CS97 Project Proposal - BrowserPerf

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Abstract

Because web browsers act as the essential gateway to the ever-expanding Internet, most users have interacted with the various web browsers out there. Thus, it is increasingly necessary and relevant to perform some sort of comparative analysis on the different products. We present a PinTool that collects various metrics related to performance, execute it under a class of web browsers (Chrome, Firefox, Safari, IE), and analyze the results.

1 Motivation

The motivation of this project is to examine performance differences between modern web browsers. Given the increasing prevalence of the Internet in our daily lives, it is even more essential to perform a more critical analysis of browsers. The hope is that we gain a more thorough understanding of how browsers function, and potentially even provide evidence for an "optimally" performing browser. The implications of these results could also provide criticism/direction towards what future versions of browsers should work towards improving.

2 Background

Our initial idea was inspired by an article on Six Revisions website, an online resource for web developers. In this article, the author conducts a performance comparison on modern web browsers by measuring factors such as JavaScript speed, CPU Usage, and CSS Rendering Speed, all organized into an approachable visualization. [1]. While this may not be a published source, it has provided a nice framework with which we can adapt our experiments. Additionally, the author attached his data, which we can potentially use as a benchmark for our results.

3 Proposal

Our idea is to write a PinTool that will aid us in collecting performance-related metrics on different browsers (e.g. Firefox, Chrome, Safari, IE). In addition to some of the metrics mentioned in the Six Revisions article, we could record other metrics such as time it took making a specific system call, or time the browser spent in the Javascript interpreter. Once we design what metrics we are interested in tracking and code those into a Pintool, we can run our tool on the browsers, collect results, and analyze performance.

4 Milestones

4.1 Milestone 1

By Milestone 1, we should have a design document of what specific metrics we want to collect. We should also have written our PinTool such that it correctly captures these metrics.

4.2 Milestone 2

By Milestone 2, we should have designed our experimental setup. This includes setting up an appropriate testing environment and deciding what we want the browsers to do. We will also collect preliminary results in this stage.

4.3 Milestone 3

By Milestone 3, we should have organized our results better and come to some feasible conclusions regarding our experiment. In other words, we would be able to present a coherent comparative analysis on the performance of our web browsers. This could include explanations of why certain browsers did better/worse at some metric, as well as if there exists an "optimal" browser.

References

[1] Jacob Gube. Performance comparison of major web browsers. `http://sixrevisions.com/infographics/performance-comparison-of-major-web-browsers/`, 2009.