

# A Comparative Evaluation of the Execution Behavior of JavaScript Benchmarks and Real-World Web Applications

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JavaScript - important for Web Applications

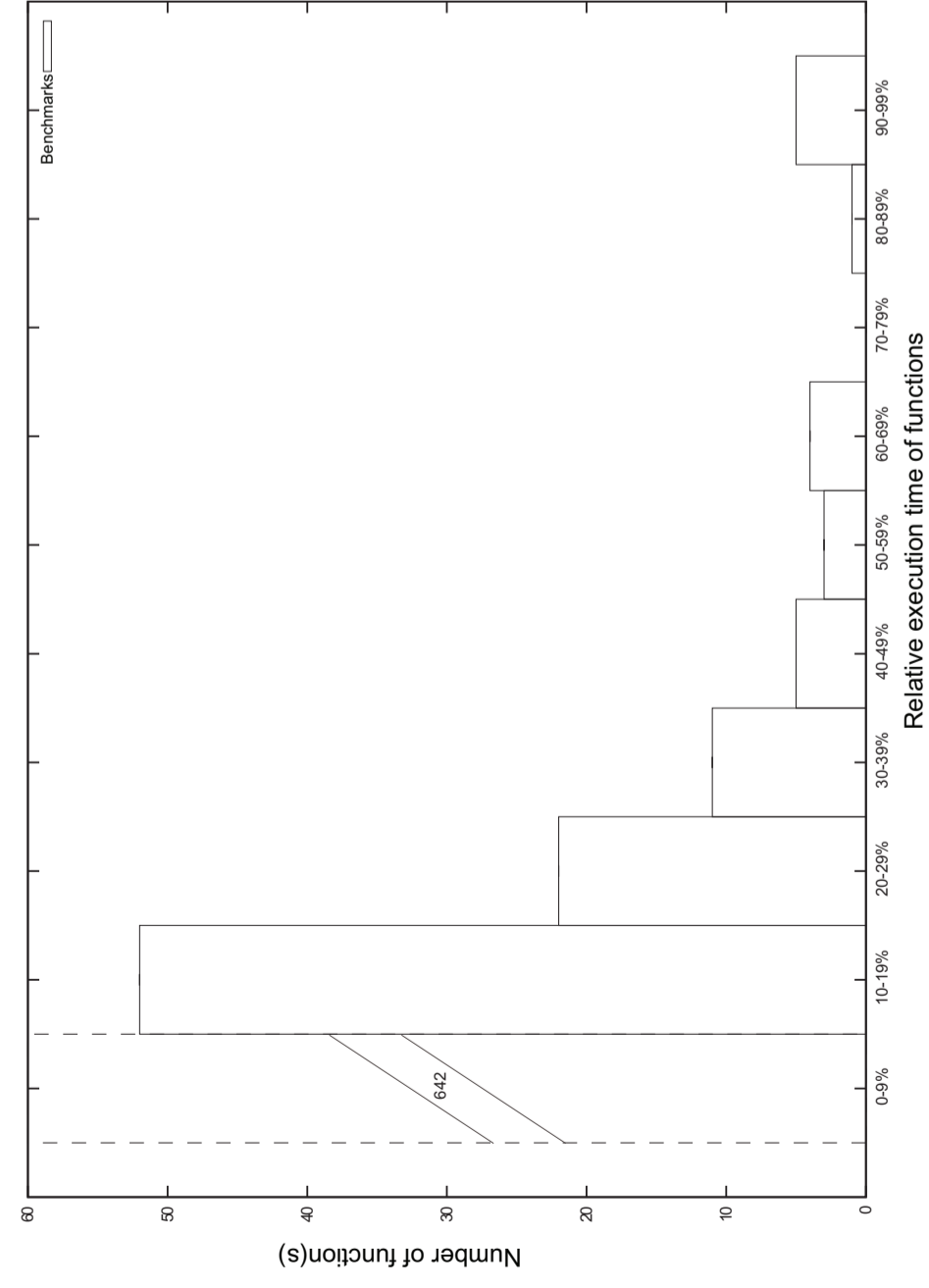


JavaScript was introduced to allow web designers to add interactivity to web pages. JavaScript has since then gained momentum, through Web Applications. As JavaScripts become more sophisticated, the need for better performance from the JavaScript engine become obvious.

## A set of JavaScript benchmarks ...

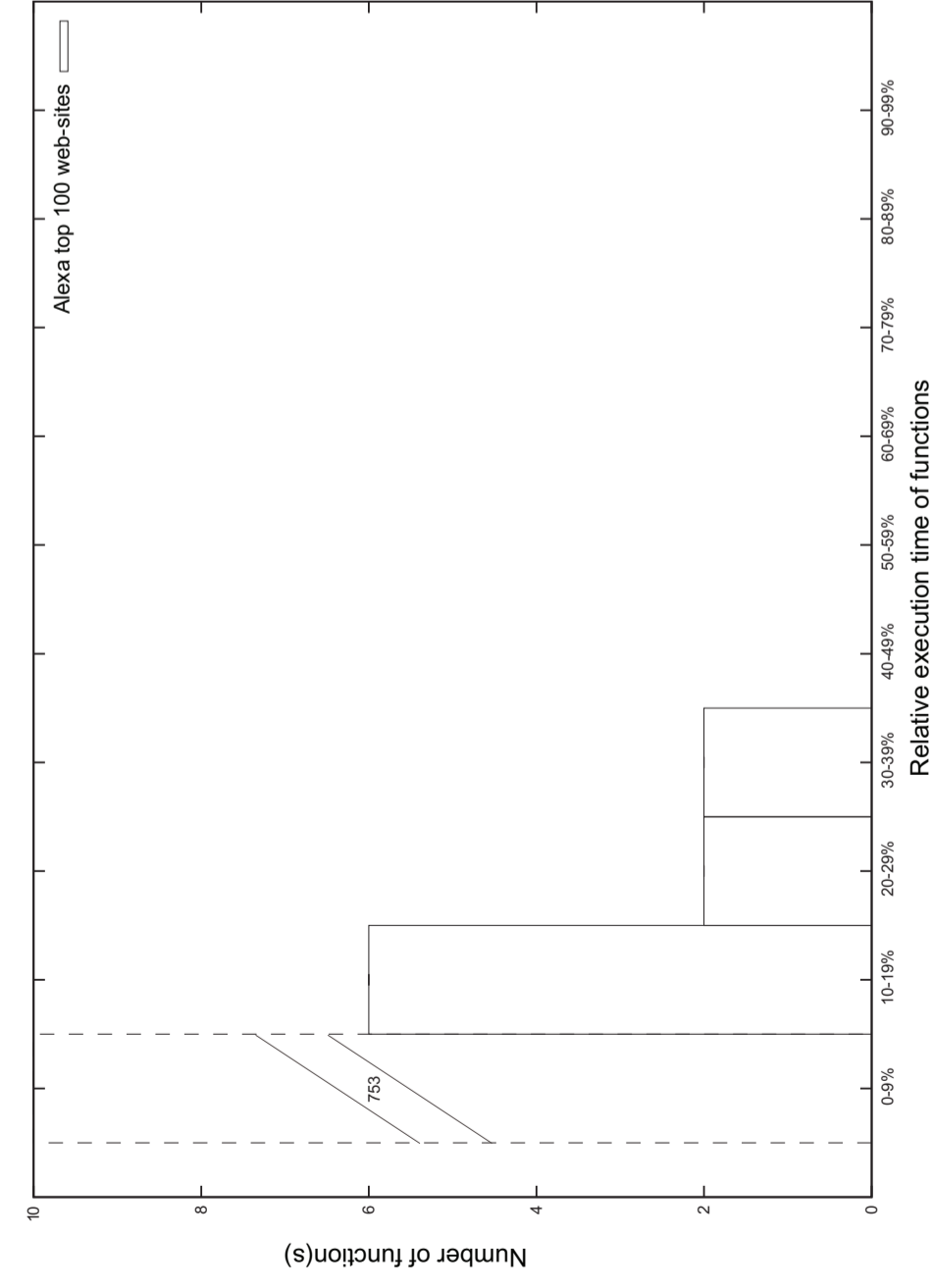
There exists a three established benchmarks to test JavaScript engine; Dromaeo, V8 and SunSpider. Many of these benchmark is based on problems within optimizations, system programming and numerical problems.

...with hotspots...



Detection of hotspots allow us to increase the execution speed with techniques such as Just In Time compilation.

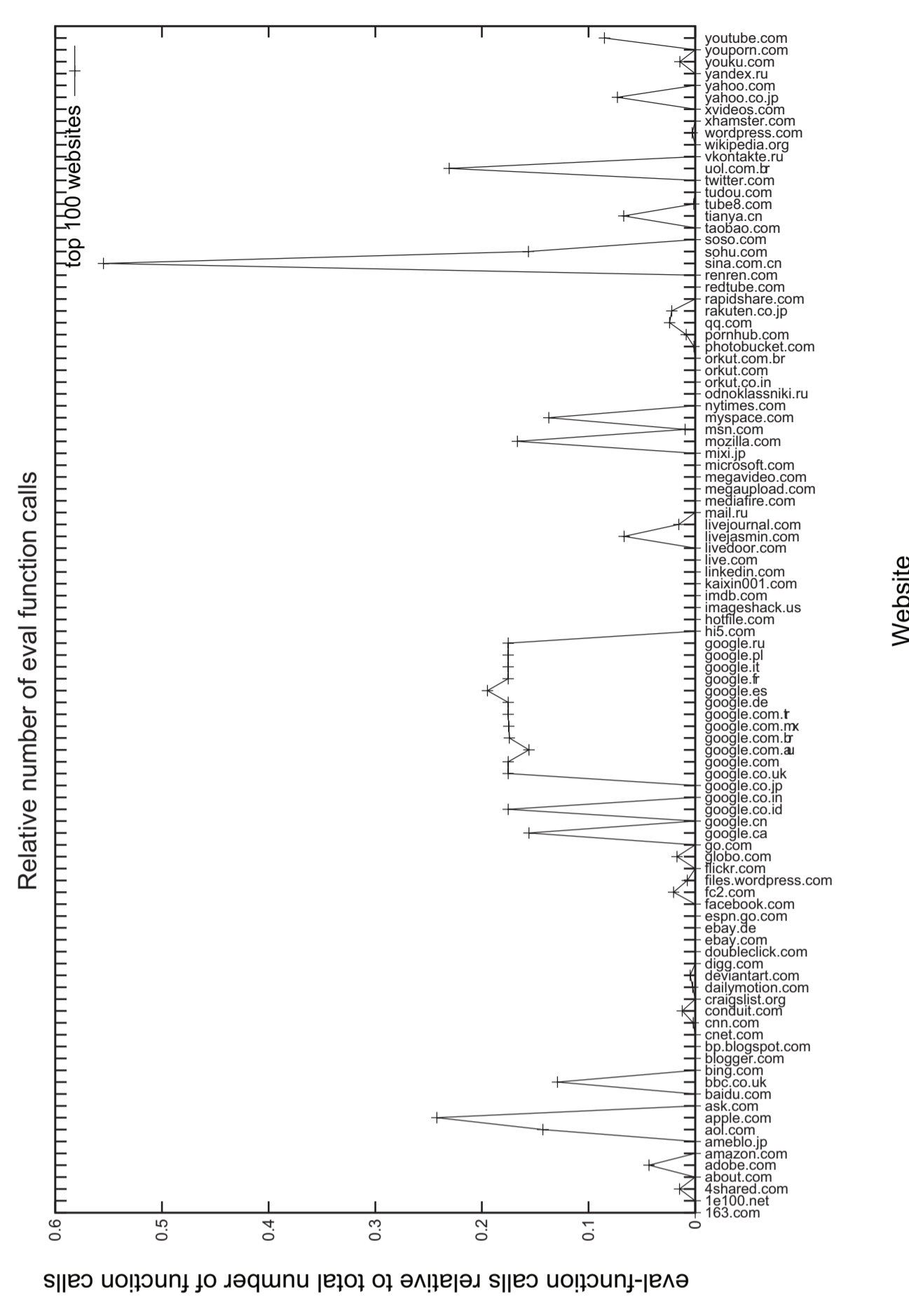
...that are absent in Web Applications



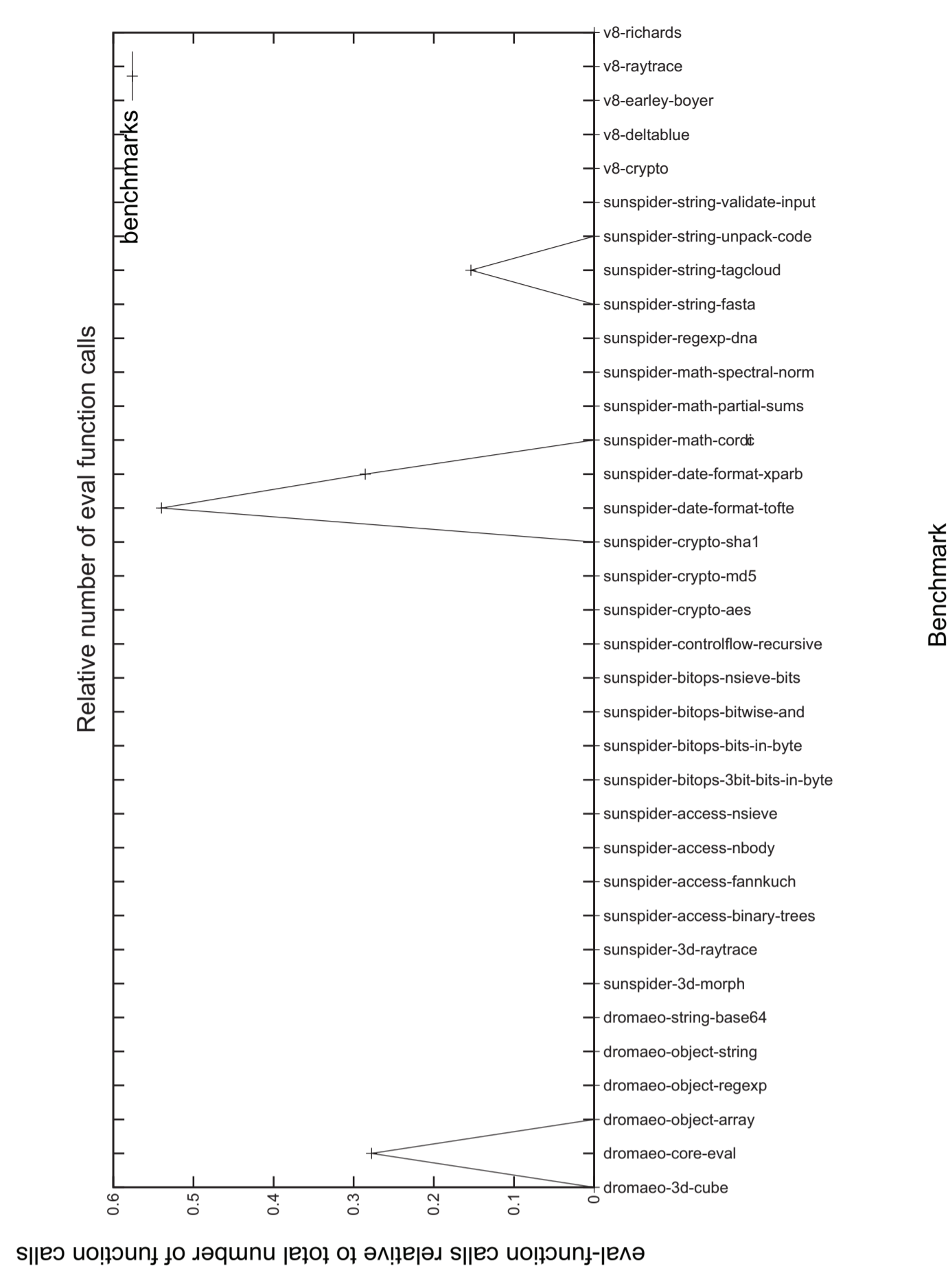
There is a penalty to do this optimisation technique, if there are there a lack of hotspots. As we see in the figure above, these hotspots are not so common for Web Applications. This suggests that Web Application have a different characteristics than the benchmark programs.

Evaluate and anonymous functions of JavaScript

Special features such as anonymous functions and evaluate functions are used intensively in Web Applications.



## Such functions are rare in the benchmarks



These type of functions are rare in non dynamic languages, which the JavaScript benchmarks often are ported from. For some cases the evaluate function is tested specifically (which one see from both the name of the benchmark as well as the amount of evaluate function calls).

## Function calls change between reload

