

SOLLVE Thrust Areas Updates

Application Requirements

- SOLLVE Spack package for application usage.
- Enable RAJA and Kokkos to target OpenMP
- Interactions with ECP applications and libraries including SLATE, Lattice QCD, miniVite QMCPack, ExaAM, Flash (ExaStar), E3SM.
- OpenMP feature wishlist ticketing system.

Standard and Specification Evolution

- Fall 2019 OpenMP Face-to-Face in Auckland.
- Release of OpenMP Technical Report 8 (Nov. 2019) containing OpenMP 5.0 Examples and features for OpenMP 5.1 with more descriptive features such as loop directive.

OpenMP Scalable Runtime

- Optimization of resource management and scheduling in the latest release of BOLT 1.0rc2; less overhead of OpenMP threads, useful for nested parallel regions.
- Work on improving support loop scheduling and tasking for OpenMP, in particular for load imbalanced applications.

LLVM Compiler

- Implementation of parallelizing and/or user-defined loop transformations in clang.
- Implementation of the OpenMP 5.0 declare mapper feature in Clang/LLVM.
- Optimization of GPU unified memory performance in Clang/LLVM.

Verification and Validation Suite

- Work with a number of compiler teams who have used the V&V Suite to evaluate their products.
- Improved V&V suite to assess features in OpenMP for a large number of different ECP systems.
- Further developed V&V suite to consider computational patterns and algorithmic strategies used in many ECP application, such as testing OpenMP tasks used in SLATE.

Training and Outreach

Webinars, Workshops, Events at ECP Annual Meeting, Tutorials, Hackathons

ECP Value

OpenMP Services

Accelerator

Affinity

Parallelism

Tasking

Memory Management