Organized by
E & ICT Academy

One Week Faculty Development Program on

FDP Programme Sponsored by

MNIT Jaipur   **RTU Kota**

Parallel Computing

Sep 28 – Oct 2, 2017
Venue: Prabha Bhawan, MNIT

Ministry Electronics & Information Technology
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Distinguished Speakers

Dr. V. C. V. Rao
Associate Director and Head,
HPC – Technology Group, CDAC Pune
Dr. Virendra Singh*
Associate Professor,
Indian Institute of Technology Bombay
Dr. Pilli Emmanuel Shubhakar, MNITJ
Dr. Santosh Kumar Vipparthi, MNITJ

*****(To be confirmed)**

Conveners

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Visit us at : http://www.mnit.ac.in/eict
Email us at : academy@mnit.ac.in

Course Contents (25 hours theory + 15 hours Lab)

Module 1: **Concurrent and Parallel Programming**
Concurrent Programming, Introduction to Parallel Computing / Programming, SISD, MISD, SIMD, MIMD, Example Parallel Algorithms – Sorting. POSIX Threads.
Module 2: **Programming through Message Passing and Shared Memory**
Introduction to MPI, MPI functions, Example algorithms, Tools – Profilers, Libraries Hybrid Programming, Benchmarks, Multi-threaded debugging techniques. Introduction to OpenMP, Runtime libraries, OpenMP with MPI and POSIX threads.
Module 3: **Parallel Programming**
Clusters - Big Data Processing. Numerical Linear Algebra Dense and Sparse (Matrix Computations), Search Algorithms, Graph and Search Algorithms. Programming on Hadoop Clusters - Graph Computations, Video Processing - Tensor Flow.
Module 4: GPU Programming
Introduction to CUDA, Applications of CUDA based systems, NVIDIA – CUDA Hardware and Software Architecture, CUDA SDK/APIs, CUDA tools and Libraries, Performance of applications – Issues and Challenges; Introduction to OpenCL, OpenCL Parallel Computing on GPU & CPU, Examples using CUDA and OpenCL.
Module 5: Advances in Parallel Programming
Programming on Intel Systems with Intel Co-processors (Intel MIC- Knight-landing Processors), OpenPOWER Systems (IBM Power-8 and NVIDIA GPUs), Message Passing Clusters with Different Co-Processors , Distributed Computing Systems - Hadoop MapReduce - Spark - Distributed Tensorflow.

15 hours Laboratory Sessions : It consist of five lab sessions which enables the participants to know in-depth programming aspects of POSIX threads, MPI, Open MP, CUDA and OpenCL. Resource environment provided by CDAC.

Course Registration & Fee

1. Registration is done online at http://www.mnit.ac.in/eict/apply_now.php
2. **Fee Particulars:**
   a. **One-time Academy Registration fee** of **Rs. 500/-** is to be paid by each participant attending for the first time (not applicable if participant has attended a training programme earlier.
   b. **Course Fee of Rs 2000/-** for Faculty members / Research scholars and M. Tech students.
   c. **Course Fee of Rs 4000/-** for participants from industries.
3. **Relaxation / rebate of 75% course fee** in (ii) and (iii) for SC/ST candidates.
4. Lodging for a limited number on first come - first served basis will be provided to outstation participants at Hostel / Guest House of MNIT Jaipur.
5. The registration fee covers the participation FDP the programme, course material, breakfast and working lunch on all the days of the workshop. The travel and other expenses would have to be borne by the participants.
6. Registration amount is received through NEFT / IMPS / DD.

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