BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
HYDERABAD CAMPUS
FIRST SEMESTER 2017-2018

CS F376 / CS F377

PROJECT TITLE & PLAN OF WORK

Date: 12th August, 2018

1. Title of the project: GPU Accelerated Range Aggregate Data Structures.
2. Need for the study: With the reduction in GPU costs the era of Parallel programming has truly begun. Thus it is important to be familiar with the concepts of Parallel programming and tools used therein.
3. Objectives (Bullet points)
    - To learn Parallel Programming paradigms
    - To learn to code in CUDA/OpenCL
    - To make an honest attempt at accelerating creation of and querying using Range Trees.
4. Literature Review

Manoj Kumar Maramreddy and Kishore Kothapalli : GPU Accelerated Range Tree with Applications

Matthew Scarpino : OpenCl in Action

5. Work Plan (Include Detailed Methodology with Time Schedule)

Environment set up and learning CUDA – end of August

Implementing sorting algorithms to gain familiarity with CUDA – mid September

Implementation of the algorithm to construct Range Tree and its optimization- end of September

Implementation of the query algorithm – end of October

Optimization of code with the objective to reduce runtime – end of November.

6. References:

Manoj Kumar Maramreddy and Kishore Kothapalli : GPU Accelerated Range Tree with Applications

Matthew Scarpino : OpenCl in Action

7. Expected Knowledge to be gained after completion of the project (Bullet points)
    - To learn about various models of parallel programming like – Phase parallel, process farm, Process pool etc.
    - To learn about various methodologies employed in parallel programming like Reduce, Scan, Fold etc.
    - To be able to write code in OpenCl/CUDA

Signature of the student
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