A Review on Improvement of QoS in Web Services Functions

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ABSTRACT
Web services provides a mechanism to aggregate multiple services into one composite services. It select services based on functional and non-functional attributes of services according to the applied user constraints. Abstract Service Ontology is a framework for optimized service selection which is formalized and developed by using OWL2-RL language. Abstract Service Ontology consists some players which are Service Provider, Information Agent, Ontology Provider, and Composer. Service Provider provides atomic concrete services, Ontology Provider defines offered functionalities and the composer query ontologies to select and execute the best conformed composite services. Request model, Objects Values conformation model and Constraint selection model aims to services selection among best affected objects services. Service selection from constraint model by using SPARQL query can be done, which follows preprocessing, conforming objects values identification and conforming composite services identification. XML files to structure Request model of the user in which requested abstract services list, its affected objects and user's constraints are there for preprocessing. Conforming object values identification determines instances of affected objects. Constraint selection model locates services which relates to the value of SPARQL query 1. Models are used for efficient and improved selection of service. Some Bio-Inspired Optimization algorithms and integration in modules can be applied and its results, efficiency can be improved and execution time can be reduced.

Keywords
OWL2-RL, SPARQL, Composite Services, XML, Bio-Inspired Optimization

1. INTRODUCTION
Web services are services for exchanging messages between client and web application and it is use to Service Oriented Architecture. A software implement system is designed to support interoperability among machine to machine interaction over a network. Web service publishes Web Service Description Language (WSDL) document and post it in a registry where service requester or client can search and locate a particular web service. WSDL uses a protocol Universal Description and Discovery Integration (UDDI) for managing the posted WSDL documents. When client try to start communication with web services then it looks up the UDDI registry and retrieves the WSDL document and communicates with web services by using Simple Object Access Protocol (SOAP) messaging protocol. The interaction among service provider, service registry and service client with help of WSDL, UDDI and SOAP is in figure 1.

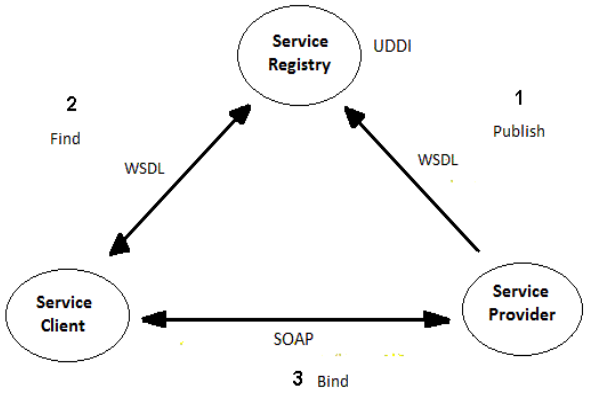

Fig 1: Interaction among Service Provider, Service Registry and Service Client

WSDL: Web Service Description Language [1] [2] is describing service as a collection of network endpoints or ports. Its specification provides an XML format for documents for service collection. A port is defined by accessing network address with a reusable binding and collection of ports are called as a service.

UDDI: Universal Description Discovery and Integration [3] [4] is a registry file to keep descriptive data about service providers or organizations or business partners written in XML for business worldwide to list themselves on internet. UDDI keeps name, product, location and web service what service providers or organizations offer, and help organizations to do E-Commerce business. Service providers and clients communicate with UDDI with the help of XML based WSDL file.

SOAP: Simple Object Access Protocol [4] is messaging protocol written in XML document. It provides communication between Service client and Service Provider by exchanging messages.

SPARQL: Simple Protocol and RDF Query Language [5] is a semantic query language for databases to retrieve and execute stored data which is in the format of RDF (Resource Description Framework).

RDF: Resource Description Framework is use to conceptualize description and information modeling which is used in web resources, like UDDI registry.

Service selection is done in UDDI registry for a particular service. Service requester searches for a service by applying constraints then SPARQL query runs to search for the service.

2. LITERATURE SURVEY

2.1 A Semantic Selection Approach for Composite Web Services using OWL-DL and Rules

Author proposes an approach [6] that relates services to objects and maintained by these services. User can apply constraints on objects affected by requested services. All affected objects and their relationships are designed by using an intermediate organizational structure using Web Service Ontology (OWL) and Semantic Web Rule Language (SWRL). Their selection techniques considers the relationships between services by looking conforming objects values of affected objects that satisfy the user constraints by combining related services to get conforming composite services.

Author have neglected non-conforming values and generated a polynomial number of SPARQL queries to reduce execution time. Applying constraints on affected objects decreases number on conforming objects values and number of generated composite services. Author has taken three major requirements:

1. Expressive service description: Service is described in described by service provider with the help of WSDL document and stored in UDDI registry.

2. Expressive user constraints: User or Service requester applies constraints to search a particular service.

3. Efficient selection strategy: Service selection strategy is based on affected objects by applied constraints by service requester and then objects are optimized to select the best result in the efficient time.

Author have used an architecture for service selection and composition which is shown in figure 2.

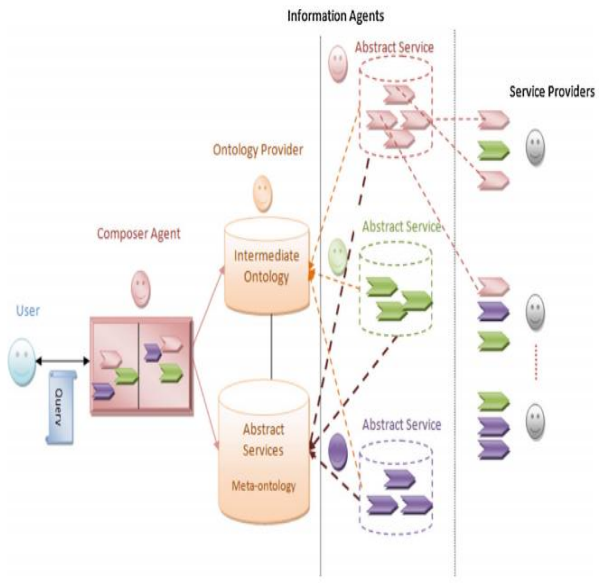

Fig 2: Global architecture of service selection and composition

Pros

1. Efficient and improved service selection technique.

2. An ontology framework which allows bundling concrete services to their abstract services according to their functionality and affected functional objects.

Cons

1. Not a good optimization technique is applied, Optimization can be improved by applying bio-inspired optimization algorithms.

2.2 A Study on Scalable Information Matching System based on Web Service Information

Author proposes a search method [7] of web service selection and utilization using a different search techniques. Earlier, it was stated only with the description of the web service rather than the quality property information in the form of web service and it had also a disadvantage of having the connection which includes in accurate information. So, the purpose of author is to propose the decision process for web service function and user at an actual level using the conventional methods and service can be selected when selection a web service. It is about to generate matching information by extraction a variety of information provided by web service providers. It is about to make sure that an appropriate web service for users would be selected through service selection in consideration with functional aspects and the scalable information matching proposed directly by users which is based on scalable information given by utilizing the scalable information matching system proposed by this research. It is about to compare the evaluated the proposed system and the existing study systems by utilizing accuracy and recall factor as evaluation as to web service search.

Author also proposes the matching broker selection management system that can select the most appropriate service for clients by providing the scalable matching services in consideration with the general properties required by clients in order to provide appropriate services to clients when clients require the use of services. The service selection process is simplified the model for by utilizing WSDL and UDDI of the existing services search model without applying dynamically the web service level contract. Their research have confirmed about the efficiency of service search by applying the service selection test method proposed through recall factor and accuracy evaluation. Accuracy and recall factor of service search is compared and evaluated by applying the method that considered the functional aspect and service properties in terms of service selection. Service selection method shows the aspects of lower service information shown the result that recall factor was low but service accuracy is increased. Therefore, it returns web service search results in order for clients to select the most appropriate service when selecting a web service.

Pros

1. Service selection management for providing the most appropriate service for clients.

2. Increased service accuracy in compare of earlier technique of service selection

Cons

1. Constant monitoring cannot possible because it is taking only scalable information for input.

2. It will be require a resolution for service starvation phenomenon which might occur between services using the collected information.

2.3 Context-aware Composition of Semantic Web Services

Author proposes a design approach [8] which is based on semantic model for context representation. It is an extension of OWL-S ontology for improving the expressiveness of each section of a particular OWL-S semantic service description, by implementation of context conditions and adaption rules. By having access for continuously updated context information and then these descriptions can be exploited by a discovery and composition tool what automatically finds the atomic or composite services that can be better applied to the requestor's behaviors and for particular situations of surroundings environment.

Authors presents an example and the final discussion clearly shows the advantages of the approach in improving the precision of automatic compositions.

Pros

1. Context aware services can be used as a flexible domain to automatically generate context-aware compositions by means of a specific tool.

Cons

1. It require a contextualize expansion of services to be performed during planning to take into account the state dependencies when a specific rules are applied.

3. CONCLUSION

This review paper highlights about semantic service selection approach for composite web services are about to select concrete services based on functional and non-functional attributes. Selection strategy considers the relationship between services by considering dependent conforming object values of affected objects. Global architecture of service selection consists four type of players: service provider, information agent, ontology provider and composer. Abstract service ontology can be developed in OWL2-RL and SWRL (Semantic Web Rule Languages) like HTML, XML etc. Abstract service ontology is a framework which consists three parts: categories, abstract services and concrete services. Service selection constraint model in which three main phases: preprocessing, identification conforming objects and identification of conforming composite services. In conforming values determination SPARQL query 1 is generated to specify constraints on affected objects and return only conforming object values after execution. In conforming composite concrete services generates SPARQL query 2 having two parameters atomic abstract value and specified value. It has two approach generating conforming objects values and locating composite services. The characteristics of semantic service selection is generating a polynomial SPARQL queries and neglecting non-conforming values to reduce execution time and provide an efficient and accurate result.

Use of Bio-Inspired algorithms like ACO (Ant Colony Optimization) can enhance the existing service selection and optimization technique from UDDI registry and it will be able to provide more accurate service to service requesters.

The highlight of this can be in following area:-

- It can provide faster connectivity to exchange messages between two organizations in compare with existing approach of web service selection

- It can be applied in real time systems too. Like weather forecasting.

- It can provide more efficient and effective result of searched services to service requesters according to the applied constraints.

This research have given three main perspectives to provide optimized and efficient result over the large scale of registered services in UDDI registry:

1. Service description technique expressive and efficient.

2. Constraints applied by user should be expressive and effective for service selection.

3. Service selection strategy should be efficient and quicker than current approach.

4. ACKNOWLEDGMENTS

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