



Online Training Programme

**Supercomputing Workshop
(Basic I)
Date: 22 July 2024**

ORGANIZED BY:

**Supercomputing Centre,
Indian Institute of Technology (BHU), Varanasi**

BACKGROUND

High-performance computing (HPC) has become a cornerstone of modern scientific research, engineering, and industrial applications, driving significant advancements across various fields. HPC enables the processing of vast amounts of data and complex computations at unprecedented speeds, which is critical for tackling challenges in areas such as climate modeling, genomic research, drug discovery, financial modeling, and advanced manufacturing. As data continues to grow exponentially and simulations become more intricate, the demand for powerful computational resources and efficient algorithms is rising. Conducting workshops on HPC is essential to equip researchers, engineers, and IT professionals with the knowledge and skills needed to leverage these cutting-edge technologies. These workshops foster a deeper understanding of HPC architectures, parallel programming, and optimization techniques, ultimately enhancing participants' ability to solve complex problems, improve productivity, and innovate within their respective domains.

Key Areas

The major areas from the HPC domain that will be covered are as follows:

1. Introduction to HPC
2. Introduction to parallel computing
3. Job Submission and Management with SLURM
4. AI/Machine Learning/Deep Learning
5. GPU programming with CUDA
6. Key concepts of containerization
7. Application-specific training

ABOUT IIT (BHU) Varanasi

Indian Institute of Technology (Banaras Hindu University), Varanasi (commonly known as IIT (BHU), Varanasi) is a public engineering institution located in Varanasi, Uttar Pradesh, India. Founded in 1919 as the Banaras Engineering College, it became the Institute of Technology, Banaras Hindu University in 1968. It was designated an Indian Institute of Technology in 2012. IIT (BHU), Varanasi has 14 departments and three interdisciplinary schools.

Supercomputing Centre, IIT(BHU) Varanasi

Supercomputing Centre, a high-tech facility provisioned under the National Supercomputing Mission hosts PARAM Shivay a high-performance supercomputer that aims to enhance the research capabilities of India's educational and research institutions by providing them with advanced computational resources. The first HPC system to be deployed at IIT(BHU) Varanasi under the NSM build approach. It boasts the highest number of external users, including an approved project under NSM Apps. Please visit the SuperComputing website for more details: <https://www.iitbhu.ac.in/cf/scc>

Coordinator:

Dr. Hari Prabhat Gupta,
Coordinator, SuperComputing Center,
Indian Institute of Technology (BHU) Varanasi

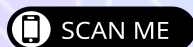
Who Can Apply?

Participants from government departments and Industries, Research scholars, motivated students, engineers, faculties, and scientists from research organizations are eligible. Possessing a basic background in coding with languages like C, C++, or Python, and a fundamental understanding of AI and machine learning, suitable for an advanced course. It is beneficial to have a basic knowledge of Unix commands.

How to Register?

Participant Registration:

1. Scan the QR Code (<https://qrco.de/bfE8Y6>):



and fill in the necessary details in the form.

2. A confirmation e-mail with workshop details will be sent to the selected applicant.
3. Attend the workshop on the specified date and schedule as per the communication.

Registration Deadline
21 July, 2024

Free Registration
No Registration Fee

Important Dates

Registration Start Date: 18 July 2024

Registration End Date: 21 July 2024

Workshop Date: 22 July 2024

Mode of selection

Selection of participants will be done by the advisory committee, Supercomputing Centre by taking into consideration various operational factors.

Programme Schedule

Time	Session Name	Instructor
10:00 AM to 11:00 AM	Introduction to High-Performance Computing	Mr. Om Jadhav Scientist C, CDAC
11:00 AM to 12:00 PM	Introduction to HPC OS (Linux)	Mr. Rakesh Suthar Project Engineer, CDAC
12:00 PM to 01:00 PM	Introduction to SLURM, SPACK & Module Files	Mr. Akash Bansode Project Engineer, CDAC
02:00 PM to 03:00 PM	Introduction to OpenMP & MPI	Mr. Akash Bansode Project Engineer, CDAC
03:00 PM to 04:00 PM	Introduction to HPC Applications	Mr. Harikesh Shinde Senior Project Engineer, CDAC

Join us for our upcoming monthly workshops! We will conduct both a basic and an advanced workshop every month.

Date	Session Name
22 July, 2024	Basic I
22 Aug, 2024	Advanced I
24 Sept, 2024	Basic II
To be announced	Advanced II
To be announced	Basic III
To be announced	Advanced III

Certification

Participants are required to attend all sessions. E-certificates will be issued to participants only on successful participation in the program.

For further assistance, please contact:

Email: paramshivay.scc@iitbhu.ac.in,

Office Address:

Supercomputing Centre,
Ground Floor, NCC Building (Opp. Institute Library),
Indian Institute of Technology (BHU) Varanasi, India