

**CS 791v: Topics: Parallel Computing**

**Spring 2013**

**Programming Assignment 1**

**FIR Filter**

**Assigned Date**

1/28/2013

**Due Date**

2/4/2013

**Overview**

For this assignment, you will generate a simple finite impulse response (FIR) filter.

The program should behave as follows:

1. Generate an array A of N values, either randomly or from a file.
2. Given a filter kernel size K, generate an output array O of size N - K + 1, where O[i] = (A[i] + A[i + 1] + ... + A[i + K - 1]) / K.

**Project Requirements**

* 2 versions of the code:
  + A compiled and running sequential C program
  + A compiled and running CUDA program
    - Your code should handle arrays greater than the maximum number of available threads.
* Multiple timings of runs of various sizes.

**Deliverables**

* Bring code and output to class for discussion.
* Have a pdf of your writeup and a zip of your source code emailed to Fred Harris and Lee Barford (DO NOT send binaries).
  + Firstname dot Lastname at … (Fred is cse, Lee is gmail)