An Ontology based Optimized Semantic Web Service Discovery using TensorFlow in Overlay Cell Networks

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Abstract - Semantic Web Services (SWS) proposes to expand traditional web service technology to integrate ontology and semantics. Services adapt to changes without human intervention. The dissemination of information about traffic services is very important to the average consumer. The current system provides semantic web services for travel information through ontology at the request of travelers. However, the current system has problems with high-level semantic web services using the Palochi algorithm. So it does not provide proper services and reliability is declining. To overcome this error, Word Sense Disambiguation (WSD) suggests that, under certain circumstances, semantic similarity results should be improved by reducing ambiguity. Introduced the Genetic Algorithm (GA) to improve optimally based web services. The focus is on providing road accident information through oncology. It selects close to the right services and provides high quality services in terms of fast response time and high accuracy results.

Keywords: Ontology, Optimization, Web Service Discovery, Genetic Algorithm, Semantic Matching

Introduction

web mining is the process of finding and discovering knowledge from web content, structure and use. web services that communicate between the world wide web (www) and the hypertext transfer protocol (http) [1] and witcom (w3). web services provide a simple interface for communication. web service innovation is the process of finding an affiliate web service for a given task. semantic web services include semantic extensions and extensions based on the semantic web approach.

frameworks and technologies are needed to help people add meaning to web service descriptions. semantic services are a part of the semantic web because it uses markup language to read the data machine in detail [2] [3]. semantic web allows data to be shared and reused between multiple applications. semantic web services (sws) platform, which uses owl-s [4] (web ontology language) to access data, providers to meaningfully describe resources using ontologies. owl-s is an ontology with the owl based framework of the semantic web to describe semantic web services.

owl-s allows users and software agents to automatically discover, request, create and monitor web resources that provide services within specific limits [5]. this paper introduces the genetic algorithm (gaa) for finding the right semantic web services for user query for road accident information. prolog uses a web tool to develop road accident oncology to clarify accident information. finally, the genetic algorithm was validated by software model development in a multi-agent platform system.

literature survey

khattar, m., & malki, m., focused on an algorithm for match making, using a short-path algorithm that solves problems of the comparison algorithm to find the optimal compatibility between customer query and provider service. sanger, j., et al., suggested the semantic web service discovery framework for finding semantic web services using natural language processing methods. this method allows you to search through a set of semantic web services to determine compatibility with the user query that contains the required keywords. keywords that match semantic web service descriptions are available in web service modeling ontology (wsmo), which use methods such as speech-off-speech tagging, limitation, and word-sense diversity [5] [6].

garcia, j .; to improve semantic web service discovery. m., et al focused on spark sql research. this approach clearly reduces the search space for detection systems and, as a result, improves the overall performance of this task. it does not facilitate the automatic optimization of detection systems [7]. li, l. & & horax, i., focuses primarily on semantic web services for e-commerce based applications. introduced [8]. cardoso.j, et al. specific workflow management systems (wfmss).

this work consists of two parts. the first part provides a comprehensive model of the qos attribute in the workflow and methods for calculating and estimating qos. the second section describes the improvements required for workflow systems to support processes that are limited by qos requirements [9]. sumper, j .; xavier, et al., refer to anthologies such as daml-s and owl-s, which are based on the semantic languages daml + oil and owl. in some cases, the gynecological concept cannot be accessed. these gynecological languages improve the economics of a particular domain [10].

PROPOSED WORK

The multi-agent platform system consists of 4 agents: Provider Agent, Client Agent, Matchmaker Agent and Updater Agent. A hybrid matching algorithm used to automatically find traveler information through web services. To provide these services, we have created ontology and travel information that includes domain definitions, descriptions, concepts and relationships.

Similarity criteria are used to describe the relationship between concepts and to give similarity degrees to determine the WS of the user query. NLP [2] (Natural Language Processing) is used to determine the meaning of words used to find semantic web services. Using a match-making algorithm, it assigns weights to each similar WSS and provides a list of web services ordered by relevant users. However, this is still a problem with the accuracy, efficiency and customer satisfaction of semantic web services.

Word sense removal, which provides more meaningful information in a specific way, avoids ambiguous issues and words. Using the WordNet tool, the deviation process takes place to determine the different meanings of a particular word. From the senses of the word, the user will find more meanings related to the trial. The genetic algorithm suggests optimizing semantic web services and determining the best effective SWS by composing web services.

Table 1 shows the inputs for this system. It contains .WL format input information, also known as ontology for accident information. The system processes through the above inputs (Table 1) and shows which web services are being used on a particular system. Using these values the user will find a web service related to risk information for research. It contains information about date, time, location, weather issue, traffic violation, injury details and vehicle issue. It contains a request for the oncology oncology and related web service column. This information about the risk is in ontology (Figure 2), which explains what features are included in these gynecological presentations.

TABLE.1 INPUTS FOR SEMANTIC WEB SERVICE DISCOVERY

Request	Related Web services
Inputs: 1.Accident.OWL#Date	Accident profile Insurance profile Weather report Accident date
2.Accident.OWL#Time	Accident Time
3.Accident.OWL#Location	Accident profile Accident place Address of location
4.Accident.OWL#weather	Weather condition Forecast information
5.Accident.OWL#TrafficViolation	Traffic violation Over speed Light condition
6.Accident.OWL#vehicle	Vehicle type Vehicle problem Driver problem
7.Accident.OWL#injury	Accident profile Injury condition Traffic violation Weather condition

Figure 1 illustrates the process flow of this system. In this system, the term net tool is used as an electronic dictionary with a set of English words used by JWNL and JWI. The Word Sense Dismusion process then provides explanations of a specific word by accessing the user query. From that semantic similarity the best web services discovered using a genetic algorithm perform the matching process using a matching algorithm. Finally, the performance of the system is evaluated.

Figure 2 shows the gynecology that includes classes for accident information. Using the Proteégé tool, the Semantic Web Anthology was developed under the .OWL file name. There are 3 main types of road accident information: accident classes, causes of accidents and injury details. The first contains information about the date, time and place of the accident. The second describes weather information such as rainfall, winter, heat and general. These include vehicle problems that cause accidents and traffic violations such as speeding, red light violation and disobedience to traffic laws. The details of the injury are deadly, serious, nothing, light and so on. Risk related web services can be found using this accident oncology.

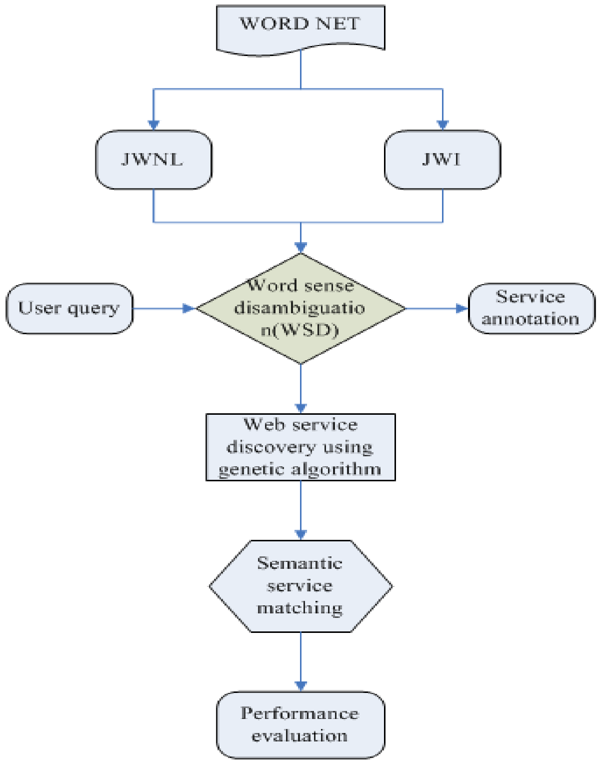

Fig.1 Process Flow

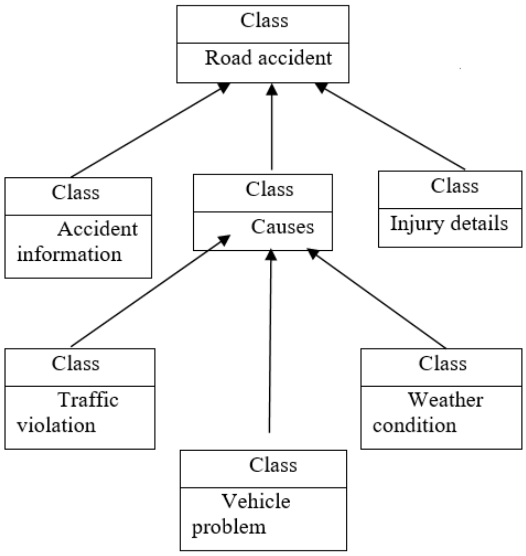

Fig.2 Part of accident ontology

A. OPTIMIZATION

The main goal of optimization is to find more relevant semantic web services that satisfy user query and improve accuracy. Finding the right (or) accurate web services requires an efficient and reliable genetic algorithm. The algorithm should be efficient (not much computer time) and accurate (SWS detectable). The best effective semantic web services for the user who need to estimate the weight value of WS. The following steps will be used to optimize semantic web services. They, Unsupervised WSD deviation, Service innovation based on weighted optimization amd Service genetic algorithm for best service selection.

1) Unsupervised WSD Cluster Service

In the process, supervised word-based deletion (WSD) is performed to improve multiple synonyms without ambiguity issues. Assuming that the text to be specified is meaningfully valid, each word is constantly replaced with its own explanations; The correct meaning should be one that enhances semantic consistency in the context of the word. For an unrestricted news item, it considers all the word groups associated with a single word, according to the Semantic Dictionary (Wordnet), ontology and already defined word groups. Word groups, i.e. word groups, are separated by multiple options for the senses. A high comparison of a feeling to the senses that are already obscure, these senses are considered correct. An input dictionary (WordNet) is required to specify a group of English words that are different from the senses of the word. An example of the senses of the word "time" using WordNet. They,

i. Riaz called four times.
ii. Rose has been waiting a long time.
iii. Time 5 p.m.

In the first verse, the word "time" is used as an example of a specific event. In the second verse, the word "time" is used indefinitely for certain actions. In the third verse, "time" is given by the time clock (clock time). Choosing the correct meaning for the word "time" and contrasting these three sentences with the corresponding meanings of the word (iii) is according to the information related to the accident. Finally this interpretation was chosen to make more sense in its true sense. Deviation of the contextual knowledge base positively affects the quality of the process.

This word sense process begins with nouns, verbs and adjectives, and each word group is assessed by updating its sensory similarity. The group with the greatest difference between the best senses (i.e., those with the highest semantics) is calculated with respect to the best sense similarities. When all word groups are evaluated, the best choice identified by obtaining the highest synonym meaning with all the word senses and changing the word group to a list of obscure ones is ambiguous.
Word groups place a high priority on this similarity. In all other cases, the deviation process is terminated. If some ambiguous words are still at the end of the deviation process, by default this is the process of selecting their first word net sense.

2) Weighted Optimization Based Service Discovery

In this module, service identification (also known as match making) is the process of determining concrete service suitability for each job. The match making algorithm provides functionally equivalent services based on their ability to satisfy the service request with functional and non-functional requirements. A genetic algorithm (GA) that enhances scalability services for global optimization. Response time, execution time, reliability and availability are the weights of QoS standards, w1, w2, w3, w4 and w5, respectively. It addresses service choice issues and creates a population of random solutions (or individuals) that GA typically produces the first generation.

Each person is judged according to their fitness function, which shows how “good” they are. Any GA will have some selection criteria to select the best individuals for reproduction. The selected individuals will be used to create a new generation by applying genetic processes such as mutation and later crossover. The goal of reproduction is to ensure that the new generation has better people than the older ones and that the average fitness activity of the newly produced population is higher.

Therefore, the right solutions can be found by repeating the above steps. The algorithm stops when certain conditions are met, e.g. Achieving a few generations. Based on the service request perspective, GA's fitness function is designed to increase the quality (QoS) characteristics of some services and reduce others. When managing QoS attributes, it is necessary to define the aggregation function for each QoS attribute.

TABLE.2 THE GENERAL GENETIC ALGORITHM

Input : Set of population (Web services)
Output: Semantic web services
1. Initialize population (at random)
2. Evaluate all individuals in population
3. Select a parent

Once the population (web services) is defined, genetic engineering can be performed and reproduced. Evaluate all individuals in the population based on fitness performance. Fitness is verified by the meaning of web services related to the user query.

A genetic process involving the selection of individuals from web services related to crossovers, mutations, and risk oncology. Crossover works to determine more semantic information from two or more web services. To determine the quality or performance of each individual in the population, GA associates the level of fitness with each solution string.

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RESULTS AND DISCUSSIONS

The specific system uses the following features, namely Java (JDK 1.6) software, which is used to maintain performance and determine the optimal SWS of the parameters. The WordNet tool is used for the purpose of Word Sense Disambiguation (WSD) .Protoz tool is used to create road accident ontology. The Pentium IV uses a 2.4 GHz processor, 2 GB hard disk and 256 MB RAM as hardware.

The main goal of Word Sense Disambiguation (WSD) is to achieve better meanings by removing ambiguities in specific situations. The above method is related to Wordnet, also known as dictionary on the web. The next step is to use a genetic algorithm (GA) to select a service for the optimized semantic web user (applicant) .Ontology refers to the risk information provided by a provider. Using this gynecology protocol tool reduces the time required to describe risk information services. The result is obtained using GA, which improves the accuracy of the WS and provides a better solution for optimization compared to other algorithms such as the hybrid matching algorithm. Improving the meaning of web services using genetic algorithm processes is unique. It offers higher accuracy, recall values, response time and user satisfaction level than the current system. The values and graph for performance evaluation are given below.

TABLE.3 COMPARISON OF VALUES FOR EXISTING VS PROPOSED

	Hybrid Matching Algorithm	Genetic Algorithm
Precision	0.83	0.88
Recall	0.81	0.87
Response Time(ms)	45	26
User Satisfaction (%)	50-65	60-81

The Table.3 shows the comparison values of precision, recall, response time and user satisfaction level for both existing and proposed system. TensorFlow tool is used for selecting inputs and compare the results.

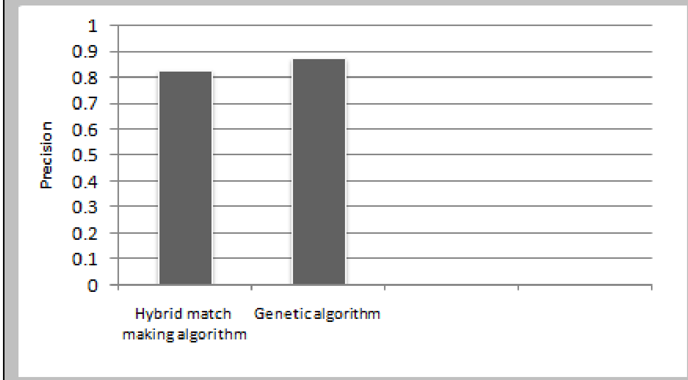

Fig.3 Precision values for SWS discovery

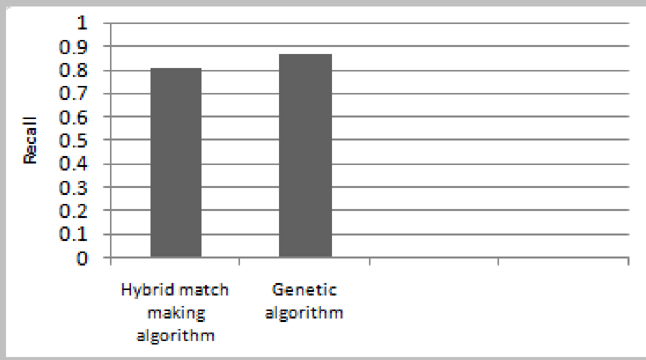

Fig.4 Recall values for SWS discovery

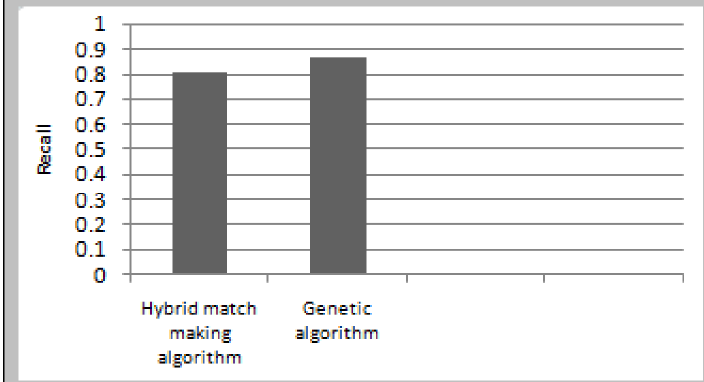

Fig.5 Response time for Existing Vs Proposed

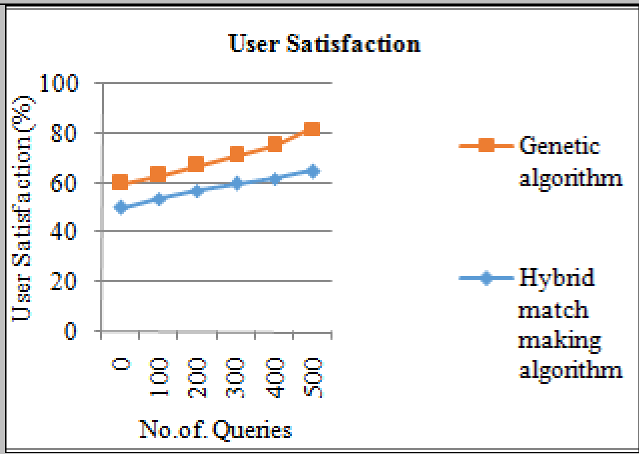

Fig.6 User satisfaction level for Existing Vs Proposed

CONCLUSION

It can be seen that the ontology can be adapted from the literature and applied to other applications. Word Sense malfunction (WSD) technology is suggested to effectively explain economics. By using WSD technology, the system eliminates ambiguities and makes more relevant web services meaningful. Ontologies are needed to promote, facilitate and sustain change. Genetic algorithm (GA) used for optimization to select the best web services suitable for the user query in a given activity. This improves the accuracy of web service detection with more semantics. The future functionality of the proposed system depends on it, which can be applied to different applications by changing two or more ontologies. The structure of affiliate web services improves the identification of semantic web services rather than a specific system.

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