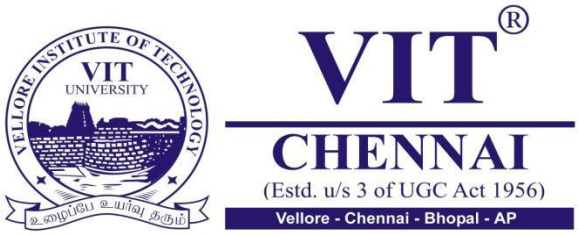

SCHOOL OF COMPUTING SCIENCE AND ENGINEERING

CSE4001-PDC-Project Review – I

Gravitational Many Body Simulation

1. Batch members Details.

Batch Size	Reg No	Name
2	20BCE1025	Abhishek N N
	20BCE1538	Mayank Gupta

Abstract:

The proposed project is about stimulating many bodies governed by gravitational and energy conservation laws which induces force on the bodies to move in certain directions, which is updated on GUI by calculating net force, acceleration, velocity and position in real time.

Let's assume a scenario for better understanding, suppose there are n bodies, we take one body and calculate net force on it by other n-1 bodies and update in GUI

To achieve this computation at a faster rate we use multiple threads, processes by OpenMP and MPI and accelerate with GPU CUDA. GUI will be shared by thread/process, and those threads/process will take care of one-one bodies from net-force calculation to rendering in GUI.

Modules:

I. Gravitational Force Calculation
II. Checking Energy is Conserved
III. Calculating change in the position of bodies
IV. Updating in GUI
V. Speeding Up the simulation with PDC concepts

Concepts

I. Basic Physics
II. C/C++
III. OpenMP
IV. MPI
V. CUDA API
VI. Any GUI library in C/C++

Platform & Language

Platform: **LINUX**
Language: **C/C++**