

Enhancing Performance with Parallel Computing

Monday 5 May 2025 15:30 (1 hour)

In today's world of Big Data, artificial intelligence, and real-time applications, performance is more critical than ever.

This presentation delves into the fundamentals of parallel programming, focusing on optimizing performance using shared memory with multi-core CPUs and distributed memory across networked systems.

Through practical examples, we'll demonstrate how parallelism can significantly reduce computation times and enhance overall efficiency.

We'll explore profiling and performance analysis techniques to help you identify bottlenecks and opportunities for parallelization, leading to the introduction of tools like OpenMP and MPI to address these challenges.

A simulation, similar to Conway's Game of Life, will highlight the real-world advantages of parallel computing, showcasing the kinds of performance gains essential in fields like machine learning, data processing, and scientific simulations.

This simulation will also set the stage for our next topic on GPU parallelism.

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