The PARADIGM Project

The PARADIGM (PARAllelizing compiler for DIstributed-memory General-purpose Multicomputers) project, at the University of Illinois strives to provide a fully automated means to parallelize programs for efficient execution on a wide range of distributed-memory multicomputers. To achieve this goal, the research being performed in the PARADIGM project addresses automatic techniques for exploiting available data and functional parallelism for both regular and irregular applications. Through a combination of compile-time techniques and run-time library support, the PARADIGM framework will be able to compile a wide range of applications for execution on a variety of high-performance multicomputers.

What sets the PARADIGM project apart from other compiler efforts for distributed-memory multicomputers is the broad range of research topics that are being addressed. Current research topics in the PARADIGM project have been focused in the following areas:

1. Performing automatic data distribution for regular computations;
2. Optimizing communication for regular computations;
3. Supporting irregular computations using a combination of compile-time analysis and run-time support;
4. Exploiting functional and data parallelism simultaneously; and
5. Generating multithreaded message-driven code to hide communication latencies.

This file serves to summarize the research publications and technical reports that have been written describing the work performed during the course of the PARADIGM project. More information on PARADIGM is available via the World-Wide Web (`http://www.crhc.uiuc.edu/Paradigm`), by anonymous ftp (`ftp://ftp.crhc.uiuc.edu/pub/Paradigm`), or by writing to `banerjee@crhc.uiuc.edu`.

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