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**Parallel
Computing
and I/O**

Enhancing OpenMP for Parallelizing Input/Output in Shared Memory Applications

OpenMP has become a cornerstone for parallelizing computations in shared-memory environments. However, a crucial aspect often overlooked is the parallelization of input and output (I/O) operations within applications. This topic aims to explore the untapped potential of extending OpenMP to parallelize the serial aspects of I/O operations in shared-memory applications.

Research Component

- ▶ Conduct a comprehensive literature review on existing parallelization strategies for I/O operations for shared memory system
- ▶ Utilize code search engines (e.g., for GitHub) to identify serial applications with potential for I/O parallelization.
- ▶ Evaluate current practices and challenges related to I/O operations in shared-memory applications.

Development Component

- ▶ Introduce a novel pragma to OpenMP for recalculating file offsets and managing file handlers in parallel.
- ▶ Develop a proof-of-concept implementation showcasing the effectiveness of the proposed pragma.
- ▶ Implement necessary modifications to OpenMP runtime to support the new parallelization approach.

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