**Lab 4: Migrating to DPC++**

**Goal:**

In this lab, students will learn how to profile a workload for the purpose of performance. This is important for system tuning, bottleneck identification, workload characterization, and capacity planning.

**Steps overview**:

1. What is Performance Analysis
2. Getting familiar with Intel’s profiling tools (Intel Advisor, and Intel VTune)
3. Perform the exercise
4. Profile an application and offload the hotspot on an accelerator

**Performance analysis**

We have provided a lecture on performance analysis. Please read it carefully to get familiar with the basic concepts of performance analysis and tuning.

**Getting familiar with Intel VTune and Intel Advisor**

Please attend the lab session, or use the video provided for you. The tutorial on Intel Vtune and Advisor is provided on both Slides and a pdf file called Intel\_Profiling\_Guide.pdf and the video is a narration of slides. When you fell that you understand the main concepts go to the next step. Otherwise, contact the TA for an 1-1 meeting.

**Perform the exercise:**

Please follow the instruction provide for you in the exercise folder. At the end, you must complete all tasks to be able to move to the next step.

**Profile AES C++ and DPC++ code**

For this step, we have provided an AES C++ code (verified working) as a start point. Based on the experience from the previous step, you must try to perform a performance analysis and then offload all the computational part of the code to an accelerator.

Prepare a report on the speedup that you get from acceleration.