An Efficient Information Retrieval Approach for Collaborative Cloud Computing

Hema B (M.E), Mrs. R. Hemalatha M.E(Ph.D)
Computer Science And Engineering, St Joseph’s College Of Engineering, Chennai 600 119, India.
Associate Professor, St. Joseph’s College Of Engineering, Chennai 600 119, India.
Hema161990@gmail.com, Hemesau_03@yahoo.com

Abstract—The collaborative cloud computing (CCC) which is collaboratively supported by various organizations (Google, IBM, AMAZON, MICROSOFT) offers a promising future for information retrieval. Human beings tend to keep things simple by moving the complex aspects to computing. As a consequence, we prefer to go to one or a limited number of sources for all our information needs. In contemporary scenario where information is replicated, modified (value added), and scattered geographically; retrieving information in a suitable form requires lot more effort from the user and thus difficult. For instance, we would like to go directly to the source of information and at the same time not to be burdened with additional effort. This is where, we can make use of learning systems (Neural Network based) that can intelligently decide and retrieve the information that we need by going directly to the source of information. This also, reduces single point of failure and eliminates bottlenecks in the path of information flow. Reduces the Time delay and it provide remarkable ability to overcome from traffic congestion complicated patterns. It makes efficient information retrieval approach for collaborative cloud computing.

Index Terms:- Collaborative Cloud Computing (CCC), Neural Network.
Training the node by feeding information to carry my request to particular organization instead of searching all rest cloud’s. It provide remarkable ability to overcome from traffic conjection complicated patterns is avoided by using techniques multi-QoS with cost, Efficiency , Disticance attribute is used.

II RELATED WORK

A Virtual Organization (VO) [1] will be a promising approach to integrate services and users across multiple autonomous clouds. However, how to build a secure virtual organization to achieve the collaboration goals is a critical problem.

A hierarchy of P2P [9] reputation systems is suggested to protect clouds and data centers at the site level and to safeguard the data objects at the file-access level. Different security countermeasures are suggested to protect cloud service models: IaaS, PaaS, and SaaS, [4] currently implemented by Amazon, IBM,[2] and Google, respectively.

Optimal cloud resource provisioning [6] (OCRP) algorithm is proposed by formulating a stochastic programming model. The OCRP algorithm can provision computing resources for being used in multiple provisioning stages as well as a long-term plan, e.g., four stages in a quarter plan and twelve stages in a yearly plan. The demand and price [7] uncertainty is considered in OCRP. In this paper, different approaches to obtain the solution of the OCRP algorithm [6] are considered including deterministic equivalent formulation, sample-average approximation.

Our CPU memory-based policy [10] using either high performance or high throughput approach and using the remote execution strategy performs the best for both CPU-bound and memory-bound jobs.

We propose a CCC platform, called Harmony [2,4], which integrates resource management and reputation management in a harmonious manner. Harmony incorporates three key innovations: integrated multi-faceted resource/reputation management, multi-QoS-oriented resource selection, and price-assisted resource/reputation control [7].

Advancements in cloud computing are leading to a promising future for collaborative cloud computing (CCC) [2], where globally-scattered distributed cloud resource have provision, configuration, utilization and decommission across a distributed set of physical resources in clouds has been studied in recent years, building individual cloud systems in CCC will generate overloaded and traffic conjection is occurred. Time Delay will happens. Moreover, it's fully based on (CPU, BAND WIDTH, MEMORY) which makes much not effective in the large-scale environment of CCC.

To overcome we used multiple cloud’s from different organization using their Individual cloud’s and scattered with Autonomous cloud’s connected through different area in worldwide and offers a promising future for information retrieval. Human beings tend to keep things simple by moving the complex aspects to computing. As a consequence, we prefer to go to one or a limited number of sources for all our information needs.

The cloud resource providing by assigning each node one reputation value for providing all of its resources. So it won't be much efficient for retrieving information from cloud.

Issues of Related work

1. Due to the issues of single cloud, multi cloud is not efficient trustworthy and Time delay occur.
III. BACKGROUND

Introducing a CCC platform with integrated Information retrieval from cloud. It can achieve enhanced and joint resources management across distributed resources in CCC. Retrieving information in a suitable form requires lot more effort from the user and thus difficult. For instance, we would like to go directly to the source of information and at the same time not to be burdened with additional effort.

This is where, we can make use of learning systems (Neural Network based) that can intelligently decide and retrieve the information that we need by going directly to the source of information. By training the network to start this process the initial weights are chosen randomly. The common type of artificial neural network consists of three groups, or layers, of units: a layer of "input" units is connected to a layer of "hidden" units, which is connected to a layer of "output" units. Which makes recently draws attention upon Internet users and information providers.

This also, reduces single point of failure and eliminates bottlenecks in the path of information flow. Reduces the Time delay and it provide remarkable ability to overcome from traffic congestion complicated patterns. It makes Efficient information retrieval approach for collaborative cloud computing.

Advantages of Background

1. Multi-QoS-oriented resource selection algorithm
2. Increase efficient information retrieval system.
3. Avoid Traffic Conjunction
4. Reduce Time Delay.

IV. NEURAL NETWORKS LEARNING APPROACH

Artificial neural network (ANN) is a machine learning approach that models human brain and consists of a number of artificial neurons. Neuron in ANNs tend to have fewer connections than biological neurons. Each neuron in ANN receives a number of inputs. An activation function is applied to these inputs which results in activation level of neuron (output value of the neuron). Knowledge about the learning task is given in the form of examples. An Artificial Neural Network is specified by:

An architecture a set of neurons and links connecting neurons. Each link has a weight,

A learning algorithm used for training the NN by modifying the weights in order to model a particular learning task correctly on the training examples. The aim is to obtain a NN that is trained and generalizes well. It should behaves correctly on new instances of the learning task. The neuron is the basic information processing unit of a NN. It consists of:

1. A set of links, describing the neuron inputs, with weights $W_1, W_2, ..., W_m$
2. An adder function (linear combiner) for computing the weighted sum of the inputs: (real numbers).

$$u = \sum_{j=1}^{m} w_j x_j$$

3. Activation function for limiting the amplitude of the neuron output. Here ‘b’ denotes bias.

$$y = \varphi(u + b)$$
Main Idea: distribute the error function across the hidden layers, corresponding to their effect on the output. Works on feed-forward networks. Use sigmoid units to train, and then we can replace with threshold functions.

Repeat Choose training pair and copy it to input layer
Cycle that pattern through the net Calculate error derivative between output activation and target output
Back propagate the summed product of the weights and errors in the output layer to calculate the error on the hidden units. Update weights according to the error on that unit. Until error is low or the net settles.

We want to assign
1. \( W_{ij} \) = weights of i-th sigmoid in j-th layer
2. \( X_{j-1} \) = inputs to our TLU (outputs from previous layer)
3. \( c_i \) = learning rate constant of i-th sigmoid in j-th layer
4. \( \delta_i \) = sensitivity of the network output to changes in the input of our TLU.

**4.2 Feedforward neural network**

It is an artificial neural network where connections between the units do not form a directed cycle. This is different from recurrent neural networks.

The feedforward neural network was the first and simplest type of artificial neural network devised. In this network, the information moves in only one direction, forward, from the input nodes, through the hidden nodes in the network.

**Single-layer perceptron**

The simplest kind of neural network is a single-layer perceptron network, which consists of a Single layer of output nodes; the inputs are fed directly to the outputs via a series of weights.
In this way it can be considered the simplest kind of feed-forward network. The sum of the products of the weights and the inputs is calculated in each node, and if the value is above some threshold (typically 0) the neuron fires and takes the activated value (typically 1); otherwise it takes the deactivated value (typically -1).

Neurons with this kind of activation function are also called artificial neurons or linear threshold units. In the literature the term perceptron often refers to networks consisting of just one of these units. threshold value lies between the two. Most perceptrons have outputs of 1 or -1 with a threshold of 0 and there is some evidence that such networks can be trained more quickly than networks created from nodes with different activation and deactivation values.

**V. Multi Layer Perceptron**

This class of networks consists of multiple layers of computational units, usually interconnected in a feed-forward way. Each neuron in one layer has directed connections to the neurons of the subsequent layer. In many applications the units of these networks apply a sigmoid function as an activation function.

\[ y = \frac{1}{1 + e^{-x}} \]

A common choice is the so-called logistic function.

**V. Cloud services**

The various clouds are created. These clouds are individual to each other i.e. one cloud is not dependent other and then provide the services to the users.

![FIGURE 5 CLOUD SERVICES](image)

**5.1 Collaborative cloud services**

Create the multiple clouds and make it as a collaborative. Then perform the tasks.

**Multiple Clouds**

![FIGURE 5.1 COLLABORATIVE CLOUD SERVICES](image)

**5.2 Cloud service consumption**

In this Fig 5.2 we are consume the cloud resources. And observe the difference between the normal clouds and the collaborative clouds. By the user utilizing the services.
Motivation of Multi-QOS

Motivation of Multi-QoS-oriented Resource Selection and Price-assisted Control

Simply combining information will lead to a few problems. The inputs of the neural network model include the QoS attributes in each transaction (i.e., price, distance, service, quality, and efficiency) and the seller’s overall reputation. The output of the model is the seller’s overall QoS. Because the real trace does not have users’ consideration priorities, we assume that the six QoS attributes have equal priorities. The predicted overall QoS and the real overall QoS for 100 resource requests, both of which almost overlap. Their root mean square error equals 0.95, a very small value. The results show the effectiveness and accuracy of the neural network model in predicting the QoS in individual resource selection.

FIGURE 5.2 CLOUD SERVICES CONSUMPTION

QoS Attribute

Failure in Services

Node Utilization

User utilizing The

Collaborative Cloud Service

Max Cap
Max trust

Request
power Trust
w/wait

percent of low individual transaction
Coherence of each QoS attribute
Resource Sharing

VI. TRUSTWORTHY RESOURCE SHARING

We first tested different methods when all requests are single-resource requests. In order to see the effect of information retrieval alone, which is measured by the ratio of successfully resolved resource requests over total requests. PowerTrust always selects the highest overall-reputed provider. As verified by the trace, a node with a high overall reputation may provide low QoS for another resource due to either unwillingness or overloaded status.

A multi-resource request is successfully resolved only after all three resources are successfully discovered. This is because if one of the three resource suppliers has a low individual reputation, the final request failure is low significantly for multiple-resource requests because it can ensure the success rate of each of the three selected suppliers by considering multi-faceted reputations for different resources.

VII. CONCLUSIONS

In this paper, we propose an integrated information retrieval management for collaborative cloud computing (CCC).

Human beings tend to keep things simple by moving the complex aspects to computing by this innovative components to enhance their mutual interactions for efficient and trustworthy resource sharing among clouds.

The multi-QoS-oriented resource selection component helps requesters choose resource providers that offer the highest QoS measured by the requesters’ priority consideration of multiple QoS attributes. Retrieving information in a suitable form requires lot more effort from the user and thus difficult. For instance, we would like to go directly to the source of information and at the same time not to be burdened with additional effort. This is where, we can make use of learning systems (Neural Network based) that can intelligently decide and retrieve the information that we need by going directly to the source of information reduces single point of failure and eliminates bottlenecks in the path of information flow. Reduces the Time delay and it provides remarkable ability to overcome from traffic congestion complicated patterns. The components collaborate to enhance the efficiency and reliability of sharing globally-scattered distributed resources in CCC.

VIII. REFERENCES


