User Ranking in WSNs Service

Deepana. K. V
PG scholar/Department of IT
Sona College of Technology, Salem,TN,India

Thangaraj. K
Assistant Professor/Department of IT
Sona College of Technology, Salem,TN,India

***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 .

I. INTRODUCTION

Wireless sensor networks (WSNs) are one of the most important practice for gathering information via lot of sensor. As the development of the WSNs, the integration of WSNs with external internet is an urgent need.

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 uses of this techniques used, in section3 the methodology is given, section4 provides existing system, section 5 provide the result and conclude the paper.

II. BACKGROUND WORK

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.

III. 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:

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

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

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

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.

IV. EXISTING SYSTEM

The service ranking process involves four main steps: user QoS assessment, context QoS assessment, QoS variation computation and assessment aggregation [4] [5].

A. User ranking

The user QoS assessment will make an overall user experience-oriented calculation to assess the candidate services. Since users may have different QoS experiences at different time on the same WSN service, collaborative filtering 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.

B. 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.

C. Variation computation

In the dynamic WSN environment, both the user QoS assessment and the context QoS assessment can change. Here, we will discuss how these variations can be used for the service ranking.

D. Assessment aggregation

The relation between user QoS assessment and context QoS assessment is far more complicated than a linear relationship. Hence, we adopt the idea of fuzzy controllers for this aggregation purpose. Firstly, the crisp variation of U(j) and C(j) can be fuzzified into respective linguistic variables, such as positive large, negative large etc. Secondly, fuzzy rules can also be used to infer the comprehensive assessment of services. In addition, fuzzy aggregation can properly handle imprecise and noise inputs, which both the inputs U(j) and C(j) may be, as well as adjust the rules to improve the accuracy ranking results by service case learning.

V. 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.