

Meeting Notes and Assignment 7/31/19

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Colorado State University, Research for Dr. Sanjay Rajopadhye, Summer 2019

Notes and Assignment

Find out if there is a significant difference between 2D mappings and identical 3D mappings that specify k explicitly as the innermost loop.

Compare both directions of k as the innermost loop for confirmed 2D mappings.

In the last 3-4 days before classes start, write a report about what we did this summer in research. This will help solidify what has been learned.

Empirically measure performance of these mappings over the next two weeks.

Naming convention is $-i, -j, -k$ = decreasing orders or i, j, k = increasing orders. Diagonals = d . Such a scheme can then be permuted with numbers such as 123 or 231.

Build the Legal Mapping Table this week. Use the latest version of icc compiler. (intel c++ compiler that is more efficient compared to gcc) - Nodelocked to room 225 (Ski resorts). We just have to compile on this machines and can run the compiled script on another one.

Testing is to be done before timing. Fill up the table as much as possible. It will summarize our results over the next two weeks.

change the out shell of the .cs script to transfer the compiled code to a different host.

Get a detailed vectorization report from icc when using it. Use vectorization report flags.

Vectorization means that all codes have vector units representing computations. The CPU often can execute 8 double precision multiply add units per cycle as a result of add multiply hardware units. Thus, we can get up to 16 operations per cycle as long as they are independent and available locally in registers.

OSP uses min/max and plus operations.

Mappings That Work:

Diagonals with k in middle (both directions of k)

Columns with k in the middle needs k to be in reverse ($j-k$)

Rows with k in the middle needs k to be reverse ($j-k$).

Waruna Meeting

Waruna does not experience the bug we are, and it is likely due to permissions. We are working with him in the 120 lab to fix this.