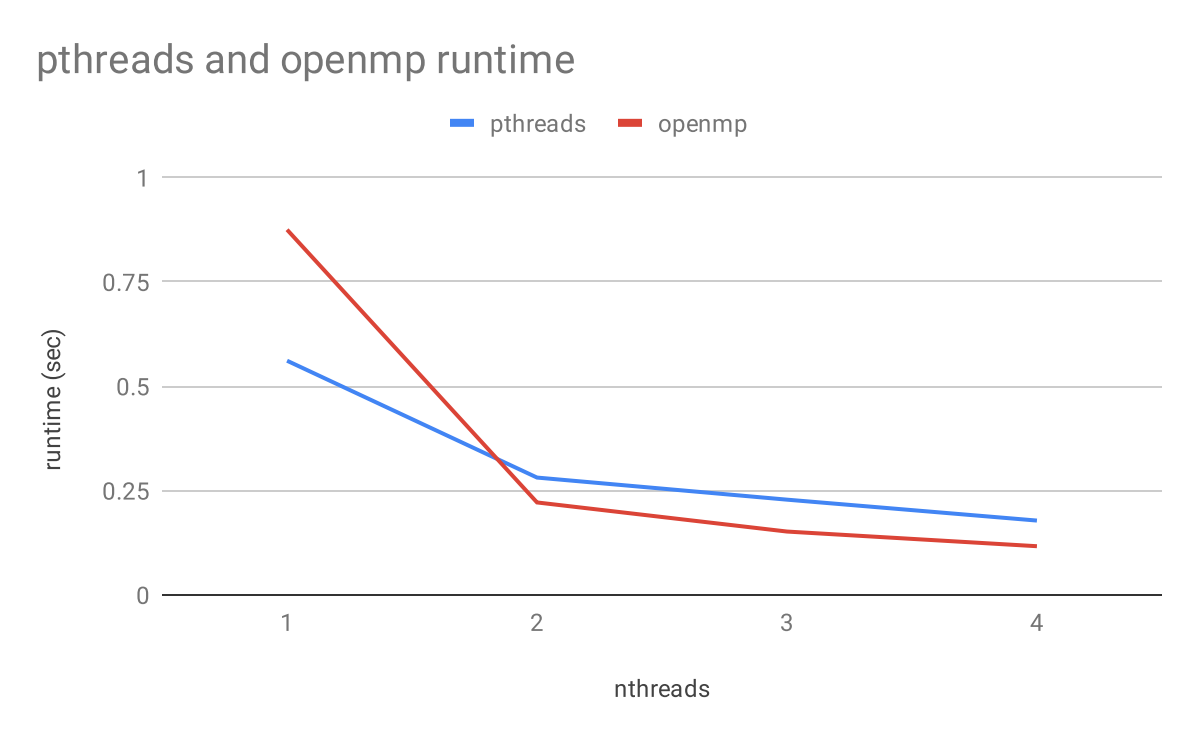
Julia set: pthreads and openmp runtime comparison

serial	0.863942	
nthreads	pthreads	openmp
1	0.561112	0.875063
2	0.281143	0.22154
3	0.228212	0.151797
4	0.178105	0.116643



Discussion

If I would like to implement a dynamic load balancing scheme in pthreads, what I would do would be to have a queue of tasks. Each thread would take one task at a time, and as soon as a thread finish the task it has been assigned, it will ask if there is any left in the queue, and if there is, would take it. We should be careful to assign tasks to threads in an atomic way (so as to avoid two or more threads having the same task).

In our example, each task could be associated to computing one pixel of the plot. This way, some threads will compute lots of pixels (those that are fast to calculate), while other will take longer in those tasks-pixels that require lots of iterations.