一种面向多核 DSP 并行编译的设计与实现

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摘　要：OpenMP 支持并行递增开发，已成为目前用于共享内存系统上的一套事实主流并行编程标准.为了在多核 DSP 上实现对 OpenMP 的支持，设计了一个对 OpenMP 程序面向多核 DSP 的并行编译器，主要工作成果包括翻译器和运行时两部分，翻译器将源文件中的 OpenMP 指令转换为运行时中的函数调用，运行时提供具体实现.如何设计并行策略将计算任务分配在各个核上是并行编译的核心问题，对应在 OpenMP 标准中为并行域的概念.编译器通过对并行指令的变换及运行时的支持，实现了主从核的并行执行，对并行编译器的设计具有指导意义.

关键词：多核 DSP；并行编程；OpenMP；并行编译器

Design and Implimentation of Parallel Compiler for Multicore DSP

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Abstract：Supporting incremental parallelization, OpenMP has become the de facto mainstream standard of parallel programming on shared memory processors. To enable parallel programming with OpenMP standard on multicore DSP, a compiler is designed for OpenMP programs running on multicore DSP . Our main work consists of a translator and runtime. The translator part converts the OpenMP directives into the function interface in runtime where the concrete implementation is provided. How to design the tactic to distribute computing task among the cores is the main concern of parallel compilation, which corresponds to the concept of parallel region in OpenMP. By means of the translation of parallel directives and support provided by runtime, parallel executing of master and slave cores is achieved, which offers instructive meaning to the design of parallel compilation.

Key words：multicore DSP; parallel programming; openMP; parallel compiler

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