We Implementation on top of the ROSE compiler infrastructure

The make can be different for individual systems and applications

Interconversion use

This is mandatory to exploit the computing power of modern HPC systems

- There is no silver bullet.
- degrade the performance portability of a HPC application
- The application is specialized for a particular system.
- make collaboration of scientists and expert programmers more difficult.
- Code optimizations by expert programmers are often non-intuitive, heuristic, and difficult to understand for non-expert programmers.

Although many approaches have been proposed to describe optimizations in various ways such as compiler directives and special script languages, non-trivial modifications of the original code that could be system-specific and/or application-specific are still required in practical uses. In addition to basic code transformations, user-defined custom transformations are needed for special demands of individual systems and applications.

The above XSLT-based loop transformation allows OpenACC to weaponize the loop nests and thus significantly improves the GPU performance. Accordingly, by switching the translation recipe, a single application code can be translated to the best version for each system, and achieve a high performance portability. Computational scientists can maintain the original code, while performance tuners describe system-specific optimizations in an external file. Therefore, the Xevolver framework will help an appropriate division of labor between computational scientists and performance tuners.