



# Analysis of Website using Click Analytics

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**Abstract**— Click Analytics is sub-domain of web analytics with a primary focus on what and where the website users are clicking on a web page. This helps analysts to study most clicked or avoided areas on a web page and the behavior of users inside the web page. Nowadays Web analytics is utilized to analyze different types of websites, but the use of Click Analytics has not been explored much especially in the educational domain of websites. In this paper, we used a Click Analytics tool called Crazy Egg in order to analyze and improve the website (www.gndu.ac.in). We collected the data of users coming on the web page for a month and then performed the analysis of collected data. We discuss the various observations and factors that play an important role towards the success or failure of a website among its users. The interpretation of results helped to know various problems existing on the web page

**Keywords**—click analytics, heatmap, website, overlay, web analytics.

## I. INTRODUCTION

In this digital era, a website not only provides cost effective and timely platform for communication with stakeholders, but also helps to shape and present its image on the internet [14].

Users coming to an educational website are usually concerned with two major points- one is finding the information essayed with ease and the other is finding the information in a timely fashion [12,8]. Krug [3] and Nielsen [5] suggest that for any user, the website of an institution must be understandable to him. Some institutions or universities for example, pay attention to design usable website to meet needs of coming visitors. Not only serving to its current students and employees, a website of an educational body also gives services to new visitors, seeking any kind of information about the organization.

Website analysis is an ongoing process. The analysis is required during the development of a website to cognize about its potential users so that layout design and content can be placed on the web accordingly. Also, once the website is developed, the analysis process does not end there but it continues for further maintenance and optimization.

The objective of this paper is to analyze the performance of gndu.ac.in website home page using click analysis approach to know how the website users interact within a web page. Web analytics [10] is becoming a very popular technique to assess the website performance and analysis. A subset of web analytics has not been explored much for the analysis of websites. Farney [1] has used click analytics technique to improve the library website. Click analytics focus on clicks received on a web page and visualizes what and where the

website users are clicking on a web page. This helps the website administrators and webmasters to know what are most and less popular elements and areas on the page. This also enables them to recognize hidden design flaws such as non-appropriate placements of links or non-linked graphics. A Click analytics tool called Crazy Egg [7] has used for the completion of the research. Crazy Egg is an online Click Analytics tool that enables its users to collect and export the click data of their registered websites.

The rest of this paper is organized as follows. Next section describes the background of click Analytics. Section III highlight the steps involved in click Analytics process. Then the literature survey is presented in section IV and in section V the results of research are presented. In the end, we conclude the paper.

## II. CLICK ANALYTICS

Web analytics [10] is a powerful technique to collect data about the traffic coming to a website. Various web analytics tools like Google analytics [11], are available that collect data and generate reports for the users automatically. These reports are analyzed to optimize the web. A subset of web analytics is called click analytics that is particularly concerned with what happens inside a web page. Click Analytics provides the data about all the clicks received by the page elements rather than total clicks received by the page URL only. All the data integrated with the click impressions are overlaid on the web page in different visual representations.

To maintain, optimize and understand the website users and to increase the revenue from a website, a website is often analyzed. The first thing to look for is how many people are visiting the website, what their various attributes are and how the website is performing on the whole. This is called web analytics. Then the next thing is how they behave inside a page; click analytics provides an answer to this question. Looking at the clicks received inside a web page helps to answer questions like what is the interest of users on page, how the placement of page elements is affecting the audience etc. Click analytics can be helpful in following ways:

- To identify which non-linked elements like text or images are getting a significant amount of clicks on a web page.
- To check which link gets more clicks among redundant links present on the page.
- To see where people are clicking most, where not and where they are but should not.

- d. To enhance the website design by identifying the flaws in the design of website such as non-linked graphics.
- e. The click analyst can look at the website from both the technical and user perspective at the same time.
- f. It shows the behaviour of the different type of audiences on the top of the web page. For example how the behaviour of desktop users differs from the mobile users on the website.
- g. To quickly check the responses of the website users towards the changes in the website design and content and compare different versions of the website.

### III. LITERATURE SURVEY

**Tabatha A. Farney (2011)[1]** analyzed the use of click analytics technique to improve the library website of the University of Colorado. There were redundant links available at the web pages. The aim of paper was to determine which links should be removed and which should not. The other objective was to reorganize the website. For this, three tools were used on the website were –in-page Google analytics, clickheat, crazyegg. The evaluation of all the three tools was performed and it was found that one tool has advantages and disadvantages over the other. For example in site analytics tool cannot generate heatmaps while the clickheat can. The volume or density of clicks can be easily evaluated with crazyegg using confetti view. There is no results export facility in in-site analytics and clickheat. By using all of them, the author was able to clearly identify and recommend the links for removal. In addition, she identified other potential usability concerns, such as visitors clicking on non-linked graphics rather than the link itself. Other benefit of tools was sharing the analyzed data with other non technical people also.

**Waisberg, Daneil and Kaushil, Avinash (2009)[2]** describes the process of web analytics. The process consists of five steps. The first step is defining a goal. Next a set of KPIs are chosen to meet the pre-decided goal. Then the data is collected using different techniques. The analysis of collected data is performed to get insight of website and to reach the goal. In the last the findings are implemented. The goal of this paper was to how to utilize web analytics to retain the traffic on website and thus improve the conversion rate. Various suggestions were presented inspired from real experiences for website performance improvements.

**Tidal, Junior (2013)[6]** examined Web metrics of a library's website to develop mobile interface of handheld users. Three analytics tools used were Google Analytics, Piwik and Clickheat. These tools collected data according to their specialization. These analytics tools helped to decide what content should be available on the library's mobile site. The paper suggested that the existing desktop website data can be used to design new mobile interface and the use of web analytics can be useful in the initial stages of development.

**Mustafa and Al-Zoua'bi(2008) [12]** presented an evaluation of nine Jordanian universities. They used a questionnaire and online automated tools. They employed five usability categories in questionnaire. Automated tools -

HTML Toolbox and Webpage Analyzer were used. The results of usability analysis showed that there were few problems with the design, performance but overall the usability level of the websites was satisfactory.

**Mutlaq B. Alotaibi (2013)[16]:** This paper discusses the usability evaluation of twelve university websites in South Arabia. Heuristic Evaluation method was used evaluate the usability. The heuristic evaluation method employs set of heuristics to test the usability of web interfaces. This method has several advantages like easy to use, less expensive and fast method to evaluate user interface design. It involves experts or evaluators who examine the website against predefined principles and heuristics. He developed a set of seven principles out of fifty-eight questions. From the research, it was found that the university websites in Saudi Arabia preserve an acceptable level of usability practices with regard to the seven developed heuristic evaluation principles. The government websites were found to be of a slightly higher quality than the private university websites. It was also seen that websites of government universities were found to offer 5% higher usability when compared to private universities.

**Nikolaos Avouris (2003) [17]:** This paper performed the usability testing on web portal of ECE department of university of Patras. The results of application of these techniques are discussed in the frame of the design and evaluation of a web portal, serving an Academic Department. They used three techniques for evaluation: on-line questionnaires, heuristic evaluation, user observation techniques and described their application for usability testing. The results of questionnaire evaluation techniques were helpful to identify the problem but do not provide insight to solutions. Heuristic evaluation requires an expert for experimentation but was observed to be better than the questionnaire technique. The disadvantage of this technique is it does not involve any real users but the experts so the third technique involving real users was used that presented many additional problems identified by users but neglected by previous two techniques. The results of these three techniques were used for new design.

**Ivory (2001)[8]** Automatic Website Evaluation Tool is software that automates the evaluation of website. It automatically collects of interface usage data and resolve problems identified. This paper examined automated evaluation tools : UsableNet LIFT WatchFire, Bobby and W3C HTML Validator to measure their effectiveness. The tools are useful to identify the problems but under the lack of guidelines they lack interpretations too.

### IV. METHODOLOGY

The analysis of web page followed four steps:

**Step 1. Web Page Selection:** The First step was to select a website and we chose Guru Nanak Dev University, Amritsar website [15].The Website of (GN DU) is visited by different type of users. It presents information to currently engaged people in the university and perspective students looking for admissions or other services. It contains all the updated information and notifications to inform the public about various activities. The website consists of multiple

ages but since home page is the primary page for a website so, we selected the homepage for our analysis.

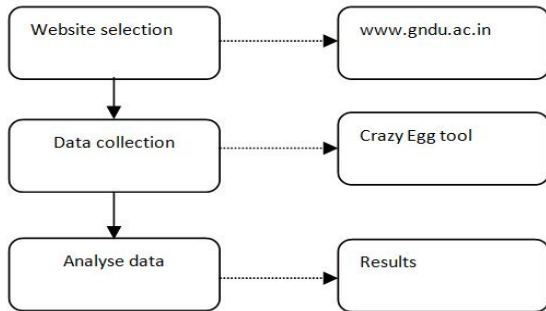


Fig 1. Methodology

**Step2. Tool Selection and Data Collection:** There are number of click analytics tools available such as Google in-page analytics [11], clicktale [4], inspectlet [13], Crazy Egg [7], Clickheat [9]and many more. We selected the Crazy Egg as our Click Analytics tool. It is a fee-based web tool. We signed up to crazyegg with our selected website. They provided a JavaScript code to add to the web pages, we want to track. We implemented the JavaScript in the home page of GNDU website as this is face of website. Then, the tool started collecting data automatically. Various types of reports were generated such as heatmap scrollmap, confetti view (fig. 3), overlay and list. The reports were in graphical form except the list which was in tabular form. Visual reports not only give quick review of analytics data but also facilitate to share the data with non-technical users very easily.

**Step 3. Understanding the Reports:** Crazy Egg generated five types of reports follows:-

- 1) **Heatmap:** The heatmap represent the clicks with color intensity. Brightness on the heatmap indicates how popular that part of web page is. Darker areas indicate no or fewer amounts of clicks received. It does not show the data in numbers but in quick and easy to get visuals.
- 2) **Scrollmap:** It shows how much users are interested on a part of web page depending upon the area viewed by browser window of user and the clicks received. It is helpful to know how far the users are scrolling the web page
- 3) **Confetti:** Each click is represented with a colored dot. Each dot contains information such as browser, device type, operating system, country, new v/s returning etc. click belonging to same segment like window 7 users will have same color different from Linux users. It is like looking at each click on a web page where is it and how many more clicks are there in that area. It can be very helpful to understand the behavior of a particular type of users on page.
- 4) **Overlay:** The overlay shows the exact count of clicks an element received. It overlay some box or signs to represent a click. Clicking on the box reveals more data such as total number or percentage of clicks received by different segments of traffic on that element.

5) **List:** The clicks received by both visible and not visible elements on the page are represented in the tabular form.

**Step 4. Analysis:** In the last, the data generated in reports were analyzed to meet the goal defined earlier. The analysis results are presented in the nest section.

### V. RESULTS AND DISCUSSION

A web page may consist of links, textual data, images, videos, or plug-ins. The users can be interested in one or more elements on the page. The first step of analysis was to know type of content receiving most of the clicks on the web page. Crazy Egg is very helpful to report even non-clickable elements on the page. So first of all, we divided the clicks into three types- text, link, other; where ‘text’ is simple text data present on the page receiving considerable amount of clicks by the users and ‘link’ is hyperlink present on web page and ‘other’ means clicks received on non-linked images, plug-ins or forms.

From Table 1, it can be seen that 56% of the page clicks received by the ‘links’ and the remaining clicks by the ‘text’ and ‘other’ collectively. This raises an investigation alarm as users might be clicking on many important parts of the page that are important from the user’s perspective, but website administrators had ignored.

Table 1: Classification of Clicks Received on Web Page

Website	Content type	percentage
www.gndu.ac.in	text	24.23%
	Link	55.59%
	Other	20.18

Table 1 not only encourages us to investigate further, but there was another hint too (fig. 2) the red color dots represent the returning users of website while white coloured dots represent the new users. From the confetti view (left), we can see that large amount of returning users were also using internal search form available on the website. There is no surprise that new users are using this feature. The question here arises that users might not be finding some information on the home page easily so they are moving towards using internal search.

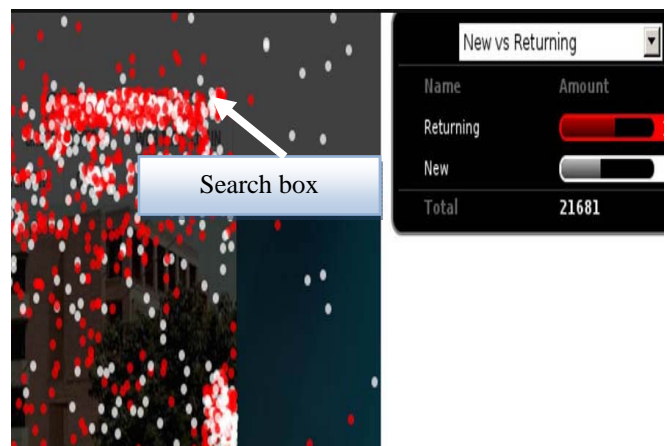


Fig. 2 Search box analysis



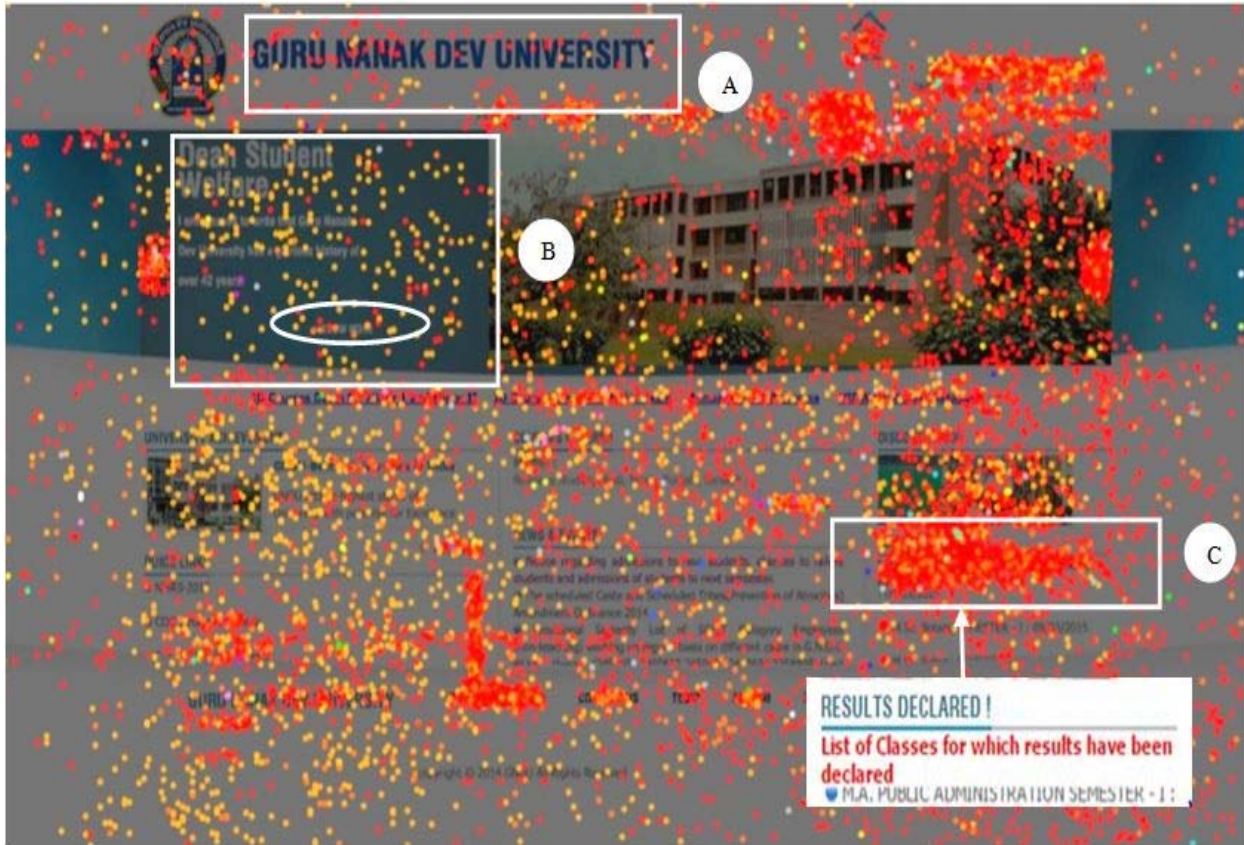


Fig. 3 Analysis of gndu.ac.in website using confetti view

While observing the click pattern on the page, we found that there were certain images that users were thinking as navigation, such as “guru nanak dev university” on the top (fig. 3, A). There was an interesting thing to note that people are more attracted towards special colors quickly (fig. 3,C). The page had text line “list of classes for which results have been declared” to inform the students that result of various classes had been declared and most of the users thought it as link and wanted to navigate to the result page from there, but no such accessibility was available. The website administrator should have made it a hyperlink to save the time of website users and to avoid their frustration.

From further inspection it was found that the various messages by dean, VC, registrar and student welfare were designed as onslide event and a link on under the name “know more” was provided to take the users to full message. But due to the presence of image alongside the messages and the division illustration as image itself, the users are distracted and they are assuming whole part (fig. 3, B) as hyperlink. The website administrators can increase the size of hyperlink to make it more viewable or they can change the color of “know more” link to get quick attention of users as observed earlier by the color psychology of users (fig. 3,C)

A website can be accessed using a computer, laptop or hand-held devices like phones. The statistics of the traffic to website show that about 57% of the total traffic coming to

the website is mobile users. Crazy Egg has a quick mobile versus desktop website comparison facility. This allows analyzers to check how the behaviour of mobile users different from desktop users. From the analyses of mobile and desktop comparison report, it can be seen that mobile users not using the scroll bar available with quick links.(fig.4, A) The reason was the scroll bar was not accessible on the different mobile phones. The different click behaviour of mobile and desktop users can also be seen in the fig.4

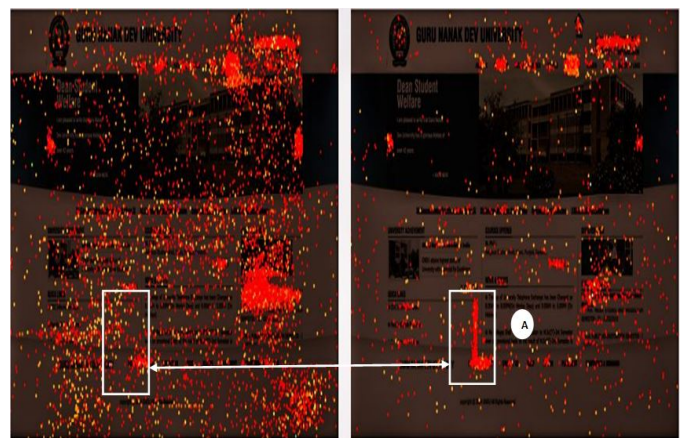


Fig. 4 Mobile and Desktop Clicks Comparison (left –mobile , right – desktop)

Large number of visitors using mobile devices makes it important that the website is made compatible with the

mobile devices or a different mobile compatible version of website should be created. Junior tidal [6] had used Clickheat, in conjunction with other analytics tools Google Analytics and Piwik, to make decisions regarding development of mobile website of a library website. The different parameters of mobile and desktop traffic are as in table 2. From table, we can say that website should be compatible with atleast chrome and Firefox browsers for desktop users and chrome and mobile android browser for mobile phone users to satisfy the majority of users. The layout can be designed based on the window width of majority of users.

Table 2: Mobile and Desktop Parameters Comparison(in Percentage)

	<b>Desktop (43%)</b>		<b>Mobile (57%)</b>	
Browser	Chrome	29.53%	Mobile(Android)	10.13%
	Firefox	08.96%	Chrome	16.19%
Operating system	Windows 7	24.68%	Android	35.74%
	windows xp	8.53%	Windows 9x	9.49%
	Windows 8	3.38%	Iphone	5.67%
Windows width (in pixels)	1300-1400	21.24%	1000-1100	14.12%
	1000-1100	10.11%	300-400	12.38%
	1200-1300	4.15%	200-300	6.95%

## VI. CONCLUSION

In this paper, a subset of web analytics, called click analytics, was used for the analysis of website. The evaluation of results showed that there were some weaknesses in the design that affect the users experience on the website. The click analysis also helped to differentiate the behaviour of mobile and desktop users. This research suggested that click analytics technique could be used to evaluate the web pages and also to identify potential usability problem areas. The drawback of this technique is

that the effectiveness of results depends on the interpretation capability of data analyst and his expertise in using click analytics tool. We suggest that in future there should be standard methodology based on the Click analytics for the analysis of websites.

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