**Project 2 – Report**

Project 2 urged the need to understand parallel programming and apply the understanding to achieve two outcomes, viz., converting an image from color to grey scale (homework 1) and image blurring (homework 2). This report explores my overall learning experience with Project 2.

To begin with, it took some effort from my side to follow the videos properly as I “binge watched” them in order to get to the homework assignments as soon as possible. I could still keep up with the tutorial, thanks to the constant quizzes conducted during the course of the tutorial that helped in understanding most, if not all, of the points.

I did struggle with few of the quiz questions, but after the quiz, the answers were discussed properly and that helped in clearing any doubts that I had and reinforcing my understanding.

Also, I didn’t really work on any C or C++ related code for quite a few years now and I did face difficulty with the syntax a bit. However, the tutorial provided a serial implementation of the logic in C++. It was easy to follow that implementation and correct whatever errors I had in my code.

Specific to homework 1, I initially did not apply the *gridsize* and *blocksize* correctly. To understand where I was going wrong, I went through that portion of the tutorial again and implemented my logic. Another area of confusion was when I was trying to evaluate the *1D\_position* from the 2D array. Even going through the given serial implementation did not help. Finally, I did some trial and error to figure out the correct way of evaluating *1D\_position*.

Specific to homework 2, I did spend a lot of time on implementing the kernel logic for *gaussian\_blur*. Finally, I had to go through the reference implementation and follow it to get my output correctly.

The overall experience of the course was really amazing as I got to learn the basics of parallel programming. The tutorial itself was so organized and precise that I did not feel bored or skip any of the videos. I got to know about GPU, its hardware and software, how we can make use of it to work on tasks issued by CPU, the local, shared and global memory associated with GPUs and worked on map and stencil communication patterns, amongst other things. The tutorial also made me feel that CUDA is fun to learn.

One thing that I would definitely do differently is go back to the videos and make proper notes, in order to have a clear picture of my understanding along with the flow of the lecture.

In conclusion, I think the project did go well in terms of learning as I learnt about parallel programming and use the learnt concepts to implement and achieve both the requirements.