Supercomputer Education and Research Centre (SERC)

presents

Workshop on High Performance Computing in the Agriculture Domain

July 14 to July 16, 2021

under the scheme

National Supercomputing Mission (NSM)
Govt. of India

co-hosted by:

IIT Indore	ICAR-IISR Indore	Mahindra University Hyderabad	C-DAC Pune	IISC Bangalore	IIT Kharagpur

It gives us immense pleasure to inform you that the Workshop on High Performance Computing (HPC) in the Agriculture Domain under the National Supercomputing Mission (NSM) from Supercomputer Education and Research Centre (SERC) will be hosted by IIT Indore, ICAR-IISR Indore, and Mahindra University Hyderabad in collaboration with C-DAC Pune, IISC Bangalore, IIT Kharagpur from 14 July 2021 to 16 July 2021 in virtual mode.

This workshop aims to bring together researchers, engineers, industry experts, students, and practitioners to make them aware of the latest HPC technologies for easing practical/research work in the area of agriculture domain. Recent developments in computational techniques in various domains of science and engineering have been strongly linked with the efficient utilization of HPC resources. Therefore, it is essential to impart HPC training to the application domain researchers.
Objectives of the Workshop

1) *To introduce various parallel programming models, such as CUDA, cuML, a parallel computing platform and application programming interface (API) model created by Nvidia for GPU technology.*
2) *To introduce parallelisation in Python, which is the most popular programming language used in industry.*
3) *Currently to conduct hands-on practice on these programming models.*
4) *To introduce parallel programming clusters and heterogeneous architectures.*
5) *Using HPC in the field of Agriculture research.*
6) *Demonstration of Big Data algorithms for Genomics.*
7) *Layout the foundation of the Agriculture Grid ecosystem.*

No Registration Fee
Fill the Registration details: *https://forms.gle/fBRzkjpoLFKqOfcU9*
Bar code:

The last date of Registration: July 12, 2021 till 12:00 AM
The meeting link will be intimated on registered e-mail: July 13, 2021
Schedule of the workshop: *click for the schedule*

Contact:
Dr. Aruna Tiwari, Associate Professor, Computer Science and Engineering, IIT Indore
Mail your queries at: *atworkshop.nsm@gmail.com*
Organizers:

Dr. Aruna Tiwari
IIT Indore

Dr. Milind Ratnaparkhe
ICAR-IISR Indore

Dr. Neha Bharill
Mahindra University
Hyderabad

Dr. Om Prakash Patel
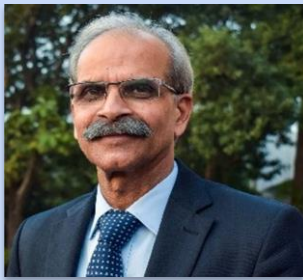**Mahindra University**
Hyderabad

Patron

Prof. N.K Jain
Director, IIT Indore

Chief Guest

Prof. D.B. Phatak
BOG Chairman, IIT Indore

Guest Of Honours

Prof. V.K. Tewari
Director, IIT Kharagpur

Prof. Srikanth Sastry
Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore

Prof. Rajat Moona
Director, IIT Bhilai

Special Guests

Dr. Nita Khandekar
Director, ICAR- IISR Indore

Prof. Narendra S. Chaudhari
IIT Indore

Prof. Yajulu Medury
Vice Chancellor, Mahindra University Hyderabad

Panel Discussion

Title: Impact of HPC in sustainable Agriculture Growth in India.

Col. A K Nath (Retd.) **Executive Director (Corporate Strategy and C-DAC Pune)**	**Dr. Arundhati Misra,** **Group Director, AMHTDG, EPSA, SAC – ISRO, Ahmedabad**
Dr. Anil Rai **Head (A) & Professor Bioinformatics, ICAR-Indian Agricultural Statistics Research, Pusa, New Delhi.**	**Dr. Rajeev K. Varshney** **Research Program Director-Genetic Gains, ICRISAT, Hyderabad**
Prof. Pabitra Mitra, Head **Center for Computational and Data Sciences, Professor Department of Computer Science and Engineering, IIT Kharagpur**	**Prof. Ashwani Pareek** **School of Life Sciences Jawaharlal Nehru University, New Delhi**
Dr. Kapil Ahuja **Associate Professor, Computer Science and Engineering, IIT Indore**	**Prof. Rajat Moona, Director, IIT Bhilai** **Dr. Nita Khandekar, Director, ICAR- IISR Indore** **Prof. Narendra S. Chaudhari, IIT Indore**

Keynote Speakers

Prof. Sathish Vadhiyar
Professor Department of Computational and Data Sciences (CDS) Supercomputer Education and Research Centre (SERC), IISC, Bangalore

Title of the talk:

Mr. Megh Makwana
Data Scientist at NVIDIA, Hyderabad

Organizing Hands on Session:
Title of the talk: Accelerating Data Science for Agriculture Domain

Dr. Dinesh Kumar
Principal Scientist (Biotechnology) Center for Agricultural Bioinformatics, ICAR-IASRI, New Delhi

Title of the talk: Agri-computational genomics especially on applied aspects like productivity enhancement or disease management or germplasm dispute management.

Dr. Muthukumarasamy Karthikeyan
Senior Principal Scientist Chemical Engineering and Process Development (CEPD), CSIR National Chemical Laboratory, Pune

Title of the talk: AI in Precision Agriculture (PA) to meet the Sustainable Development Goals (SDG)

Dr. Prashanth N. Suravajhala
Senior Scientist, Systems Biology Department of Biotechnology and Bioinformatics, Birla Institute of Scientific Research, Jaipur

Title of the talk: Integrated Systems Genomic Challenges for Big Data Repertoire in Agriculture: Where are we heading?

Prof. P. Krishan Reddy
Professor, IIIT Hyderabad

Title of the talk: Towards building farm-specific advisory systems to improve the efficiency of every farm

Dr. Somsubhra Chakraborty
Assistant Professor, Agricultural and Food Engineering, IIT Kharagpur

Title of the talk: Applications of Advanced Sensors and AIML in Soil Management

Prof. Arya K. Bhattacharya
Dean Research, Professor and Head Department of Computer Science and Engineering, Mahindra University, Hyderabad

Title of the talk: Design of hybrid CPU-GPU architecture parameters enabling training of CNNs with Evolutionary Optimization

Dr. Poulomi Ganguli

Assistant Professor
Agricultural and Food
Engineering,
IIT Kharagpur

Title of the talk**:** Big data in Natural Hazard Modelling: Challenges and Opportunities for Machine Learning

Mr. Ashish Kuvelkar
Senior Director, C-DAC
Pune

Title of the talk: Parallel Computing – The essential aspect of High-Performance Computing.

Mr. Navin K. C. Twarakavi

Research Scientist
IBM Research Labs, India.

Title of the talk: AI-driven methodology for enabling resilient food supply chains.

Dr. Milind Ratnaparkhe

Senior Scientist, Biotechnology,
ICAR-IISR Indore

Title of the talk: Application of high-performance computing in plant genomics and crop improvement.

Mr. Amit Saxena

Joint Director HPC
Medical and Bioinformatics
Applications Group,
C-DAC Pune

Title of the talk: Quantum Computing applications in Agriculture

Dr. Aruna Tiwari

Associate Professor,
Computer Science and
Engineering,
IIT Indore

Title of the talk: Scalable fuzzy clustering and its applications to Genomics