Weekly Research Report

Monday 10/21/2013

Wei Wang

Weekly Research Report

Thursday 10/17/2013

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What I needed to do (review)

- work on using PPCG compiler to transform Lulesh programs
  - worked on it (details in next slides)
- work on the vectorization of the cardiac code
  - Did not work on it yet.

What did I do (1)

- work on using PPCG compiler to transform Lulesh programs
  - Riyadh's PPCG could auto-parallelize (involving scalar privatization) the sequential code while tiling it. But the problem is: the time it took to auto-parallelize is at the magnitude of hours!
  - Solution: ?

What did I do (2)

- Polyhedral optimize cardiac code for input size smaller than 2048, on Xeon Phi
  - Previously, input size 2048 had barely speedups (about 3-5% improvement)
  - Found that for smaller input size, the improvement was about 15%. For example, size 1024, the 110X speedup got improved to 110*(1+15%) = 130X speedup by using polyhedral transformations. (Graphs attached in the beginning)

What do I plan to do?

- Get lulesh auto-parallelized and transformed for MIC, put results into paper draft
- Get a ready to submit version to you by Sunday (10/20/2013) for IMPACT 2014 workshop on polyhedral compilation techniques (deadline 10/25/2013 AoE)
- Get some progress on improving manual implementation of cardiac code.
- Start looking at Windows PoCC/PPCG