Rahulkumar Gayatri

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Current Position

- ***Title*** - Exascale Science Application PostDoctoral Fellow.
Lawrence Berkeley National Lab.
- ***Description*** - HPC Application Optimization Engineer and Performance Portable Application Developer.

Projects

- ***Berkeley GW***
- Material science kernel used as a case study for performance portability.
- Implemented KNL and GPU specific code and compared the performance with their OpenMP4.5x and Kokkos implementations.
http://performanceportability.org/case_studies/gw/
- ***SW4*** - Optimized the code for Intel's Knight landing architecture by enabling vectorization, cache blocking and reducing OpenMP overhead.
https://github.com/geodynamics/sw4lite
- ***MOOSE*** - Parallelize and optimize the ODE system solvers used to simulate cellular behaviour in human brain.
https://moose.ncbs.res.in/
- ***Doctoral Thesis: OMPSs*** - Compiler and runtime support for multiple threads in OMPSs.

Proficiencies

- ***Languages***: C,C++ , python
- ***Programming Models***: OpenMP4.5, OpenMP3.0, Cuda, Kokkos, OMPSs, Pthreads, MPI, STM
- ***Scripting***: Shell, LaTeX, Sed, awk, gnuplot
- ***Profiling Tools***: Intel-vtune, Intel-advisor, Intel-SDE, LIKWID, gdb, Valgrind

Publications

- "Loop level speculation in a task based programming model." *High Performance Computing (HiPC), 2013 20th International Conference*
- "Transactional access to shared memory in StarSs, a task based programming model." *Euro-par, 2012 Parallel Processing*
- "Analysis of the overheads incurred due to speculation in a task based programming model." *MULTIPROG, workshop at HiPEAC, 2015*
- "TERAFLUX: Harnessing dataflow in next generation teradevices." *Microprocessors and Microsystems*
- "Parallelizing Breadth First Search Using Cell BE, HiPC, Student Symposium, 2008"

Education

- **Doctor of Philosophy (PhD) in Computer Science** (2015)
"Increasing Parallelism through Speculation in Task-Based Programming Model."
- **Master of Technology, Computer Science** *G*PA - 4.75/5.00 (2009)

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