International Journal of Engineering Research in Computer Science and Engineering (IJERCSE) Vol 3, Issue 3, March 2016

# Dynamic Search Algorithm for Message Routing In Unstructured Peer To Peer Network

[1] A. Sai Pratheek, [2] N Divya Bharathi, [3] Prasad B
[1]II/IV, [2][3]Associate Professor
[1][2][3] Department of CSE, Marri Laxman Reddy Institute of Technology and Management (MLRITM) Hyderabad
[1] saipratheek123@gmail.com [2] nuladivyabharathi@gmail.com [3]bprasad@gmail.com

***Abstract*** **Each node won't have global information about the entire topology and the position of additional nodes in unstructured nodes. A dynamic feature of unstructured P2P network, occupying global behavior is so tough. Search algorithms to place the resources and to route the communication to the mark node. RW and flooding are two typical examples of blind search algorithm by this query messages are passed to neighbors without any knowledge about the probable locations of the queried resources or any importance for the route to end. The algorithms are not appropriate to route a message to target. The stated algorithm is dynamic research; this is generalizations of RW as well as flooding. Dynamic search uses knowledge – based search procedures. Every node will communicate query messages more sharply to approach the mark node.**

**Keywords: Unstructured nodes, Dynamic feature, Unstructured P2P network, Flooding, Query messages**

## I. INTRODUCTION

Peer to peer networks and all of them maintain the track of all files and neighboring node information and this imposes lot of computation overhead and the overall system performance Peer to peer networks are so popular these days and every user and organizations are showing their interest in maintaining a peer to peer network across them. Peer to peer file sharing systems are efficient and the efficiency of them mainly depends on few factors like scalability and the flexibility to search the network. There are many existing techniques to search these unstructured peer to peer networks and they are proved to be inefficient as most of them depend on the flooding algorithms. In general all the nodes across the peer to peer network do not hold the global information of the topology and capturing the global behavior of other nodes is also a difficult job. There are many popular search techniques for implementing the search across the Unstructured is affected a lot. Flooding and RW are the important existing techniques for searching and they simply searches the network based on a query and they really does not hold any information related to the actual data location and thus they are proved to be inefficient.

.

### *a. Project purpose:*

The dynamic search (DS) algorithm, which is a generalization of flooding and RW. DS overcomes the disadvantages of flooding and RW and takes advantage of different contexts under which each search algorithm performs well. The operation of DS resembles flooding for the short-term search and RW for the long-term search. To understand the concept of unstructured peer to peer networks and how a typical search operation is done across these networks.

### *b. Project Scope:*

Network serves as a backbone for any communication. Due to the drastic increase in the network devices, the networks are flooded with messages but nodes in unstructured peer to peer networks doesn't maintain global information, that leads to the issue of poor message routing which conventional algorithms are not able to address. Dynamic Search algorithm provide the capabilities to locate the queried resources and to route the message to the target node. Thus, the efficiency of message routing in unstructured P2P networks is increased.

## II. SYSTEM ANALYSIS

### *a. Problem definition:*

In unstructured peer-to-peer (P2P) networks, each node does not have global information about the whole topology and the location of queried resources. Because of the dynamic property of unstructured P2P networks, correctly capturing global behavior is also difficult. Search algorithms provide the capabilities to locate the queried resources and to route the message to the target node. Thus, the efficiency of search algorithms is critical to the performance of unstructured P2P networks.

***b. Existing System:***

RW as well as flooding are two typical examples of blind search algorithms by this query messages are sent to neighbors without having any knowledge about the probable locations of the queried resources or any importance for the different directions to send. Few other blind search algorithms involves modified BFS(MBFS),directed BFS increasing random periodical flooding as well as ring. These algorithms try to alter the flooding operation to improve the efficiency. Moreover they still produce a huge amount of messages of query.

***c. Limitations of Existing System:***

Search cost is so high in the existing system generates a considerable messages of query even the distribution of resources is so scarce. This search is inefficient because the target is away from the query of source due to the query messages will increase exponentially with the count of hops. It is so time consuming one.

***d. Proposed System:***

In this it states dynamic search algorithm this is generalization of RW and flooring's face the disadvantages of RW and flooding and it take the advantage of various contexts under this each search algorithm done well. The DS operation resembles flooding for the short term search and RW is useful for the long term search .In order to examine the Ds performance ,it apply the random graphs as the model of network topologies and it adopt the possibility producing functions to model the connection distribution of degree. It examine the performance of search algorithms with respective some performance metrics involves the rate of success .query hits number, search efficiency and efficiency of query.

***e. Advantages of Proposed System:***

It decreases time of search. It takes benefits of random walk and flooding based method. Knowledge based search algorithms take benefit of the learned knowledge from previous results of search and it route messages of query with various weight depend on the knowledge.

## III. SYSTEM MODULES

The system module includes Peer Request, Super peer Response, Upload, Super peer updating, File request, Updating probability table, Response.

***a. Peer Request Module:***

In this module, the system has to request the relationship (connection) to the super peer. For the communication, the peer system is making the connection with one super peer.

***b. Super peer Response Module:***

In this module, the super peer is sending the reaction or response to the exacting peer according to request and capacity.

***c. Upload Module:***

In this module, a peer sends the port number or ip number consequent to their information of file.

***d. Super peer updating Module:***

In this module, peer request and database are maintains by the super peer. Therefore, updating and maintenance of database is important. If the super peer or peer ask file means then it check its database. If it not find the file then it ask its adjacent super peers until obtain the files.

***e. File request Module:***

In this module, a peer asks a word document file for the main server that is super peer. A super peer checks the corresponding information file in a database of superperer. If finds the file then sends the port number.

***f. Updating probability table Module:***

In this module, using the Dynamic Search Algorithm, the super peer updates or modifies the probability table. Successfully delivers the particular search query of the file to the certain peer. The corresponding probability value of the peer is increased. Finally, if fails the search then the probability value is also decrease.

***g. Response Module:***

In this module, the peer gets the corresponding port or IP address to file information. For future, the peer is communicating with the port or IP number.

## IV. SYSTEM DESIGN

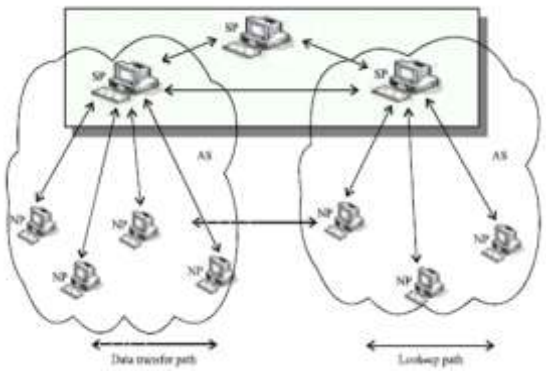

***Fig 1: Architecture***

In the above architecture, contains two paths, which are data transfer path and looking up path. Both paths contain the each four normal peers and one server or super peer. Moreover, these super peers contain another super peer. In this, one normal peer in data transfer path is

associated with the normal peer in looking up path. The normal peers in both paths are connected or associated with the super peers. In between the super peers also maintains the relationship.

## V. PROCESS SPECIFICATION

***Techniques and Algorithm Used:***

***Dynamic Search Algorithm:***

The performance of a peer-to-peer (P2P) unstructured network is observed by applying the search algorithms which is critical considerably. As the entire nodes present in such kind of network do not have the overall information of the network topology and the queried resources location. So only the network depends on a search algorithm for the locating queried resource and then the routing of message to its target node can be performed. Therefore the search issue is divided into two types namely: Depth First Search Algorithm and Breadth First Search Algorithm

***Depth First Search Algorithm:***

Based on this kind of algorithm the Random Walk (RW), efficient search algorithm is produced. In the RW algorithm, a single query message is sent by the query source to any one present in its neighborhood. The query message indeed is referred to as a Walker. If the neighbor to which the Walker is sent does not have a query source on its own, then the message is moved to the other neighbor present in the neighborhood for the further process to get continued. This kind of process performed reduces the cost as the message is not stopped anywhere in the middle which could be considered as an advantage. It also has a disadvantage is the search time taken in finding a target by this algorithm is much. The time taken is more as one hop is taken to visit a node making the count of hops increase linearly with it. And also the query success rate in RW is low due to it. The redundant path and degree of link limits the improvement of success rate and search time as the walker's number gets increased.

***Breadth First Search Algorithm*:**

Flooding is one of the BFS based algorithm which is a default search performed on the Gnutella network. The query message is sent to all of the neighbors present in the network by the queried source. As a node receives the message it first verifies itself whether it has a query source if it results in yes, then the query source receives a response message indicating the query hit. If else the query message is sent to the all the other neighbors except to the one the message came from. The disadvantage that can be considered is query cost.

Even though the source of query is scarce the production of query messages continues. The inefficiency of the search algorithm is shown when the query source is farther away from the target as because of the exponential growth of the query messages along with the hop count.

The both searches can be explained with the help of a network represented as follows:

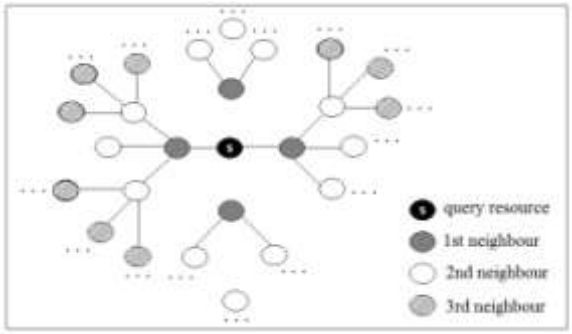


***Fig 2: An unstructured network***

Each vertex link degree is 4 in the graph. In Flooding concept, as the growth of network is unlimited from the source of query as that there is a increase in number of the query messages at every hop as 4, 12, 36,….. And at the 3rd neighbor the query messages present are a total of 52 for finding a single resource.

In the RW concept, only 12 vertices of the second neighbor are visited as the walker numbers k is set to 32. Due to these 32 walkers, the search becomes inefficient as they can visit only 12 of their neighbors in the second hop.

***Algorithm for Dynamic Search (DS):***

It is the generalization of MBFS, flooding and RW. In the DS algorithm there are two phases having search strategies in different. The DS decision threshold n and query message hop count h is considered by each search strategy.

***Step 1:*** Initially the queried resource f, query source s and the probability of transmission p are considered.

***Step 2:*** The hop count h, decision threshold n, vertex r, time-to-live limitation (TTL) and $m_i$ as the $i^{th}$ query message are taken.

***Step 3:*** If h0, then it is verified with the value of n such as h<=n

***Step 4:*** If the result is true then the hop count increases by 1 as hh+1 and s can choose a portion of p from its neighbor's $m_i$ and can visit their willing neighbor.

***Step 5:*** If the result comes out to be false that if h>n then the hop count increased by 1 as hh+1 and the $m_i$ should visit only one neighbor of s.

***Step 6:*** For each and every value of r the next following steps should be performed.

***Step 7:*** As if the r consists of the local info of f then r should return the entire info present with it to the query source s and the $m_i$ gets stopped.

***Step 8:*** If the above condition is not satisfied the hop count is checked with TTL as h>TTL and if true then $m_i$ stops searching.

***Step 9:*** If false then it verifies the h<=n then the hop count is increased by the value 1 as hh+1 and then r can choose a portion p of its neighbors $m_i$ and h visit the chosen one.

***Step 10:*** If the above condition also goes false then h>n condition is verified ad h is increased by 1 as hh+1 and the $m_i$ which carries h would visit any one of the neighbor of r.

***Step 11:*** Finally the resulted output is the entire local information of f.

## V. SCREEN SHOTS

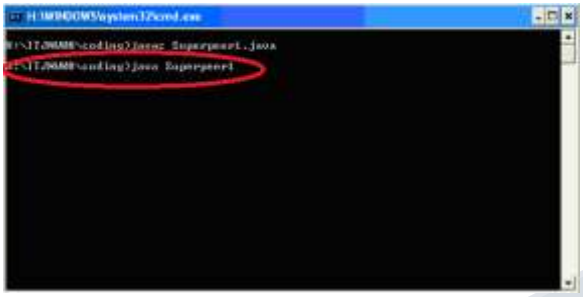

**Fig 3: A server socket connection is established to the server**

A server socket connection is established to the server as shown in the fig 3, such that the data upload or download requests from the server are accepted and approved at the server side.

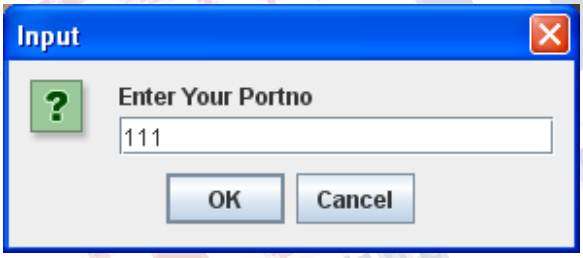


***Fig 4: Client port number***

When ever the client peer batch file is started, the required port number of the client is asked as shown in the fig 4 at the user interface level as shown in the above screen.

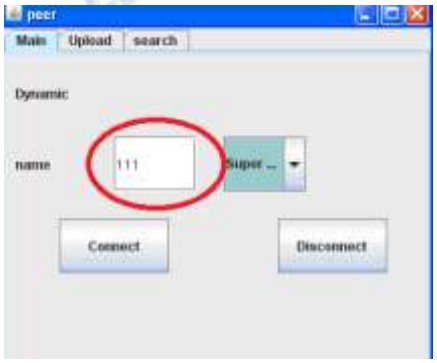


***Fig 5: User interface window***

User entered port number is populated as shown in the fig 5 at the name of the peer and here, swings concept is used to created the user interface window.

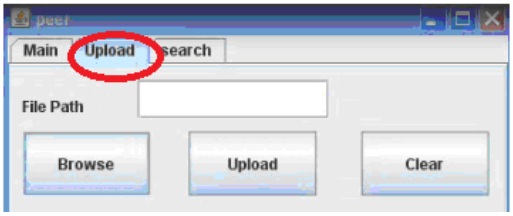


***Fig 6: File upload window***


***Fig 7: Alert***

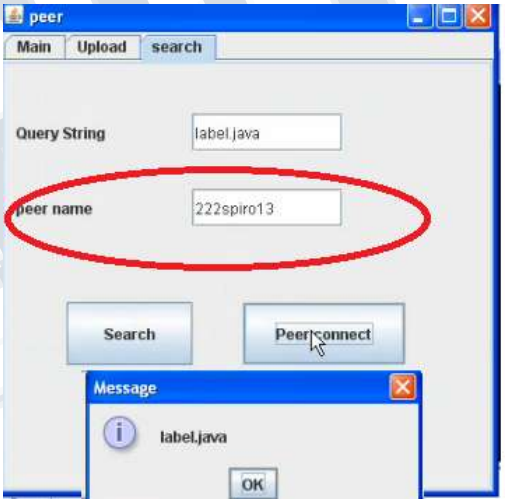


***Fig 8: Peer Connection***

Selected file is uploaded to the server database shown in the fig 6 and 7 based on the port number related data input and data output stream objects are used to convert the data to bytes and write to the server database.


***Fig 9: File download***

Once the file is downloaded from the server it is saved to the current working directory of the user and they can check the file in it.

## VI. CONCLUSION

In this task, offered the DS algorithm that is flooding generalization, RW and MBFS. DS defeats the RW and flooding disadvantages, and obtains different contexts advantage in which any investigate algorithm does better. It is similar MBFS or flooding for the search of short term and for the search of long-term RW. Examine the DS performance based on few metrics with the search time, success rate, number of query messages, and number of query, hits, search efficiency and query efficiency. Statistical solutions display that suitable DS parameters setting will get short investigate time and give a better tradeoff among the search actions and price. In various contexts, DS constantly do better. When joined with search algorithms of knowledge-based, its search actions can be further increased.

## REFERENCE


1. Kai Hwang. (2008). Massively Distributed Systems: From Cluster/Grid to P2P/Cloud Computing over The Internet. Available: http://gridsec.usc.edu/hwang/TalksandPresentations/Hwang-MasssiveDCS-April10-2008-USC.pdf. Last accessed 18th nov 2010.
2. JUSSI ALA-KURIKKA. (2007). Context-Aware P2P Middleware for Mobile Wellness Applications. Available: http://www.mediateam.oulu.fi/publications/pdf/1036.pdf. Last accessed 18th nov 2010.
3. Prarthana Shrestha. (2004). AUDIO FINGERPRINTING IN PEER-TO-PEER NETWORKS. Available: http://ismir2004.ismir.net/proceedings/p062-page-341-paper91.pdf. Last accessed 18th nov 2010.
4. Maysam Yabandeh. (2008). Simplifying Distributed System Development. Available: http://lara.epfl.ch/~kuncak/papers/YabandehETAL09SimplifyingDistributedSystemDevelopment.pdf. Last accessed 18th nov 2010.
5. Rabab Hayek. (2008). Cluster-based Search Technique for P2P Systems. Available: http://hal.archives-ouvertes.fr/docs/00/34/83/13/PDF/RR-6782.pdf. Last accessed 18th nov 2010.
6. Nabhendra Bisnik. (2005). Optimizing Random Walk Search Algorithms in P2P Networks. Available: http://www.ecse.rpi.edu/homepages/abouzeid/preprints/2007comnet.pdf. Last accessed 18th nov 2010.
7. Elsevier B.V. (2008). Guest editors' introduction: Foundation of peer-to-peer computing. Available: http://www.ict-optimix.eu/images/1/1e/Foundation_of_peer-to-peer_computing.pdf. Last accessed 18th nov 2010.
8. Sabu M. Thampi. (2010). SURVEY OF SEARCH AND REPLICATION SCHEMES IN UNSTRUCTURED P2P NETWORKS. Available: http://www.macrothink.org/journal/index.php/npa/article/viewFile/263/268. Last accessed 18th nov 2010.
9. Emerson Ribeiro de Mello1. (2007). Evaluation of P2P Search Algorithms for Discovering Trust Paths. Available: http://www.cs.ncl.ac.uk/publications/books/papers/314.pdf. Last accessed 18th nov 2010.