GPU CENTER OF EXCELLENCE

TEQIP SPONSORED
ONE-DAY WORKSHOP ON
PARALLEL COMPUTING WITH GPUs

Conducted by
GPU Centre of Excellence (GCOE), IIT Bombay

Organized by
Pondicherry Engineering College, Puducherry

Date: 12th March 2016 (Saturday)
Venue: Chemical Engineering Seminar Hall, Pondicherry Engineering College

About PEC: Pondicherry Engineering College (PEC) is a prestigious institution of Government of Puducherry, having over 30 years of standing in undergraduate and graduate education in Engineering and Technology. PEC offers 8 undergraduate programmes and 13 post graduate programmes. PEC is recognized as a research center of Pondicherry University as well as a QIP center, with over 300 research scholars on its roll at present. PEC can boast of a highly qualified faculty team, with more than 85% of them holding Ph.D degrees from reputed institutions. With Autonomous Status conferred by UGC, PEC is one of the institutions selected by MHRD to receive TEQIP-II grants and further identified under the RUSA scheme for up gradation to a State Technological University in the ensuing Academic Year.

About GCOE: Indian Institute of Technology Bombay (IITB) was awarded NVIDIA’s GPU Center of Excellence (GCOE) in the year 2013. GCOE serves as a hub for all heterogeneous high performance computing activities in the country. GCOE at IITB supports a number of research projects in the areas of Atmospheric and Ocean modelling, Bioinformatics, Circuit Simulation, Computer Graphics and Vision, Computational Fluid Dynamics, Global Optimization, Molecular Dynamics, and Reliable Computing. GCOE plays a major role in promoting GPU computing through infrastructure development, manpower training, student internships and projects, and research funding. To increase awareness in GPU computing, GCOE conducts workshops across the country.

About the Workshop: This one-day workshop on “Parallel Computing with GPUs” introduces some of the key tools for parallel scientific computing and embedded computing. The workshop will include lecture-cum-demos and hands-on sessions. The workshop is divided into three sessions:

A. **Session on Parallel Computing with MATLAB:**
This session introduces concepts of vectorization, parallel MATLAB computing on multiple CPU cores, and parallel MATLAB computing on GPUs. Participants will be taught how to parallelize loops, distribute or co-distribute large arrays over multiple CPUs, and speed up matrix computations on both CPUs and GPUs. Concepts will be demonstrated through hands-on sessions.

B. **Session on GPU Computing with CUDA:**
This session focuses on writing CUDA codes. Single-block and multi-block vector additions, shared memory examples, and device query and error handling, will be introduced through demos and hands-on.

C. **Session on Embedded Supercomputing with Jetson TK1 board:**
This session gives an overview of features and applications of embedded supercomputing with NVIDIA’s high-end Embedded platform Jetson TK-1. Participants will be introduced to possibilities of hardware and software development on the Jetson TK-1 platform, for use in their research. A case study demonstration is also included.

Who can participate? The workshop is open to all faculty and graduate students from any discipline of engineering and science, who are keen to work on (or already working on) problems that require high performance computing tools. Interested participants shall fill in the Registration Form and E-mail the scanned copy to the Coordinators. Registration is free. Coordinators will finalize the list of participants and intimate the selection through E-mail.

Prerequisites for the workshop:
1. All participants must be familiar with the basics of MATLAB and C language programming.
2. All participants should bring their own laptops fully charged and preinstalled with MATLAB and Parallel Computing Toolbox (2015b version).
3. Coordinators will guide the participants in obtaining a trial license of the software and installing it before coming to the Workshop.

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**Principle Expert Faculty:**
- **Prof. P.S.V. Nataraj**
  - Chairperson
  - NVIDIA Academic Programme Coordination Committee for India
  - Systems and Control Engineering
  - IIT Bombay, Mumbai – 400 076
  - Website: http://www.sc.iitb.ac.in/~ccoe

**Coordinators:**
- **Dr. S. Sundaramoorthy**, Dean (Academics)
- **Dr. M. Ezhilarasan**, Assoc. Dean (Academics)
- **Dr. S. Rajagopan**, Assoc. Dean (Academics)

Office of Dean (Academics)
Pondicherry Engineering College, Puducherry – 605 014
Phone: 0413-2655281 Ext: (326) | 09444290056 | 094442086394
E-mail: dean.academics@pec.edu | Website: http://www.pec.edu
**REGISTRATION FORM**

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<tr>
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Signature of the Participant | Signature of the Recommending Authority  
(PRINCIPAL/HoD/Guide) 

Date:  
Place:  

* E-mail the scanned copy to dean.academics@pec.edu on or before 06.03.2016  

**Note:** On Selection, participant will receive an E-mail on or before 08.03.2016, intimating the schedule and instruction to download the required software and the trial license.