From Faust to Flocking: Declarative Control of the Faust Synthesis Language in the Browser.

Myles Borins[1] *

Center For Computer Research in Music and Acoustics
mborins@ccrma.stanford.edu

Abstract. The Flocking audio synthesis toolkit, developed by Colin Clark, offers a unique declarative model for doing signal processing within the browser. It's JSON-based syntax combined with the interpreted nature of the JavaScript language make it an ideal candidate for creating interactive sound synthesis environments in the browser. At the current time the toolkit has very few unit generators when compared to more traditional environments. The Faust project, developed at Grame CNCM, offers a unique solution to this problem. Faust consists of both a language and a compiler, allowing individuals to deploy a signal processor to various industry standard environments (max/msp, supercollider) and formats (vst, au, jack). This paper examines a technology stack that allows for Faust to be compiled to highly optimized Flocking unit generators that synthesize sound using the web audio api.

Keywords: Faust, Flocking, JavaScript, asm.js, emscripten

1 Introduction

The Web Audio Api, first introduced in 2011, offers a platform for signal processing that is supported out of the box on almost every web-capable device. Deploying to the browser also enables one to leverage a wide variety of web technologies ranging from User Interface components to large scale development frameworks.

While the concept of making interactive sound synthesis environments in the browser is quite exciting, there are two primary factors stopping individuals from investing time into the platform; There has not yet been enough Signal Processing related JavaScript code written yet, and some signal processing concepts prove difficult to implement efficiently in a loosely typed language with no memory management.

* Julius O. Smith, Yann Orley, and Colin Clark

2 Making Noise

3 Technology Stack

3.1 Faust

3.2 Emscripten & asm.js

3.3 Web Audio Api

3.4 Flocking

The Flocking audio synthesis toolkit offers a unique declarative model for doing signal processing within the browser. It's JSON-based syntax combined with the interpreted nature of the JavaScript language make it an ideal candidate for creating interactive sound synthesis environments in the browser.

4 A Simple Approach

5 Automation

6 Performance Benchmarks

7 Looking Forward

8 References