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SERVICE RANKING THROUGH SLOW INTELLIGENCE SYSTEM

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Abstract:

A fascinating approach slow intelligence system (SIS) is designed to manage service ranking problem arises in the web services UDDI. SIS solves the mentioned problem effectively and concretely and also moves towards the feasible solution (feasible service rank list). The phases of SIS such as Enumeration, Propagation, Adaptation, Elimination and Concentration are used to create the best rank list for the particular user request by the UDDI. Proposed work Architecture, Algorithmic steps and a case study are focused.

Keyword: *Slow Intelligence - Web service - Ranking*

1. Introduction:

The modern computerized world is controlled by the network. Each and everything is easily accessible to people via media and social network. Provisions of purchasing the essential things and home goods via internet online market are available.

Service like ticketing, banking, inquiry and guide to purchase anything are also possible via internet. World becomes quite small and almost all services are in every ones doorstep, because of network development. This Significant growth has increased the need of ranking among the similar services which are in the hands of UDDI in web service.[4] The operation, administration, maintenance and provisions of web services are based on the selection of service provider among the large collection and service providing method. It is also changing every day because of business strategies.

There are many third party web service raking software solutions available such as AWR-SEO, ranking and rank ranger etc. it can produce only static result, but business world is more dynamic[5]. So, dynamic updation and changes to be accommodated while ranking the web services. The quick changing nature of business facts should be incorporated to produce the best rank list. It is possible with slow intelligence system concept. In this paper

the subsequent sections are organized as follows Section 2, Reviews some Related work, section 3, problem Definition and Description, Section 4, slow intelligence and its phases, section 5 architecture for proposed problem, section 6 formal Algorithm, section 7 behavior of the proposed system with sequence diagram and Section 8, illustration algorithm with experimental result and section 9, outline the plan and future work.

2. Related Work:

Devices and services newly available in the network can be detected by the protocol SDP (service discovery protocol) but ranking among the collection of services can be done only through special software. Any way the special software cannot give the concrete service rank list always, because of business changing nature. But the slow intelligence system can solve the service rank list problem.

As presented in paper, "Slow Intelligence System Framework to Network Management Problems for Attaining Feasible Solution" mentioned a novel approach to the network management based on the use of SIS. In which a methods is proposed to develop a system to acquire messages received from various server that are in the managed network according to an SNMP standard and try to solve the problem through SIS.[1] The Slow Intelligence System is a general-purpose system characterized by being able to improve performance over time through a process involving enumeration, propagation, adaptation, elimination and concentration. Similarly, the Slow Intelligence System approach will allow the system to automatically infer the actions to take. In general slow intelligence system may produce just a .result at the initial stage but in the long run it will produce only the optimum feasible solution because of the adaptation phase of the SIS.

3. Problem Definition & Description:

The problem caries to develop a framework for effective service Ranking system based on semantic similarity between the parameter of the web service client request and the web service provider advertisement by using Slow Intelligence System (SIS).

Present days while UDDI is requested for service provider data by web service clients. Only the directly mapped provider data (if available) is provided otherwise UDDI does nothing. But if UDDI consider the semantic similarity between the provider data and client request with SIS then at least some result can be attained.

4. Slow intelligence and its phases:

Regular work of SIS propagates and communicates its experience with other solution providers to obtain and refine the solutions. By this way finally feasible solution is attained.

- *Slow Intelligence System for someone can also be a Quick Intelligence System for others.*
- *A Slow Intelligence System can evolve into a Quick Intelligence System and vice versa.*

These two points are the important points to emphasize in SIS. [3]

Slow intelligence system's decision cycle provided result in short run may or may not be better. But, in the long run it provides only a better solution. The refinement on multiple solution path is carried out repeatedly. Finally, SIS confirms the better solution.[1]

- Enumeration: In problem solving, the list of solutions are enumerated until the approximate solution is obtained.
- Propagation: Every SIS knows its context and environment related to its process, through the continuous exchange of information, SIS transmits information to other (logically or physically close) SIS's.
- Adaptation: Solutions enumerated are adapted to the circumstance. In some cases, the mutations despite optimal solutions because some solutions which already attained in the previous issues may be suitable.
- Elimination: Approximate solutions and solutions which violating feasibility conditions are eliminated and exact solutions will be considered for next progress.
- Concentration: In this stage all resources will be concentrating to implement only one appropriate feasible solution (or a few at a time).

5. Architecture of the Proposed Problem:

The above mentioned phases of the slow intelligence system are accommodated in the service ranking problem is proposed architecture as shown in Fig (i). through which host can attain best solution for the service ranking problem.

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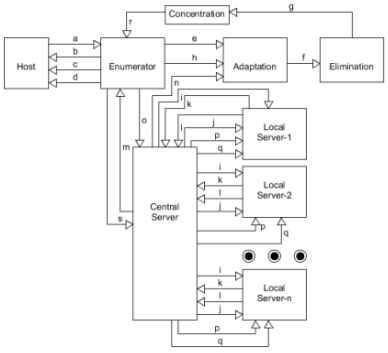

Fig (i) SIS Architecture for Service Ranking

Data flow pattern of fig. (1) are,

a) If no solution is readily available.
b) If the problem was previously solved.
c) If the solution is available in the ontological knowledge base of enumerator.
d) If the solution send by the central server is appropriate.
e) If more than one solution exits in the knowledge base.
f) Move with the collected environment and circumstances information.
g) After detecting the exact solution.
h) No solution is found from its knowledge base.

i) If no solution with central server and with host Input.
j) Empty message if no solution.
k) Send the solution to central server if available.
l) Send the solution if detected.
m) Send empty message if no solution.
n) Asks the adaptation phase to collect adjusted environment information about the problem.
o) Get the adjusted environment information
p) Send the updated information to the local server received from other local servers.
q) With adjusted host input based on adaptation phase modified input.
r) One feasible provider list.

6. Algorithmic Steps:

Proposed algorithm takes service name as input to obtain top service provider information from the best rank list which is suitable to the particular client by performing SIS activities such as enumeration, propagation, adaptation, elimination and concentration.

Web service client (WSC) search the Rank list (RL) in the universal Description Discovery Integration (UDDI) for service(s). If required RL is in the UDDI Data Base (DB) then the Top element (Service Provider name) of the Rank list is selected as provider for client otherwise the knowledge Base (KB) of slow intelligence system (SIS) is searched for new RL, if available then the provider is selected.

If still there is no service provider data then the SIS searches the Request in the local Servers (N) which are connected with SIS and if any RL is returned to SIS by local server then it (RL) is stored in the KB of SIS as enumeration list. Collection of RL in the enumeration list is reduced in to single RL by using the adaptation phase parameter (AP), Otherwise modified service (MS) request is searched again. Time parameter (T) is also used to stop the refinement process at certain stage. This process can be given in algorithmic steps as

1. Search RL of S
2. If RL exists in UDDI Then send the Top element of (RL) to WSC go to step 12 Else (continue).
3. Search RL in KB of SIS. If exists go to step2 with RL Else continue.
4. Get N and get T

5. i=1
6. Search RL in KB of Local Server(i). If RL in KB then store RL(i) in KB of SIS
7. i=i+1, T=T-1
8. If i<=n go to step 6
   If T >=0 then go to step 5
9. If Total Number of RL in KB>1 then.
   Get Ap_1....Ap_n
   Eliminate RL not relevant to Ap_1 to Ap_n else continue (go to next step)
10. If RL=1 Thus go to step2
    Else generate MS
11. Set S=MS go to step 2
12. STOP

7. Behavior of the Proposed System:

The sequence diagram showed in fig (ii) describes the communication pattern of the above algorithm:

i) Service requestor (Web Service Client) to UDDI
ii) Response of UDDI to Web service client
iii) Request of UDDI to SIS
iv) Reply of SIS to UDDI
v) Request of SIS to Nearby local servers and
vi) Nearby local server to SIS.

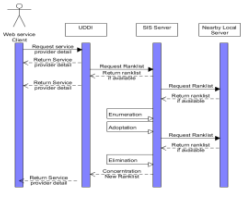

Fig (ii) Sequence diagram for Service Ranking

8. Experimental Result:

In order to test the performance of the proposed system a virtual experiment is conducted and obtained a result as follows,

S ← Internet Service provider.

1. Assume RL of UDDI is [BSNL, MTNL]

   Then Top element of [RL] = BSNL

   solution ← BSNL

2. Assume if no RL with UDDI and

   The RL of SIS is [BSNL, MTNL]

   Then the Top element of [RL] = BSNL.

   Solution = BSNL

3. Assume that if no RL with SIS then the RLs of Local server are

RL_1	RL_2	RL_3
Airtel	Reliance	BSNL
Reliance	Vodafone	MTNL
Vodafone	BSNL	Airtel
Idea	MTNL	Airtel

No. of RL > 1

Assume that AP_1 ← 3G

AP_2 ← Government Network

AP_3 ← Speed

Then

$AP_1 (RL_1, RL_2, RL_3) = RL_A$	$AP_2 [RLA] = RL_B$	$AP_3 (RL_B) = RL_c$
Airtel	BSNL	BSNL
Reliance		
Vodafone	MTNL	
BSNL		
MTNL		

4. Assume there still no RL from Local server Then S is adjusted as Datacard because Datacard is the relevant word of internet according to the knowledge base of SIS.
5. Now the result of local servers are,

RL_1	RL_2	RL_3
Airtel	Reliance	BSNL
Reliance	Vodafone	MTNL
Reliance	BSNL	Vodafone
MTS	MTNL	MTS

No. of RL > 1

Assume that AP_1 ← 3G

AP_2 ← Government Network

AP_3 ← Speed

Then

$AP_1 (RL_1, RL_2, RL_3) = RL_A$	$AP_2 [RLA] = RL_B$	$AP_3 (RL_B) = RL_c$
Airtel	BSNL	BSNL
Reliance		
Vodafone	MTNL	
BSNL		
MTNL		
MTS		

Solution = BSNL.

9. Conclusion:

In this paper a new method for service ranking problem has been introduced. This method is based on Slow Intelligence System approach. The proposed approach introduces a powerful way for the improvement of generating service rank list. The system continuously upgrades the knowledge of base SIS as well as local server. The future work aims to improve the system by the use of new and effective methodologies by enhancing the ontological knowledge base.

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