

Compiler assisted optimization

Lukáš Slouka, Walter Scherfel

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During the last several years parallel computing has assumed a very prominent role in the field of computer science. Compilers had to adapt to this trend by providing automatic performance optimization as well as less known assisted optimization.

We will briefly examine automatic optimization, how compilers vectorize and parallelize source code, and what are the limitations of this approach.

Main focus of the lecture will be on assisted optimization in general and on *OpenMP* standard as one of the most well known representatives of this approach. We are going to present all major features of assisted vectorization and parallelization with *OpenMP* in C language with practical examples using *GCC* and *ICC*. Namely, we will examine `#pragma omp simd`, `#pragma omp for`, and `#pragma omp task` compiler directives.