

Weekly Research Report

Monday 10/21/2013

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review of the issues to solve/What I needed to do

- Although **Lulesh** can go through polyhedral compilers, no extensive experiments were done, **no results** (numbers /graphs) were generated
- **IMPACT 2014 workshop** on polyhedral compilation techniques **due** on 10/25/2013 AoE, need to 1) get lulesh results into paper & 2) get a ready draft to John by Monday.
- Manual implementation of cardiac code (for **Plos ONE submission**) is **not** well **vectorized**

progress on: IMPACT 2014 draft

- Added MIC results of Cardiac code to the draft
- Redo all parts of the draft except Related Work and Conclusion
- Sent the draft to John
- Need to work on related work and conclusion
- Depend on how many pages we want, we can add some discussion of lulesh challenges

progress on: Lulesh

- Generated program variants for one SCoP
 - that scop occupied ~12% execution in fully parallelized OpenMP
 - did not generate variants for more SCoP because the polyhedral compiler took too long to do transformation
 - The results on elo is that the variants performed as well as the original OpenMP implementation on Sandy Bridge
 - The original OpenMP program had slow down running on MIC.
 - Not planning to add lulesh results to IMPACT2014 draft

progress on: PlosONE

- Met with Will on profiling the cardiac code using Intel Vtune Amplifier
 - we found that the vectorization is at the OK range.
 - The problem is related to memory stalls and also the bandwidth is not 100% utilized.

The plan (before Thursday)

- Related work and conclusion section of IMPACT 2014 workshop paper
- Try to get good Lulesh numbers using polyhedral approach still
 - at least I will have the energy and time correlation data generated on Sandy Bridge (on MIC, the problem is aforementioned: the program is not performance portable yet: needs investigation)