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Speed Perspective for analysing Website Performance of Haryana State Universities

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Abstract: Speed is one of the key factors in determining webpage performance. More than 50% of the website visitors tend to abandon the site after an average minimum wait. The webpage must respond to the user before this average minimum wait so as to make them stay on the page so factors like first byte, start rendering and visually complete play important role in determining the performance of webpage and hence the site. This paper compares the speed performance of official websites of the state universities of Haryana for these performance factors.

Keywords: Website Monitoring, Web Analytics, Website Performance Metrics, Speed Analysis, Webpage Speed.

I. INTRODUCTION:

Identification of errors and bottlenecks in website performance is required so that a faster experience can be delivered to the users. Several studies have been carried out to thoroughly investigation about the performance of the website from various perspectives like, web traffic, speed and so on, based on which efforts are being made to improve the web usage experience and provide users the satisfaction they seek. There is a fair scope of performance limitations even when the website itself is quite fast. Many technical metrics exist that are not much related to user experience such as page load, DOM content loaded etc. But now there is also focus on metrics which affect the users' web browsing experience such as Speed Index, First Paint etc. Studies show that more than 50% of the website visitors tend to abandon the website after an average wait of 3 seconds.[10]

The speed index metric takes into account the visual progress of the visible page loading and calculates an overall score for how quickly the content was painted. In order to do this, it must be able to compute how "complete" the page is at several instances of time while the page is being loaded. In WebPagetest[8] this is achieved by capturing a video of the webpage loading in the browser and examining each video frame (10 frames per second in the current implementation and it only works if video capture is enabled). The algorithm used for calculating the completeness of each frame can be found at [9] that further assume that each video frame can be assigned a % complete.

First Interactive is the measurement of time when the main content has been delivered and is expected to be responsive to the user's input. A webpage may be responsive or not responsive at times. Not being responsive is any duration for which the main thread is blocked for around more than 50ms. Technically, such measurements are difficult.

The work explains further work added to previous attempts by authors, which included analytical reviews for state universities[12] and private universities[13] of Haryana in particular. This work has added perspective of speed for web analysis.

Experimental Setup and Tools Used: Belonging to science and technology domain, seven of the state universities of Haryana have been chosen for this experiment as listed below. A comparative study of the official websites of mentioned universities has been done. Based on their speed/time taken, several metrics have been recorded for analysing the performance of their official websites. webpagetest.org[8], a freeware online Web Analytical Tool[11], has been used for data collection done during the month of December 2018.

The website used for carrying out work are:

1. www.kuk.ac.in - representing Kurukshetra University as educational hub
2. www.mdwrohtak.ac.in - representing Maharshi Dayanand University
3. www.cdlu.ac.in - representing Chaudhary Devi Lal University
4. www.gjust.ac.in - representing Guru Jambheshwar University of Science and Technology
5. www.dcrustm.ac.in - representing Deenbandhu Chhotu Ram University of Science and Technology
6. www.crsu.ac.in - representing Chaudhary Ranbir Singh University
7. www.cbhu.ac.in - representing Chaudhary Bansi Lal University

The data has been recorded from the mentioned tool and the results have been reported in the form of charts with the help of Microsoft Excel, for a better presentation.