

Centre for Development of Advanced Computing, Pune

Internal Workshop on Optimizing Performance of Parallel Programs

December 05 (Wednesday), 2001 ~ December 07 (Friday), 2001
Venue for lectures: C-DAC Auditorium

December 04 (Registration)

Time (Hrs)	Activity
17:00~17:30	Registration and Kick off the workshop with PIZZA party at NPSF Roof-top

Day 1: Wednesday (Morning Session) **Performance :Issues on Uni-processor Computing**

Time (Hrs)	Activity
09:30~10:00	Trends in Serial Processor Computing; The memory sub-systems hierarchical features; Cache features; managing memory overheads; Memory access patterns; blocking ease to memory access patterns
10:00~10:30	Basic Compiler Techniques: What an Optimizing Compiler does?
10:30~11:00	Tea break
11:00 ~ 12:00	Code Restructuring techniques Loop optimizations techniques (Loop collapsing; Loop Alignment, Loop Fission, Loop distribution, Loop unrolling; Loop interchange, negatives of loop unrolling, Dependency analysis, Loop Fusion, Other Single processor optimization features

Day 1: Wednesday (After Noon Session) **Performance :Issues on Architectural models/Hardware/Software**

Time (Hrs)	Activity
14:30~15:00	An overview of Architectural Models of Parallel Machines – Factors effecting the Performance from Hardware/Software point of view
15:00 ~15:30	Types of Performance requirements – Basic Workload and Speed metrics
15:30~ 16:00	Overheads in Performance of Parallel Machines
16:00~16:30	Tea break
16:30~17:00	Performance: Scalability and Speed-up Analysis
17:00 ~17:30	An overview of Performance Visualization Tools

Day 2: Thursday (Morning Session)
Performance: Principles of Parallel algorithm Design

Time (Hrs)	Activity
09:30~10:00	Parallel Paradigms and Programmability; Types of Parallelism: Data Parallelism; Task Parallelism
10:00~10:30	Decomposition techniques: What is meant by good decomposition?
10:30~11:00	Tea break
11:00~12:00	Load balancing, Schemes for Static and Dynamic load balancing

Day 2: Thursday (After Noon Session)
Performance :Issues on Explicit/Implicit Parallelism

Time (Hrs)	Activity
14:30~15:00	An overview of Parallel programming models – Implicit Parallelism
15:00~15:30	Explicit Parallel Models: Data Parallel Model: f90/HPF
15:30~16:00	Explicit Parallel Models: Message Passing Model (MPI)
16:00~16:30	Tea break
16:30~17:00	Explicit Parallel Models: Shared Memory (Pthreads)
17:00 ~18:00	Explicit Parallel Models: Shared Memory (OpenMP)

Day 2: Thursday (Evening Get-together)

Time (Hrs)	Activity
19:30 ~20:00	Dinner Get-together at C-DAC Roof-top

Day 3: Friday (Morning Session)
Performance: Application and System benchmarks;
Performance issues - Programming using MPI – from application perspective

Time (Hrs)	Activity
09:30~10:00	An overview of Micro/Macro Benchmarks (Part I)
10:00~10:30	An overview of Micro/Macro Benchmarks (part II)
10:30~11:00	Tea break
11:00~12:00	Performance issues in selective application programs (part I) using MPI
12:00~12:30	Performance issues in selective application programs (part II) using MPI

Day 3: Friday (Afternoon Session)

Time (Hrs)	Activity
14:30~15:30	Open Discussion: Feed-back and Conclusions
15:30~16:30	Future plan for workshop at national/international level