



## Boosting SEO Tactics: Using SEO Tools

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**Abstract**— *Search engine optimization – commonly abbreviated to SEO – is the process whereby in which a web site, or more specifically a web page or document, is constructed or modified amended in such a way as to improve its placement in the search engine results pages or SERPs. The site content analyzer3 tool is the perfect tool which is used to measure the content quality. The Site content analyzer3 tool provide a number of useful parameters named as: keyword density, keyword weight, keyword distribution; discover the most relevant keyword and key phrases, find out the quality of in-site links, overview the whole site-wide picture and many more. The Total Backlink Analyzer tool is an online tool used for finding the backlinks of Websites..This tool generates the total no. of important links connected to the website.*

**Keywords**— *Search Engine Result Pages (SERP), Search Engine Optimization (SEO), Page Rank (PR), Link Popularity, Keyword Density(KD) ,Keyword Weight(KW)*

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### I. INTRODUCTION

A Web search engine is a search engine designed to search for information on the WWW(World Wide Web). Information may consist can contain of web pages, images, information, database n and other types of multimedia files . Some search engines also extractsmine data available in news, books, databases, or open directories. A web site that contains a database of information from other web sites that user can query to find specific subjects area or specific topic. Search engines use software programs to gather and organize information. A web search engine examines websites on the internet in order to provide a catalog of information contained on those websites. Search engines at page layout and markup as well as linkage data to determine the relative importance and meaning of a document. The primary relevancy driver for most competitive keywords is like text(keyword). When user type something in the search box of search engine like Google, Yahoo, or MSN search, the engine will return results to user, organized by pages. The search engines tell that how many results they found. Search engine optimization is a sophisticated scripts used to help organize the world's information. Search engine is a tool to find information. The objective of a search engine is to provide high quality results by correctly identifying all web pages that are relevant for a specific query and presenting the user with the most important of those relevant pages. Relevance refers to the textual similarity between the query entered and a page text or content, Pages can be given a query specific, numeric relevance score(query dependent), the higher greater the value of this number, the more relevant the page is to the query. Importance refers to the global (query independent) popularity of a pageweb document is , as often inferred from the link structure (e.g. pages with many in links are more important), or may be perhaps other indicators. In actual practice, search engines usually addcombine relevance and importance, computing a mixed combined numeric rank score that is used to properly order query results presented to the user. Search engine optimization (SEO) is the process of improving the volume or quality of traffic to a web site from search engines via "natural" ("organic" or "algorithmic") search results [5]. Search engine optimization (SEO) is the science of increasing traffic to your Web site by improving the internal and external factors influencing ranking in search .[6] In this paper we will discuss how site content analyser and backlink analyzser can be used to to increase the popularity of the website but before that there are some useful terms that need to be discussed .These are:

#### A. Types of search engine

- *Crawler-Based Search Engines*  
*Human-Powered Directories*

A Search Engine crawler is also referred to as “robot” or “bot”. Crawler-based search engines consider many factors when indexing websites. Search engines are designed to try to find and rank the best websites.[2]The examples of crawler-based search engines are Google and AltaVista etc. On the contrary human-powered directories are directories that are compiled by human reviewers, who review, examine and evaluate short descriptions of websites provided by people who would like their websites listed online.The example of human-based search engines are Yahoo Directory and Business.com

*Ethical Search engine optimization:* The Ethical Search engine optimization is the techniques and strategies that search engines accept. They are the tactics that can be valid used in the websites ranking. Ethical Search engine optimization involves creating a properly marked up website that gives clear information for both users and search engines.[10]

*Unethical Search engine optimization:* The unethical search engine optimization attempts to deceive the search engines into listing a particular website more highly. In particular, the search engine different information to the sighted user.[10]

**B. Factors to be considered in search engine optimization**

- On page optimization factors
- Off page optimization factors

**On page optimization factors:**

There are many components of On-page optimization that should be addressed to assist with gaining visibility in the search results of the engines.

*Title tag :* This is the most important on-page optimization factor of all. This should be the first tag in the Head section of the page. A site's title tag is by far one of the most important on-page optimization element. It is displayed at the top of the browser and it is also used as the title of the website in the SERPs.

*Meta tags :* Meta tags used to be very important. Meta description tag should contain a brief description of the web page, including the primary keyword so it stands out in search engine result pages. When a user view the website using an Internet browser (such as Microsoft Internet Explorer), The browser is told by the webpage how it wants itself to be displayed.

*Alt tag :* The alt text is very important in SEO, because search engines cannot understand what the picture is about and the only way for them to know if the picture is relevant to a website or not is reading the alt text. Image alternate-text tags (ALT tags) are only indexed where the image is part of a hyperlink. ALT tags are useful for non-graphical browsing and should be employed correctly. The so-called alt text is a text located in the ALT tag of the images.

*Anchor Text :* Anchor linking is the lifeblood of the Internet. As part of Ssuccessful on-page optimization need to get into the habit of using keyword rich anchor text to interlink the site pages. This is one of the key factors used by the engines when ranking web pages.

*Sitemap :* A site map provides users with a means to navigate directly to content within the website. A site map can provide deep links to all the content on the website. A special page on a web site that contains a tree-like representation of the link structure of the site.

*Site age :* The age of a web site appears to be a more and more important ranking factor in the search engines. An older web site holds more trust than a new site because it has been around a while and established itself. Websites which fresh content seems to rank higher up these days. Hence, the content should be kept fresh and also relevant to the topic.

*Navigation:* Having good navigation is important to the indexing of web pages. There is nothing worse than arriving at a website and having difficulty understanding where to go for the information are seeking. Have easy to use, clearly marked navigation so the visitors click through instead of click-away in frustration.

*Keyword density :* Keyword density is the percentage of times a keyword or phrase appears on a web page compared to the total number of words on the page. The formula is to calculate website keyword density on a web page for SEO purposes is  $(N_{countkr} / T_{countkn}) * 100$ , where  $N_{countkr}$  is how many times a website repeated a specific keyword and  $T_{countkn}$  the total words in the analyzed text.

*Key Phrases :* A group of keywords put together make a key phrase. SEO is the process of optimizing web pages for keywords and key phrases so that they rank highly in the results returned for search queries. When calculating the density of a keyword phrase, the formula would be  $(N_{countkr} * N_{wpp} / T_{countkn}) * 100$ , where  $N_{wpp}$  is the number of words in the phrase.

*Keyword Prominence :* Prominence is how close to the to the start of the pagearea top that the keyword appears in the webpage. In general, a keyword that appears closer to the top of the page or area will be more relevant. However, in some situation ,sometimes it may helps to have a keyword in the midwaydle of an area, or even toward the bottom end of the area.

*Keyword proximity :* This refers to the placement of keywords on a Web page in relation to each other or, in some cases, in relation to other words with a similar meaning as the queried keyword.

**Off page optimization factors:**

*Back links :* Back links are incoming links to a website or web page. In the search engine optimization (SEO) world, the number of back links is one indication of the popularity or importance of that website or page.

*Link Exchange :* Link Exchange process in which, three sites are involved in a series of three one way links between them. This is usually done when two websites (A) and (B), and one link to website (A), to another link partners site(C), while in return, the link partner links his website(C) to the site (B). It means that site (A) is linking to site (C) and in return, site (C) is linking to site (B).

*Page Rank :* It is a link analysis algorithm used by the Google Internet search engine that assigns a numerical weighting to each element of a hyperlinked interconnected set of web documents, such as the WWW(World Wide Web), with the sole purpose of "measuring" its relative importance within the set.

*Link popularity :* Link Popularity is considered a significant factor not only in ranking websites but also for achieving increased traffic through search engines. Link popularity refers to the total number of links that a search engine has found in a webpage. The more websites link to the web page, the higher the link popularity of the page.

*One Way Incoming Linking :* It is the best type of links to have for the site. They increase PR(page rank) and link popularity. They notify indicate to the search engines that the site is an authority on the keyword or keyword phrase used to link. However, incoming links are the most difficult to acquire. These types of links are powerful in building link popularity

*Operating Modes Of Site Content Analyzer3* : The Site content analyzer can work in following modes:

- *Keyword mode*
- *Key phrase mode*
- *Keyword density and keyword weight*
- *Keyword cloud*
- *Link mode*

*Keywords Mode* : Keyword is a single word in the text part of the a web page. This is a main term on which search engines perform their operation operate with. Every word on a page is in fact a keyword; it alters the overall rank of a page in search engine's index. The way it does that depends on its weight, distribution and density.

*Keyphrase Mode* : In key phrase mode the calculation of key phrases could be done .The important key phrases which are included in the website coding are shown in the output. The weight, count and density of key phrases in a website are calculated in key phrases mode.

*Keyphrase Density(KD) & keyword weight(KW) mode*: Keyphrase density is a relative value that represents how many times Site Content Analyzer3 meets a phrase on the given page. For instance, if a phrase meets 46 times and there are 100 key phrases in total, the density of a phrase is  $46 / 100 * 100\% = 46\%$  . Keyphrase weight is value that shows the importance of a phrase. The weight is summarized from the weights of all keywords that build the keyphrase with respect to their relative position and distance.

*Linked Mode* : In linked mode the list of linked webpages can be displayed. The linked webpages is the interlinking webpages in a website.

*Information mode* : In information mode, all the information related to the webpage being analyzed is shown .e.g . size of the page ,title,word count , average weight,image count ,meta keywords , meta description etc.

*Keyword cloud mode* : The keyword cloud defines the appearances of important keywords. The keyword cloud is a visual depiction of keywords used on a website; keywords having higher density are depicted in large fonts. The main keywords of a website appear in large fonts.

*Report Generation* : The Site content analyzer tool can be generated a report of all contents. This report is all about the webpages contents. The different calculation of different termsfactors that can be included in the webpagesite is defined in this report.

The report includes :the different information detail

- *File Information*
- *File summary*
- *Keyword density report*
- *Keyphrases report*
- *Keyword weight report*
- *Links report*

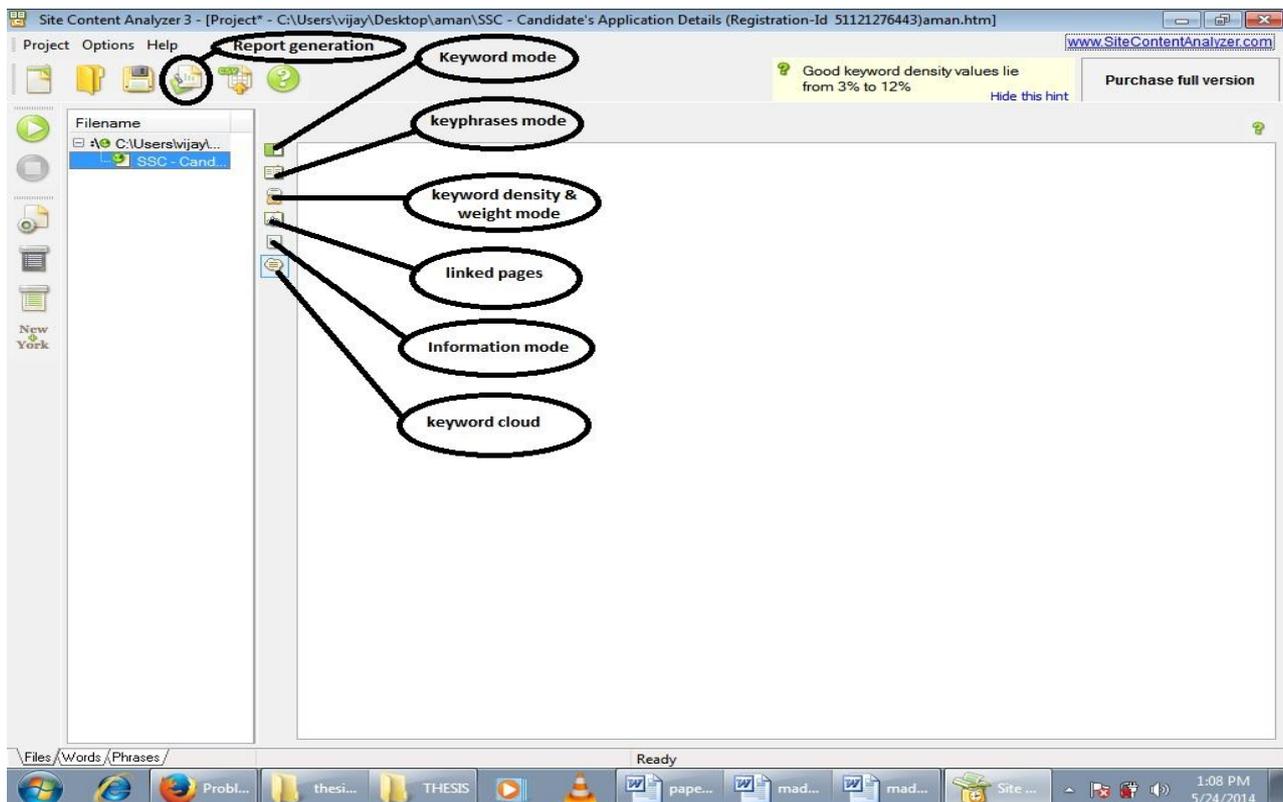


figure 1: site content analyzer modes

By analyzing the outputs produced by different modes of the site content analyser3 , the website can be optimized for important keywords and keyphrases.

**Operating Mode Of Total Backlink Analyzer Tool:** The total backlink analyser is an online tool that is used to find out all the pages that are connected to the webpage under consideration. It is also known as the inbound links. The inbound links are very important factor for website ranking .The greater the number of inbound links ,greater is the popularity of the site .The inbound links are very difficult to aquire. The URL of the website act as the input for the backlink analyser tool. Then the tool searches the web to find out all the backlinks to the website .

## II. PROPOSED WORK

Effective way of calculating the link popularity is proposed in this paper .The link popularity factor is the off page optimization technique that can be used in improving of ranking strategy .For considering the link popularity factor we use the page rank factor which can specify the position of the websites on the search engines. Suppose we take 5 following universities websites listed below

- [www.kuk.ac.in](http://www.kuk.ac.in)
- [www.gjust.ac.in](http://www.gjust.ac.in)
- [www.nitkkr.ac.in](http://www.nitkkr.ac.in)
- <http://babamastnathuniversity.com/>
- <http://hau.ernet.in/>

Now input universities URL one by one in the Backlink analyzer tool to find all the inbound links to the website. The output of backlink analyzer when www.kuk.ac.in in entered as input is given below

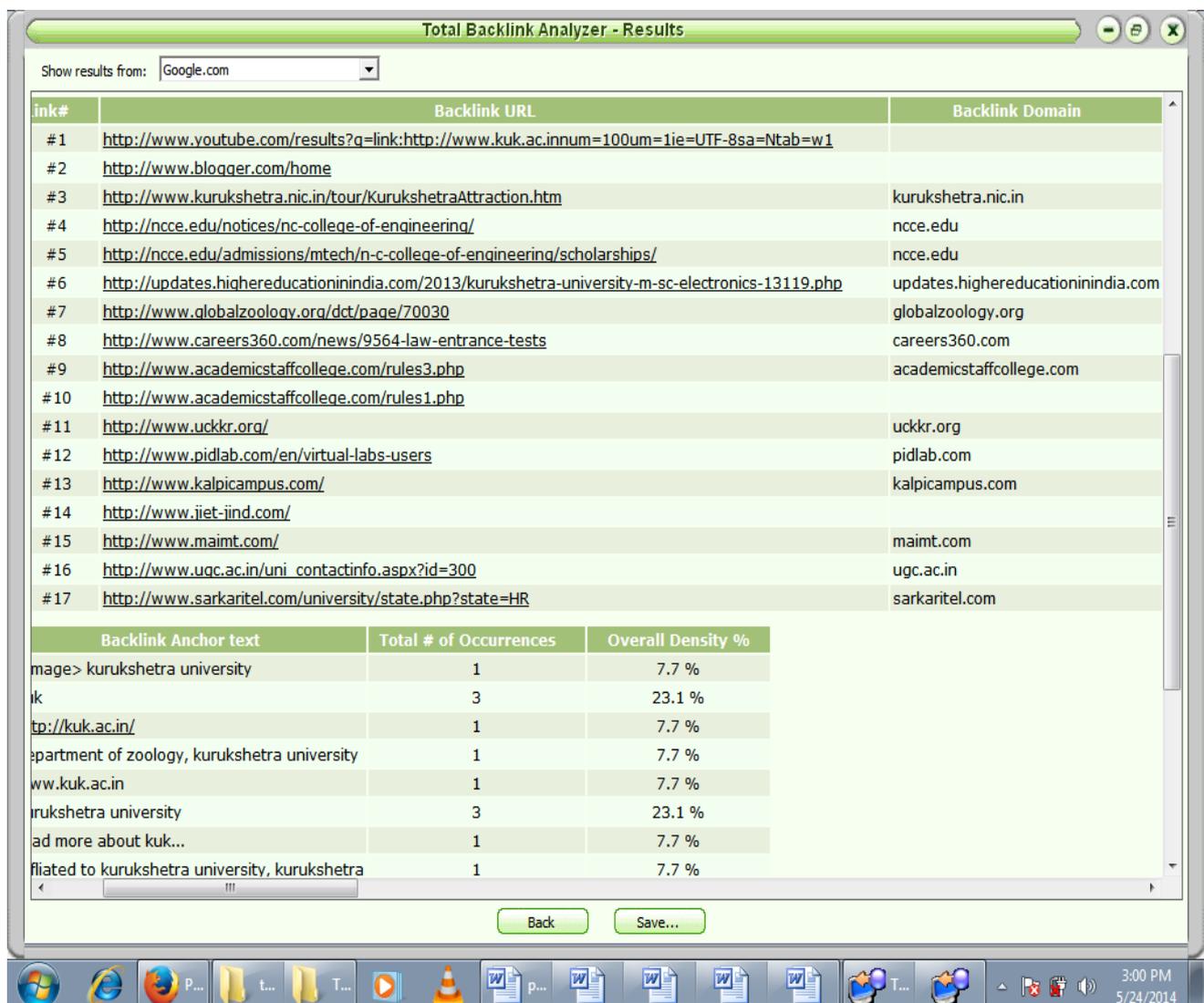


Fig 2 :Result of backlink analyzer tool with input kuk.ac.in

Now we have to check the page ranks of each backlink given by the backlink analyzer tool. There are number of websites on the internet that can be used to check the page rank of any webpage. The <http://www.prchecker.info/> website used in this research paper to find the page ranks of linked websites.

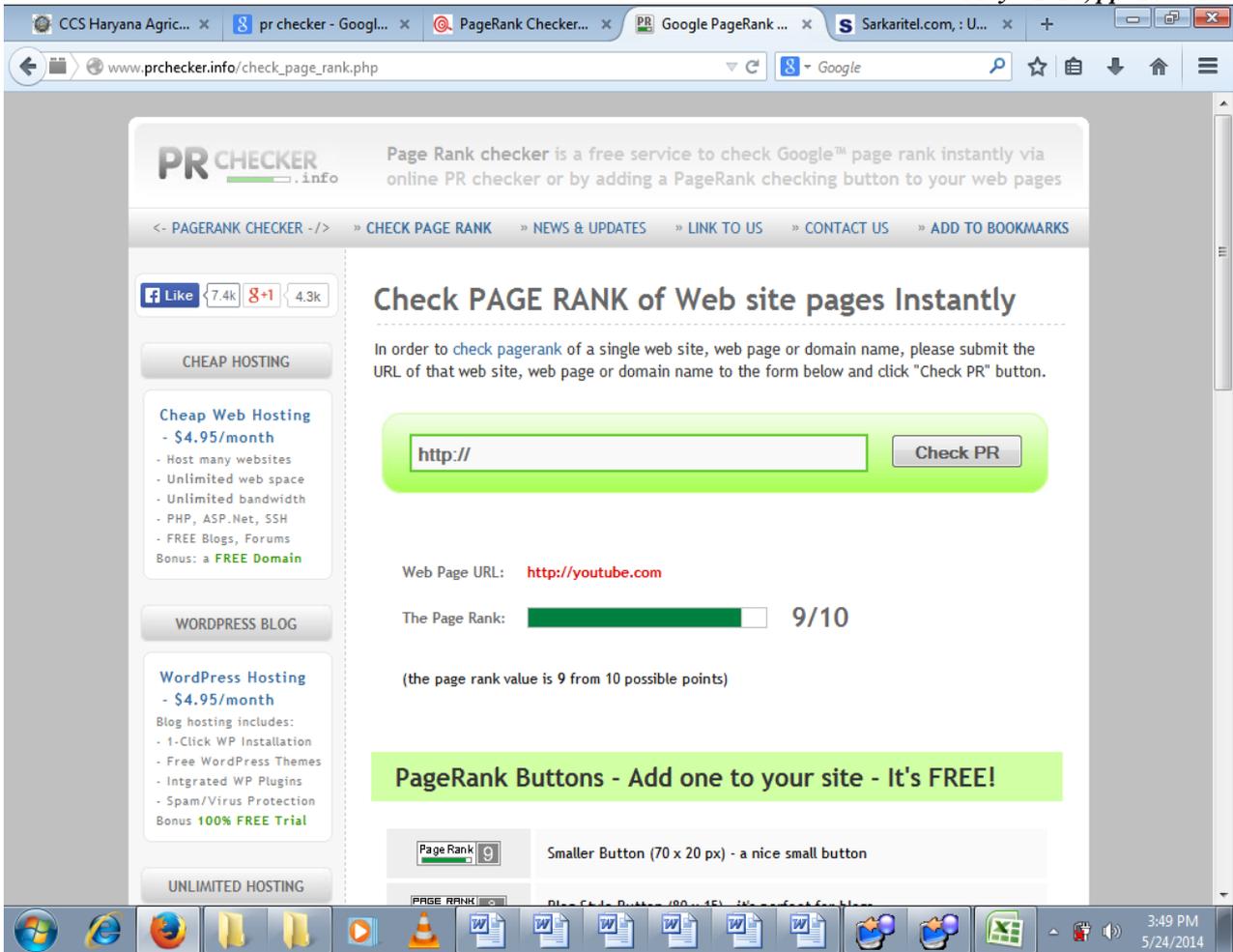


fig 3 : Generating page rank of each webpage with prchecker.info

Table 1 : Page ranks of each backlink connected to [www.kuk.ac.in](http://www.kuk.ac.in)

Link#	Backlink URL	PR
#1	<a href="http://www.youtube.com/results?q=link:http://www.kuk.ac.in&amp;num=100&amp;um=1&amp;ie=UTF-8&amp;sa=N&amp;tab=w1">http://www.youtube.com/results?q=link:http://www.kuk.ac.in&amp;num=100&amp;um=1&amp;ie=UTF-8&amp;sa=N&amp;tab=w1</a>	9
#2	<a href="http://www.blogger.com/home">http://www.blogger.com/home</a>	9
#3	<a href="http://www.kurukshetra.nic.in/tour/KurukshetraAttraction.htm">http://www.kurukshetra.nic.in/tour/KurukshetraAttraction.htm</a>	4
#4	<a href="http://ncce.edu/notices/nc-college-of-engineering/">http://ncce.edu/notices/nc-college-of-engineering/</a>	5
#5	<a href="http://ncce.edu/admissions/mtech/n-c-college-of-engineering/scholarships/">http://ncce.edu/admissions/mtech/n-c-college-of-engineering/scholarships/</a>	5
#6	<a href="http://updates.highereducationinindia.com/2013/kurukshetra-university-m-sc-electronics-13119.php">http://updates.highereducationinindia.com/2013/kurukshetra-university-m-sc-electronics-13119.php</a>	4
#7	<a href="http://www.globalzoology.org/dct/page/70030">http://www.globalzoology.org/dct/page/70030</a>	6
#8	<a href="http://www.careers360.com/news/9564-law-entrance-tests">http://www.careers360.com/news/9564-law-entrance-tests</a>	6
#9	<a href="http://www.academicstaffcollege.com/rules3.php">http://www.academicstaffcollege.com/rules3.php</a>	3
#10	<a href="http://www.academicstaffcollege.com/rules1.php">http://www.academicstaffcollege.com/rules1.php</a>	3
#11	<a href="http://www.uckkr.org/">http://www.uckkr.org/</a>	3
#12	<a href="http://www.pidlab.com/en/virtual-labs-users">http://www.pidlab.com/en/virtual-labs-users</a>	2
#13	<a href="http://www.kalpicampus.com/">http://www.kalpicampus.com/</a>	2
#14	<a href="http://www.jiet-jind.com/">http://www.jiet-jind.com/</a>	5
#15	<a href="http://www.maimt.com/">http://www.maimt.com/</a>	3
#16	<a href="http://www.ugcnet.ac.in/uni_contact.info.aspx?id=300">http://www.ugcnet.ac.in/uni_contact.info.aspx?id=300</a>	2
#17	<a href="http://www.sarkaritel.com/university/state.php?state=HR">http://www.sarkaritel.com/university/state.php?state=HR</a>	5

Table 2 : Calculating total page rank value of www.kuk.ac.in

Kuk.ac.in(PR value)	Total num. of backlink(frequency)	PR*total num. of backlink
PR1	-	-
PR2	3	6
PR3	4	12
PR4	2	8
PR5	4	20
PR6	2	12
PR7	-	-
PR8	-	-
PR9	2	18
	17	76

In the same way ,we can calculate the total page rank of all university’s website.The total page rank of each website is given in the table below

Table 3 : total page rank of all universities

PAGE RANK	kuk.ac.in	gjust.ac.in	nitkkr.ac.in	babamastnathuniversity.com/	hau.ernet.in/
PR1	-	-	-	-	-
PR2	6	-	-	-	-
PR3	12	-	-	-	-
PR4	8	12	12		12
PR5	20	-	-	-	15
PR6	12	-	18	-	6
PR7	-	-	14	-	7
PR8	-	-	16	-	-
PR9	18	18	18	18	18
	76	30	78	18	58

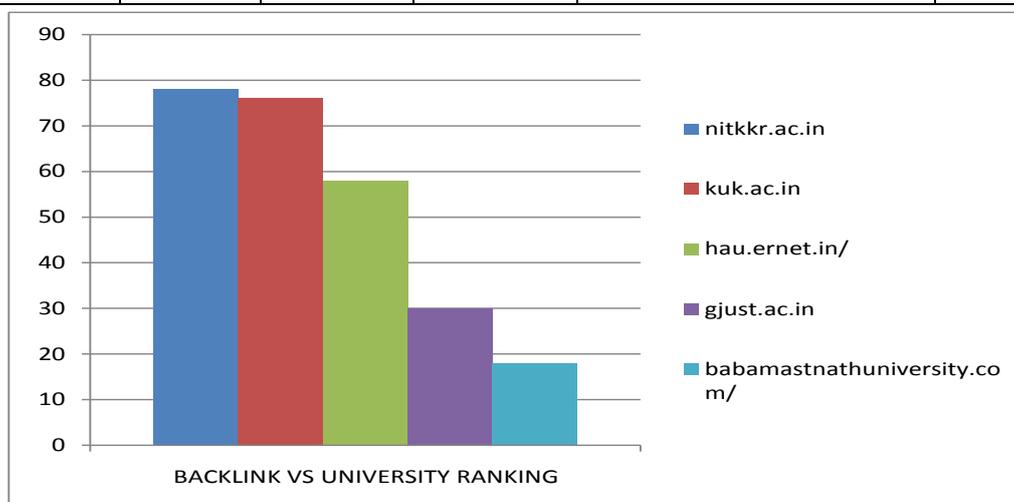


Fig 4: Backlink vs university ranking

### III. CONCLUSION

During the research work, effective value based scheme is presented to detect and mitigate the malicious nodes attack in MANETs. Algorithms harnessing the link structure of the web are becoming increasingly useful as tools to present relevant results to search queries. Although the Page Rank algorithm is based on a simple idea, scaling or modifying its implementation to operate on large sub- graphs of the web requires careful arrangement of the data. We have demonstrated that Page Rank can be run on modestly equipped machines. We have determined that single-precision Rank vectors are sufficient for accurate computation. We have presented several ways of analyzing the convergence of the algorithm, based on the ordering induced on web pages by the Rank vector. During the research work, effective scheme is presented to find out the website overall ranking based on page rank of each website connected to the site under observation. In the end , a graph generated showing universities ranking based on overall page rank score and in our experiment the page rank value or link popularity of [www.nitkkr.ac.in](http://www.nitkkr.ac.in) is highest in all. The detection mechanism and the removal approach in this solution are specially introduced. The detection mechanism could be used to effectively detect malicious nodes by performing neighbour monitoring and information exchange between cluster heads. Depending on cooperation of all well-behaving nodes in the network, malicious nodes could be excluded from the discovered routes.

And route selection is based on hop count as well as path quality to select the most reliable route to a specific destination. The proposed scheme is implemented in MATLAB. The results of the experiments showed that even in the presence of malicious nodes, the newly proposed scheme improves network throughput to about 82%, from 71% network throughput provided by AODV, 32% network throughput provided by AODV under two malicious nodes. A conclusion is made from the simulation results that malicious nodes degrade the network performance considerably and increase other nodes' burdens.

Moreover, if data packets are used instead of dummy packets to check the node's effective value more improved performance results can be obtained.

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