Master's Defense Announcement

DIGITAL SIGNAL PROCESSING WITH A GPGPU IMPLEMENTATION

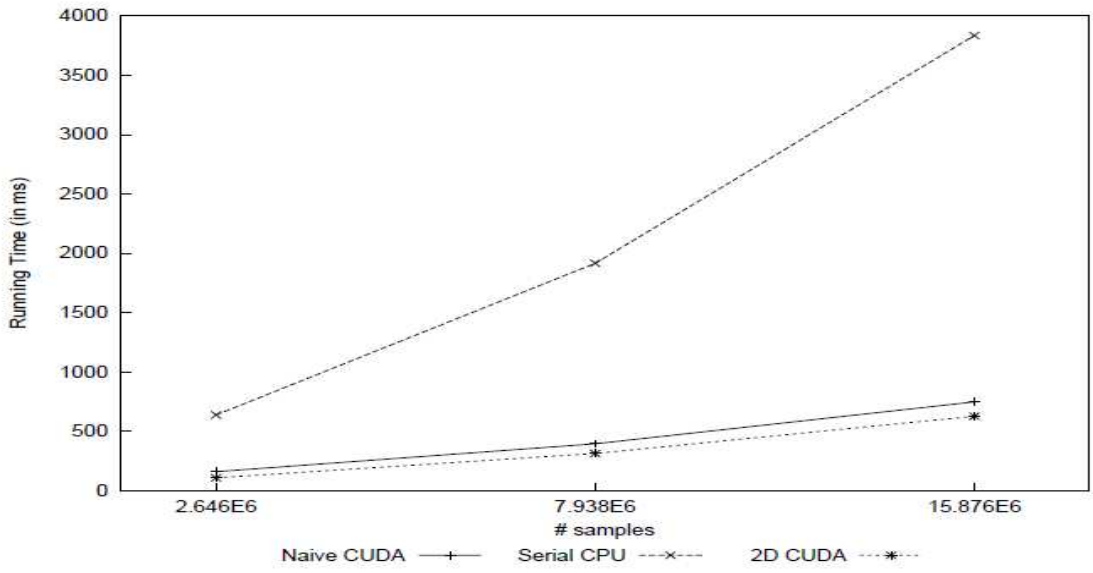
Presented By:

Kristofer Shinn

Abstract

Digital audio has become ubiquitous in modern society. Producing music digitally has become a standard method of audio production. Much research has been recently done using the GPU for general purpose computing; however, applying digital signal processing algorithms to audio signals has historically been overlooked in GPGPU research. This thesis attempts to provide a proof of concept using consumer grade video cards to implement DSP algorithms. Nvidia's CUDA is explored as a means to utilize the GPU for general purpose computations. The field of DSP was surveyed to find an appropriate algorithm to use. Two forms of convolution are implemented with CUDA and compared with serial implementations in order to compare the effectiveness of parallel implementations.

Figure 5.9: Performance results for a 25 tap FIR filter



Committee Members:

G. Michael Barnes, chair
Gloria Melara
Robert McIlhenny

Date: Wed, April 28, 2010
Time: 3:00 pm
Location: JD 4508D