

SIMD in JavaScript via C++ and Emscripten

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```

1 function average(data) {
2   var sum = new SIMD.float32x4.zero();
3   for (var i = 0; i < data.length; i++) {
4     sum = SIMD.float32x4.add(sum, data[i]);
5   }
6   var total = sum.x + sum.y + sum.z + sum.w;
7   return total / (data.length * 4);
8 }

```

Figure 1. Finding the average of an array of numbers in JavaScript using SIMD.

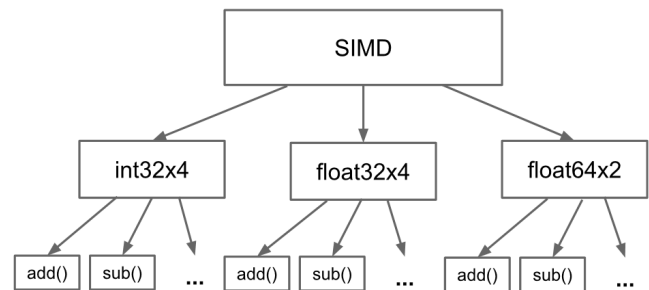


Figure 2. SIMD.JS object hierarchy

Abstract

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1. Introduction

We'll explore the use of Mozilla's Emscripten to compile C++ benchmarks, that has use of SIMD intrinsics, into JavaScript. This was recently made possible by the SIMD.JS primitives introduced in JavaScript VM prototypes for Chromium and Firefox as well as extensions to the Emscripten compiler. Emscripten will correctly translate a subset of available C++ SIMD x86 intrinsics into corresponding operations defined in SIMD.JS. The JavaScript benchmarks associated with the SIMD.JS primitives were converted to C++ by hand, and then automatically converted back into JavaScript using the Emscripten compiler.

2. SIMD.JS

3. Emscripten

4. Compiling x86 C++ SIMD intrinsics

5. Benchmarks

6. Results

7. Summary

A. Appendix Title

This is the text of the appendix, if you need one.

Acknowledgments

Acknowledgments, if needed.

References

[1] P. Q. Smith, and X. Y. Jones. ...reference text...