value

$\sum y$ - sum of second service ranking value

$\sum x^2$ - sum of squared x values

$\sum y^2$ - sum of squared y values

4.3 Existing Result Analysis

In this result five services should be considered. Each Services consist of list of user names and their ranking value. The process are Web Service1 should be compared with all other 4 web services in order to get the correlated value. During comparision in both web services similar names only considered. Then the Web Service 2 should be compared with all other 4 Web Service and so on. Finally we will get 5 compared values. In this the best value will be choosen based upon the interval [-1,1] which a larger positive value indicates that high ranked web services. In this result, Web service 5 is best compared to Web service 1.

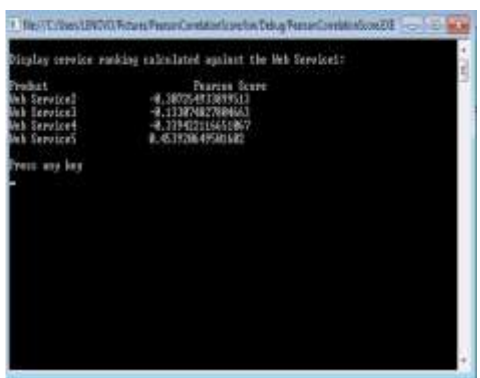

Figure 1 Pearson Correlation Coefficient Result

5. Proposed Work

5.1 Context ranking

For WSN services, due to the dynamical environment, the QoS context, which direct relates to the service performance from the service' perspective, should be also considered for effective service assessment and ranking. For some physical-level factors a bigger value represents the better performance, while for others a smaller value indicates the better performance. To simply the discussion, the former factors are referred to as positive factors, and the latter ones as negative factors.

Here some of the factors should be considered for Context aware filtering. They are:

- energyPercentageThreshold
- transmissionLatencyThreshold
- packetLossThreshold
- memoryPercentageThreshold
- loadFactorThreshold

Based upon these factors context aware ranking should be filtered.

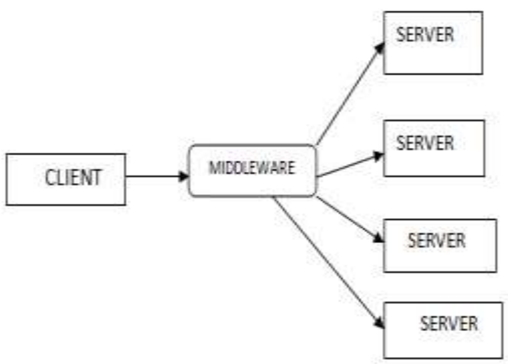

Figure 2 Basic context aware service framework

5.2 User and Context Ranking Assessment

In the dynamic WSN environment, both the user ranking and the context service ranking to be considered[4][5]. By combining this two services accurate result will be obtained in future work.

6. Result Analysis

In this result, list of 10 services should be considered. Each services should have five different physical level factors. In dynamic environment, value of physical level factors will change dynamically. Indiviual user will experience different values at different time. Context aware services will be filtered by giving some limitation to each physical level factors. In future, for each service user ranking also provided by user ranking values, user ranked date and time. By this more accurate result can be generated.

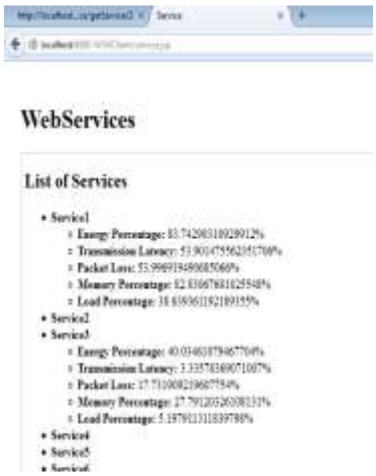

Figure 3 list of services before context aware filter

Figure 4 list of service after context aware filter

7. Conclusion

In this paper, WSN services are increasingly employed for the integration of real-world information due to their interoperability. However, in the dynamic WSN environments, traditional Web service ranking methods that employ user ratings cannot be directly applied to WSN-based services. To overcome this problem a novel context aware service ranking approach for WSN services is introduced. Because, it will fastly collect the information about current situation and provide relevant services to the user. To function properly, additional source code is required for this type of implementation. For every selection element in the source code, we define a set of constant context attributes that are assigned to the selection. Many existing and even developing learning systems, such as the Mobile and Active Learning Environment (MILE), rely on traditional client-server paradigms for information exchange and distribution. This architecture makes sense in some formal learning situations, where learners gather in a specific place, connected to a specific network, on a regular basis. Providing flexible, adaptable, and dynamic learner interactions in any environment, without a single bottleneck or point-of-failure, however, requires a more peer-to-peer-based solution.

REFERENCES

[1]. A.K Dye "Understanding and using context" Personal and ubiquitous computing, 5(1):4-7, 2001.

[2]. S. Cuddy, M. Katchabaw and H. Lutfiyya "Context-aware service selection based on dynamic and static service attributes" Wireless and Mobile Computing, Networking and Communications, 2005. (WiMob'2005), IEEE International Conference on (Volume: 4)

[3]. K. Scott and R. Benlamri, "Context-Aware Services for Smart Learning Spaces", IEEE Transactions on Learning Technologies, 3(3), pp.214-227, Jul.-Sept. 2010.

[4]. R. Lowe, P. Mandl and M. Weber, "Context Directory: A context-aware service for mobile context-aware computing applications by the example of Google Android" Pervasive Computing and Communications Workshops (PERCOM Workshops), 2012 IEEE International Conference on 2012.

[5]. Wenjia Niu, Jun Lei, Endong Tong, Gang Li, Liang Chang, Zhongzhi Shi, Song Ci, "Context-Aware Service Ranking in Wireless Sensor Networks", Journal of Network and Systems Management, January 2014, Volume 22, Issue 1, pp 50-74.