GUJARAT TECHNOLOGICAL UNIVERSITY

Invitation for Faculty of GTU Engineering colleges

Workshop on HPC& Parallel Programming

In collaborate with

C-DAC & Intel Corporation

By

GTU PG SCHOOL

Date:

20th June, 2015(09:30 AM to 05:00 PM)

Venue:

Gujarat Technological University

Nr.Vishwakarma Government Engineering College
Nr.Visat Three Roads, Visat - Gandhinagar Highway
Chandkheda, Ahmedabad – 382424 – Gujarat

About HPC

High Performance Computing (HPC) is the game changer for scientific and engineering research resulting in innovation and better approach, leading to human advancement in terms of well-being, social advantage and wealth creation. It also enables us to address the opportunities and challenges that lie ahead.

HPC in general, refers to the practice of aggregating computing power in a way that delivers much higher performance than one could get out of a typical desktop computer in order to solve large problems in science, engineering, or business in much shorter time. Numerous scientific and engineering breakthroughs have been accomplished with the help of HPC. Computational Science along with the associated computational resources (HPC technology) has now established themselves as the 'third pillar' of scientific enquiry alongside theory and experiment.

HPC plays a vital role in addressing several grand challenge problems like climate modeling, oceanography, seismic analysis, life sciences, astrophysics, materials modeling, structural mechanics etc., which cannot be executed by ordinary computers in a stipulated time envelope. Supercomputing facilities have enabled countries in their science and technology capabilities in areas such as designing vehicles, aero planes, massive structures like high rise buildings and bridges, infrastructure, discovery of new life saving drugs, discovery and extraction of new energy sources including oil, natural gas etc.

Over the years, HPC systems have benefitted the nation in several ways. To quote a few instances, weather prediction has reached accuracy of forecast as well as real time tracking of natural phenomenon. Timely warning of cyclones in the recent past has saved many lives and property.

Most importantly HPC which is relying on the parallel processing Paradigm's has moved in to Industry domains and has been used in Pringle chips design, Good year all weather Tyres, P&G diapers and Golf balls design to many other day to day product design efforts bringing revolutionary innovations and speed to bring it to market. These applications of HPC have generated several new avenues of employment for fresher's and experienced to migrate to challenging roles of Parallel programming with higher income levels.

Objective of the workshop

Supercomputing is seen as a powerful tool for a nation to compete with other nations. Government of India has launched the National Supercomputing Mission envisaged to enable India to leapfrog to the league of world class computing power nations.

The Mission enables empowering national academic and R&D institutions spread over the country by installing a vast supercomputing grid comprising of more than 70 high-performance computing facilities. The Mission also includes development of highly professional High Performance Computing (HPC) aware human resource for meeting challenges of development of these applications.

To support such kind of massive HPC infrastructure to be created during the mission in the country, the manpower should also have to be geared up accordingly. To empower our scientific community to be HPC ready, C-DAC is conducting a series of parallel programming workshops nationwide.

Workshop Abstract

The one-day workshop aims to create HPC and parallel programming knowhow amongst academicians, scientists, researchers and engineers and how it can benefit them. It will provide a detailed outline of HPC overview which includes building blocks, applications, and parallel programming models, software development tools, emerging technologies & trends as well as growth opportunities in HPC.

The main concepts and technologies talked about will include computer architectures, clusters, computing with many-core architectures (GPGPUs and Xeon Phi), SIMD, Vectorization, MPI, Open MP and development tools such as compilers, profilers, advisors.

To register go to below mention link:

http://intelparallel.in/hpc/cdac/ahmedabad.html

Limited seats are available and Last Time & Date for registration: 16-06-2015
Participants will get confirmation Email by 5:00 PM 17-06-2015.

Schedule of Workshop

Schedule	Time	Discussion title
09:30am-09:45am	15 min	Inauguration and Key note
09:45am-09:55am	10 min	Overview of Day
09:55am-10:15am	20 min	• Need for HPC in science & engineering and its impact in business • Growth opportunity areas in HPC
10:15am-10:45am	30 min	Pathway from serial computing to parallel computing
10:45am-11:00am	15 min	Tea Break
11:00am-11:45am	45 min	Parallel Programming: • Paradigms • Shared memory programming with Open MP • Distributed memory programming with MPI • Parallel Libraries
11:45am-12:30pm	45 min	Demo of Open MP and MPI
12:30am-01:30pm	60 min	Lunch Break
01:30pm-02:00pm	30 min	Recent trends in supercomputing architectures : Importance of multi-core and many-core computing in supercomputing
02:00pm-02:45pm	45 min	Many-core programming : SIMD and vectorization Demo of Many core SIMD programming
02:45pm-03:15pm	30 min	Introduction to PARAM Shavak , supercomputing in a box Development kit cum application enablement platform from C-DAC
03:15pm-03:30pm		Tea Break
03:30pm-04:00pm	30 min	HPC Software Development Tools: an overview
04.00pm-04.45pm	45 min	HPC quiz and Prize announcement- mention the1st,2nd and 3rd prizehere.