A Dymamic Service Composition on Social Networks

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Abstract— In today's world, web services are highly essential as they are required for accomplishing tasks in a matter of second. Web services provide features such as e-Booking, e-Shopping, e-Banking that helps users to acquire everything from where they are Currently web developers use semantic based descriptions of web services to select and compose them and provide a single composition plan to the users. In certain cases providing a single plan to the users may not allow them to explore other good options that are available. Hence, giving multiple options to the user's request would help them select a plan according to their desire and comfort us, propose an algorithm based on semantic description to compose multiple composite services dynamically and provide to the user and allow the user to select an optimized composition based on his comfort.

Keywords- Service Composition, Social Network, QoS

I Introduction

This document is with the proliferation of web services providing the same functionality, researches about practicability and adaptive capability of web services selection mechanism have gained considerable momentums. In this paper Dynamic web service composition in done based on the results from directed acyclic graph based on optimal path method and giving important to results using the scheduling algorithm and round robin algorithm. The outcome of this algorithm shows that it boosts the speed of service selection that increases the performance of the service composition based applications. There are two directions in this paper the future work has to be done, one is to look for the way of implementing run-time caused by the poor utilization of the feedback data that is big wasteful processing results in poor efficiency of the algorithm and another is to estimate services based on probability distributions with short life cycle or less frequent use and estimate the probability distributions for services with short life cycle or less frequent use.

In a large market place, many services are available, so selecting the services based on performance and efficiency in a hard task. So QoS is used to select the service and used for service composition. The tradition approach in such marketplace use predefined business process. This restricts other schemes and services. The method of using predefined business process limit optimization of service composition and the user or the system only gets limited optimal solutions or cannot get globally correct or acceptable solutions. However by combining path planning with QoS service composition can overcome this problem of flexibility and it drastically increase the search space, as these Service composition are used in the Big Data environment ,the search space is hauntingly large and efficiency of such methods are serious issues. To reduce such a large search space Social Network based used User Centric dynamic composition with combined path planning is used and return the composition to users and provide them with the option of selecting the service which is efficient, in terms of cost, time and performance.

This paper provides optimized solutions from QoS, Social Networks and also provides the user the option of selecting desired services based on the needs, efficiency and performance by seeing real-time data.

II. RELATED WORK

This part gives a small literature survey on User Centric Social Network analytic, QoS based service composition and combined path planning.

A. *User Centric Social Network Analysis*

A person can be connected to every other person in the world is used as a concept in social network. The concept is said by Travers.J and Milgram.S [12].By using this concept User Centric Analysis in Social Network in done.

The Study about Social Networks brings the concept of strength between the relationships, the strength is generally strong or weak .In the strong relationship vital and frequently or similar messages are transferred and only certain, general or not so important messages are exchanged between the weak relationships [13].

In Business to Business (B2B), a good long term cooperating relationship increases authority. The reason behind using social network is to calculate QoS based on information transferred between two strong relationships and for authority.

B .*Qos based Service Composition*

This is to select the suitable and perfect service using the predefined business model and associate with the suitable Qos. By using ACAGA_WSC algorithm which is a combination Ant and Genetic algorithm QoS is calculated .The reason behind using this algorithm is to overcome the shortcomings of Ant and Genetic algorithm. The data generated from this algorithm is combined with the User Centric data from Social Network is combined to get optimized and suitable service for the User.

C. *QoS Service Selection with Complex Structures*

This is to provide the user to select the suitable service based on performance. Here a proper planned method is developed to determine the Qos for the service with complex patterns. By taking into account of the probability and conditions of each complex structures, four types of composition patterns for composite services are introduced. These are sequential, parallel, loop, and conditional patterns [14].These patterns can be selected based on the results from QoS calculation.

D. *Path Planning*

Path Planning is a method to form service path that provides a analysis existing planning approach [3] [10].The path planning proposes Xplan to build automatically the service progress or venture and provides re-planning [15] of web services.

III. Problem Modelling

In this section, the problem is modeled as online shopping website. It is consists of two parts shopping and shipping. In shopping the website consists of number of items and has to select as per the user needs. Consider a shopping site to purchase a book and after purchase select the way to ship the book.

IV. Solution

Consider there are four services, the user has to select any service for the purchase. The best service is provided by QoS calculating based on results by ACAGA_WSC algorithm and combining path planning with user centric Social Network Analysis.

Also provide user with four types of composition patterns to select Complex composite service and similar process is done for shipping also.

V. Implementation

Based on this model is basically consists of five primary stages. The system architecture gives the outline of this model. The algorithm ACAGA_WSC algorithm, Path Planning, and Social Network Analysis to calculate QoS all comes within this five states.

SYSTEM ARCHITECTURE

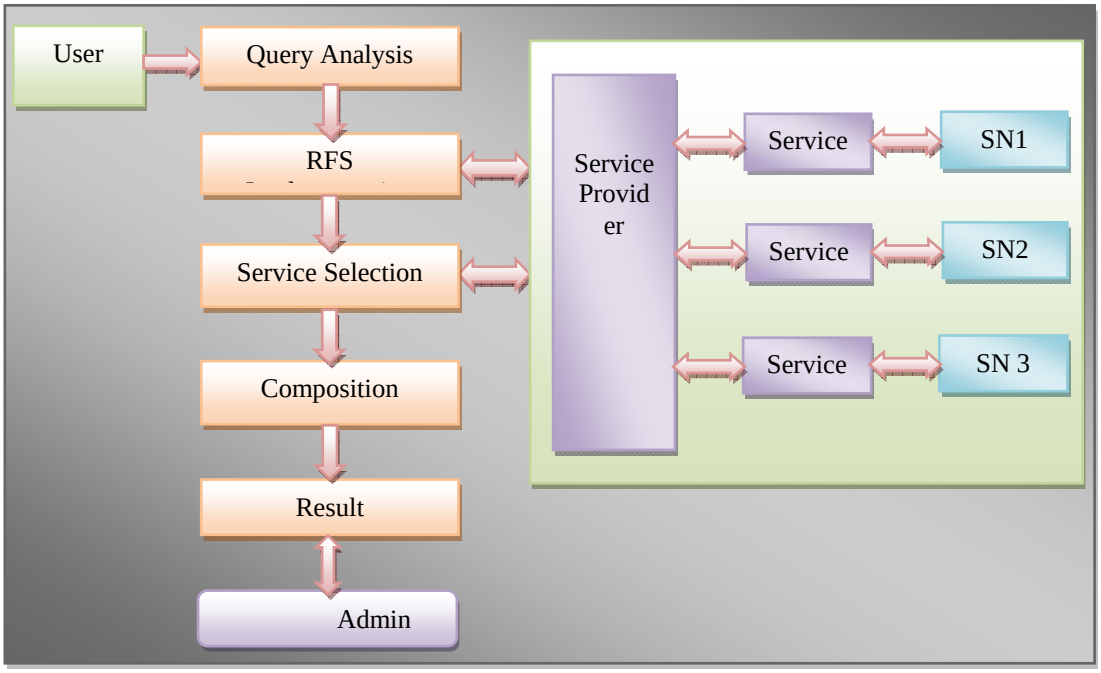

Fig. System Architecture

A.*QUERY ANALYSIS*

A user enters a word into to search engine to find want the user wants in the web, the search queries are of different forms such as normal text or hypertext such as each words are separated by “and” , “or” and “-“ to exclude. If a user is searching for certain information on different social networks that includes several area or facts and intended to describe every one of them by a disjunction. For example Android OR Smartphone OR Big Screen the user gets three types of results and take disjunction query such as Android “and” Smartphone “and” Big Screen, the user gets specific results. By doing so the user is likely to get results from different social networks.

B.*RFS IMPLEMENTATION*

In the request for service phase, the needs of the user such as functional and non-functional specification of the consumer’s needs to be fulfilled. The Non-functional specification include involvement of Human agent who acts as broker in providing the service, must has good reputation and has to provide good quality of service.The Functional or technical specification include platforms such as hardware or software and has to adhere strictly to the standard policies. If the consumer is satisfied with the certain service the consumer can Request for Service (RFS).The RFS is done in machine readable form by Semantic Web technologies. Suppose the requested service does not satisfy the user needs, the user always has the option of change of request by increasing or decreasing the Functional or Non-functional Requirements and the user can restart the discovery phase a RFS.

C.*SERVICE COMPOSITION*

The discovered service is taken, the selected service is carried by technical and non-functional attributes and also by the budget, security and attitude of the consumer. The various service composition algorithm searches for best service. The service composition as discussed already by QoS calculation by combining path planning and results from Social Networks.

D. *PATTERN SELECTION*

In this section the calculation of QoS for composite services with complex structures are processed, taking into consideration of the probability and conditions of each execution path. There are various patterns, each patterns are given with QoS results and this generate a composition plan that meet the requirements. After getting the results from Pattern selection it is compared with results generated from QoS.

E .*COMPOSITION ENVIRONMENT*

By having the results of above modules composition environment was created where the results of selected services are collected then composed so the ultimate user requested composed result was provided by this environment

VI. Experiment

This section explains how this paper is executed in the small environment. Consider a Shopping Website, the consumer specifies requirements, the website has to deliver services based on the requirements. The Shopping Website service provider, Cooperation network is created based on the history of Cooperation of the service providers.

A Social Network consists of real persons and relation between them, as said earlier it might be strong or weak. These real person are called as Actor. These actors can be single, group or a part of organization. The actors of common history or strong relationship or part of a particular organization are becomes part of a Cooperation network. The relationship between the actors in common cooperation is strong and produce positive results. These results are used to calculate QoS.

The concept of Partner Circle is used, suppose an actor searches for a particular service, the Partner Circle algorithm searches for actors who belongs to any cooperation network, if the actor belongs to any cooperation network, the history of cooperation network members taken into account for providing service for similar specification. If not the system also searches for services with similar specification outside Partner Circle [1].

Also ACAGA_WS algorithm with the results from above is used to calculate QoS and services are provided. The actor has the option of selecting listed service or can reset it for new service. If the actor is not satisfied from QoS, the user can it manually from the Pattern Selection [14].

Consider an e-Shopping where the actor needs to purchase a book, there are four Services available first is Author as a Service, Publication as a service, Cost as Service and lastly Title as a service. Based on query best services are provided via QoS.If the actor is not satisfied from the service, actor can reset it and discovery new service or can select manually through pattern selection and can compare with QoS result for the efficiency.

The basic patterns are as follows

A.*Conditional Pattern Selection*

This is condition pattern selection where Price as a Service is selected under conditional pattern. The minimum and maximum prize is set, the service within these price range comes from this.

B *Loop Pattern Selection*

In Loop Pattern selection, all the services will be present, the actor needs to select a service first, and based on the services selection other services will be appear. Consider if the actor first selects any Author (Service) the results will appear based on the author selected and next the actor need to select Book Title (Service) based on that results will appear and so on.

C. *Parallel Pattern Selection*

In Parallel Pattern selection, the actor can search between the services. Actor searches for author as a service with Title as service .If it matches the results are shown other not.

D. *Sequential Selection*

Here all the services available are provided, the user needs to select it based on the specification.These results from the pattern selections are compared with the QoS results and right service are selected.

VII. FUTURE ENHANCEMENT

This work can be enhanced with the Dynamic QoS of a web service composition can be calculated based on the assumption that each task has a dynamic QoS. The dynamic QoS of each task is more likely to be a probability distribution in reality. For future research, it is to study dynamic QoS calculation method for a composite service with component dynamic QoS modelled as general QoS probability distributions. It would be even challenging to estimate the probability distributions for services with short life cycle or less frequent use.

VII. CONCLUSION

A systematic QoS analysis approach for dynamic composition is able to provide comprehensive QoS information for a composite service even with the existence of complex composition structures such as unstructured conditional Patterns .The QoS information generated by the proposed QoS analysis approach includes not only the QoS of the web service composition but also the QoS and probability of the execution paths with the help of logistic services.

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