

Lecture 20: Hybrid Parallel Programming

CMSE 822: Parallel Computing
Prof. Sean M. Couch



Puppy time!





HW9 and Noise



Jared Carlson 9:22 AM

@channel There seems to be a little confusion about HW9. The averaging operation (including the communication) should be done many times, e.g., 1000. You should only do the MPI setup (such as creating the window) once. It is your choice whether or not to include the setup in your timing but you should record the time it took to do all the iterations (don't time each iteration separately). You may run it multiple times and take the average of those times if your measurements are noisy. Because this was not clear in the HW instructions, we are **giving you 2 extra days to complete HW9, so the 19th**. I will have office hours tomorrow at 5 pm if you have any question about this. Good luck!



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Plan for rest of the semester

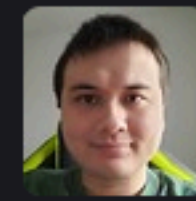
- Hybrid parallelism
- OpenMP SIMD (Thursday)
- GPUs
- The End!



Hybrid Parallelism with MPI

- Slides from Bill Gropp:

PCA Questions



Matthew Zeilbeck 12:31 AM

PCA18: On page 459, it says "OpenMP simply does not allow some things that would be desirable," and then it gives a code example below. In the below example, what does "doesn't allow" mean? Does the program give a compiler or runtime error? Does the author mean that it's not guaranteed to give you the correct output? Will OpenMP serialize it? Then is the basic rule below that describing how OpenMP behaves, or is it describing a practice that we need to follow?



- All of the above?



PCA Questions



Nathan Haut 2:03 PM

PCA18: In section 23.3 it talks about locations where flushes occur, but what exactly does a flush do? Is it just a synchronization call, or what is happening under the hood? (edited)



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- Flush means “memory synchronization”
 - really: transfer from local, temporary storage to global, permanent storage



In-class Exercise!

- Nothing to turn in!