Cetus - An Extensible Compiler Infrastructure for Source-to-Source Transformation

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To appear at the *16th Workshop on Languages and Compilers for Parallel Computing (LCPC03)*, College Station, TX, 2-4 October 2003

Abstract

Cetus is a compiler infrastructure for the source-to-source transformation of programs. We created Cetus out of the need for a compiler research environment that facilitates the development of interprocedural analysis and parallelization techniques for C, C++, and Java programs. We will describe our rationale for creating a new compiler infrastructure and give an overview of the Cetus architecture. The design is intended to be extensible for multiple languages and will become more flexible as we incorporate feedback from any difficulties we encounter introducing other languages. We will characterize Cetus' runtime behavior of parsing and IR generation in terms of execution time, memory usage, and parallel speedup of parsing, as well as motivate its usefulness through examples of projects that use Cetus. We will then compare these results with those of the Polaris Fortran translator.