



Report on Accelerating Discovery with Parallel Processing

Title of the Program
Accelerating Discovery with Parallel Processing
Venue
CSE Department
Date & Time
29 th and 30 th of August 2025, 9.30 AM to 4.PM
Participants(attach attendance sheet)
Faculty- Mrs. Vedha C and Mrs. Asha S.N Students- 67
Resource Person:
Abhijith S, Founder and CEO of SMAGJ Enterprises
Convenor/ Coordinators
Dr Manjula G.
Session Details
Accelerating Discovery with Parallel Processing Day 1 <p>The first day of the workshop lays the foundation by introducing students to the evolution of computing from sequential to parallel systems. Topics include an overview of parallel architectures such as multicore processors, GPUs, and distributed systems. Students also learnt about basic concepts like concurrency, parallelism, scalability, and speedup.The session also covered different types of parallelism (data parallelism, task parallelism, and pipeline parallelism) and introduces programming models such as OpenMP for shared memory and MPI for distributed memory systems. Through simple examples and demonstrations, participants understood how dividing a task into subtasks can significantly improve performance while also recognizing the challenges of synchronization, communication overhead, and load balancing.</p>

Day 2

In day 2, students gained hands-on experience with **OpenMP and MPI** through practical programs. Using OpenMP, they wrote a program to find the first n prime numbers and compare serial and parallel execution times to study speedup. With MPI, they first implement point-to-point communication using **MPI_Send** and **MPI_Recv**, then explore how improper ordering can cause deadlock and how to avoid it.

They also learnt collective communication by using operations like broadcast, scatter, gather, and reduce. Two sample programs demonstrated these concepts: one where data is broadcasted, processed in parallel, and reduced to a global result, and another where data is scattered, modified, and gathered back at the root. These exercises help students understand synchronization, data distribution, and communication patterns in parallel systems.

Outcome/ Takeaway

Accelerating Discovery with Parallel Processing session

The session covered the fundamentals and architecture of parallel systems and gained both basic knowledge and hands-on experience to apply parallel computing in solving practical problems.

Photos(minimum 4 photos, photos should have good clarity)

Accelerating Discovery with Parallel Processing session





HOD

Principal