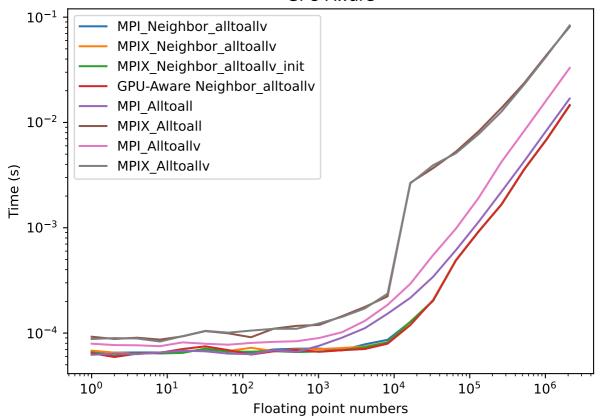
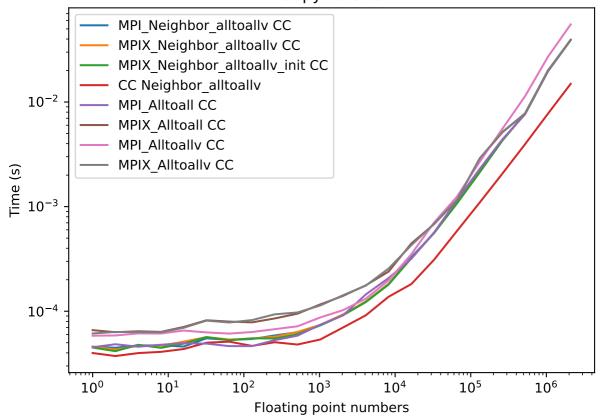
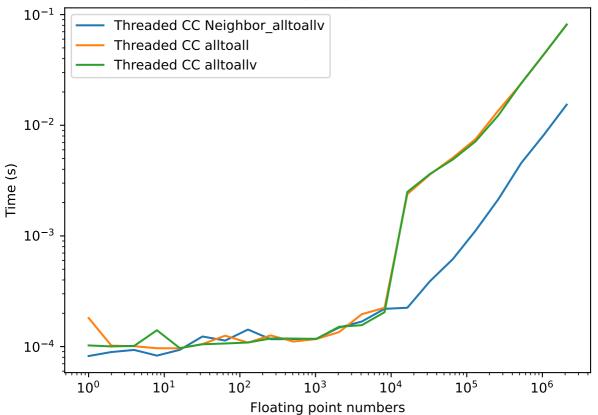
GPU Aware



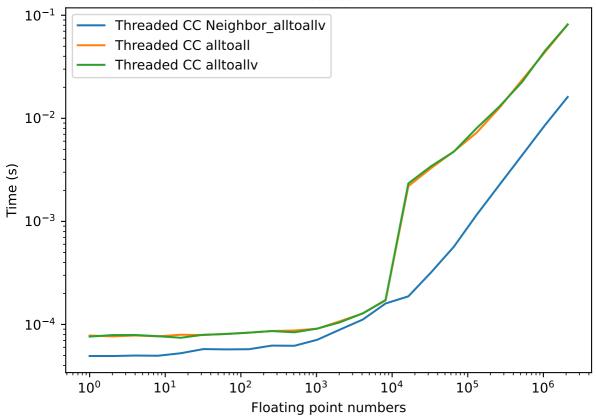
Copy-to-CPU



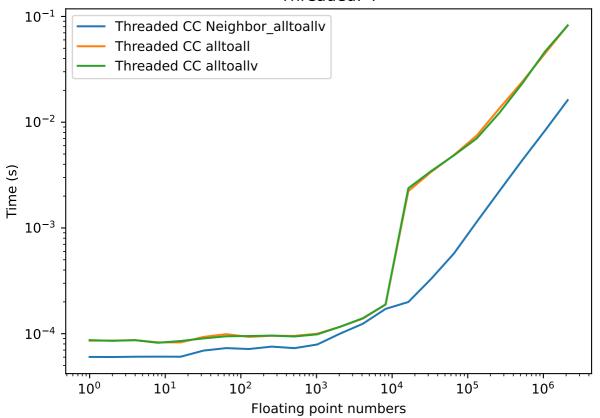
Threaded: 32



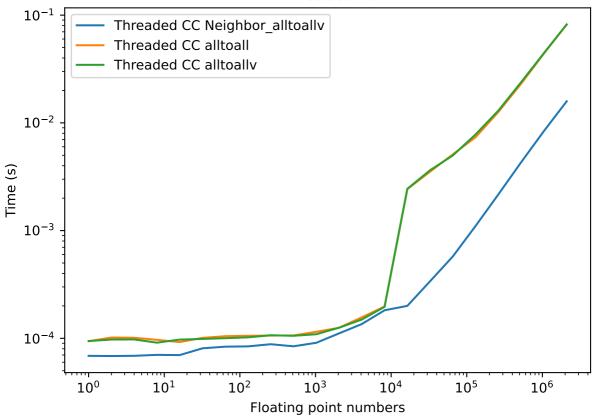
Threaded: 2



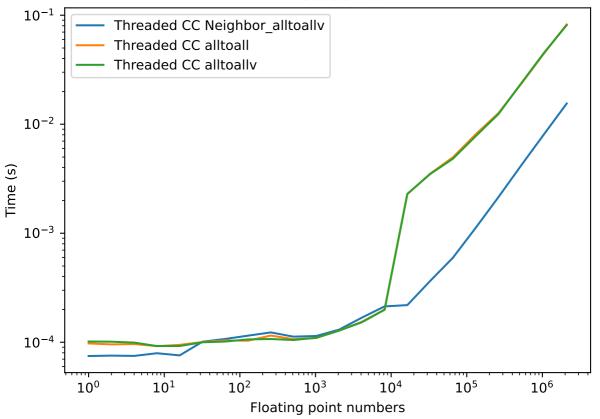
Threaded: 4



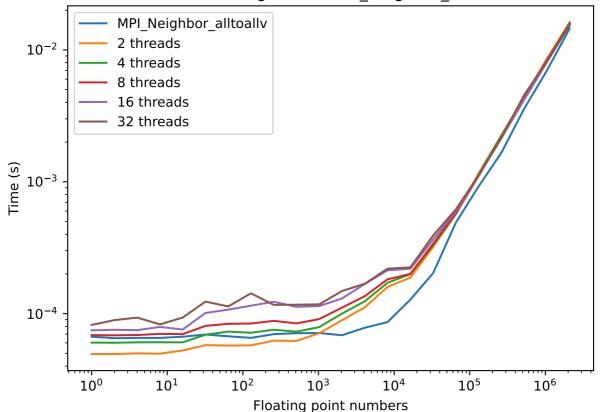
Threaded: 8



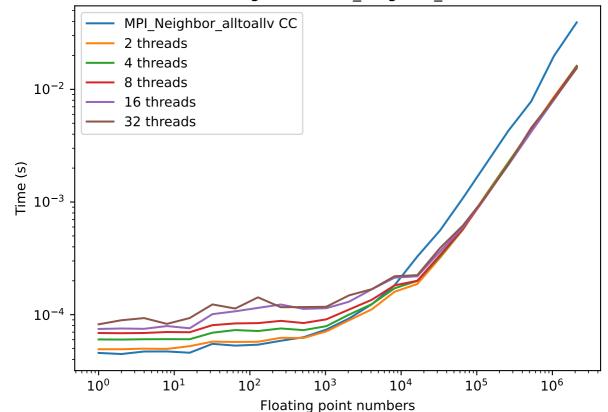
Threaded: 16



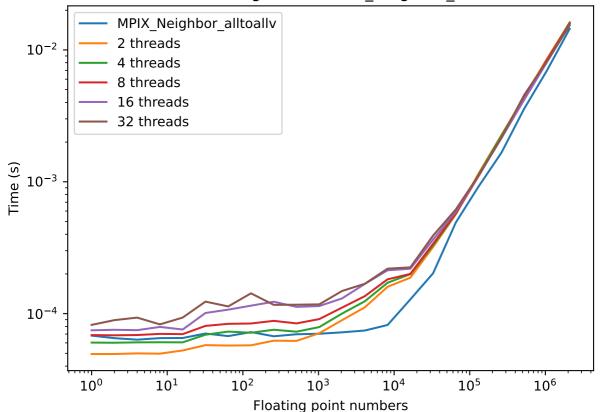
Threaded Neighbor vs MPI_Neighbor_alltoallv



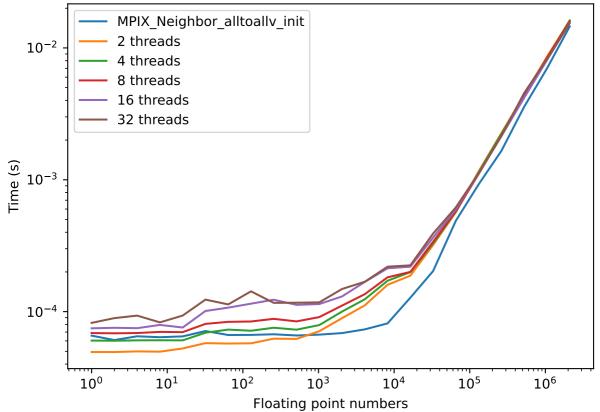
Threaded Neighbor vs MPI_Neighbor_alltoallv CC



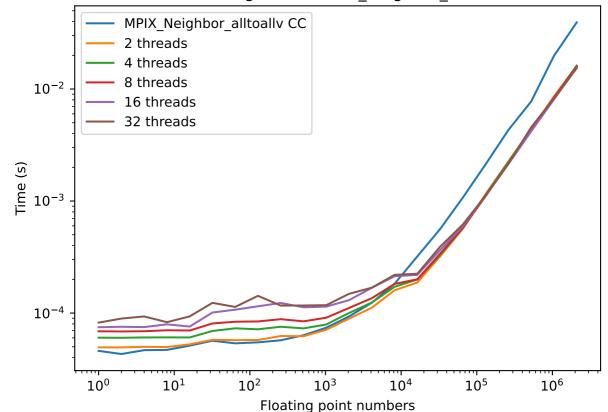
Threaded Neighbor vs MPIX_Neighbor_alltoallv



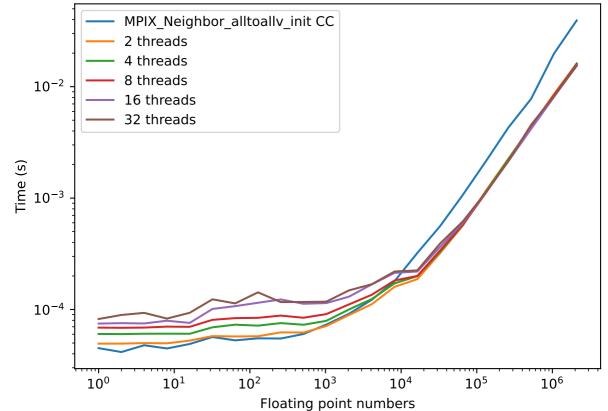
Threaded Neighbor vs MPIX_Neighbor_alltoallv_init



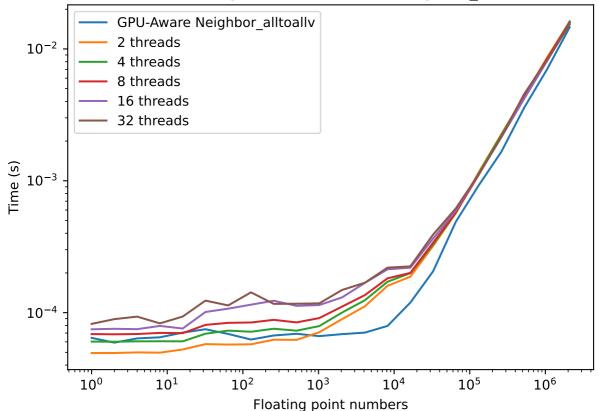
Threaded Neighbor vs MPIX_Neighbor_alltoallv CC



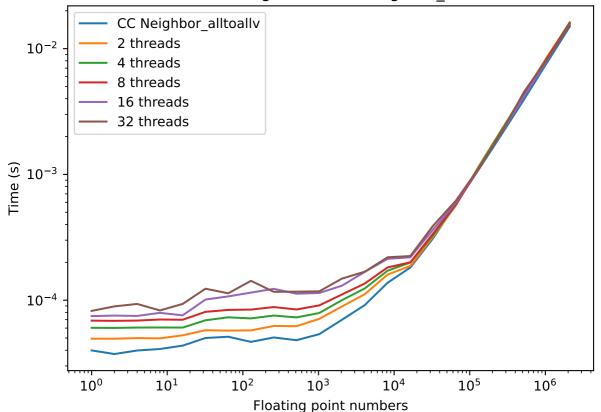
Threaded Neighbor vs MPIX_Neighbor_alltoallv_init CC



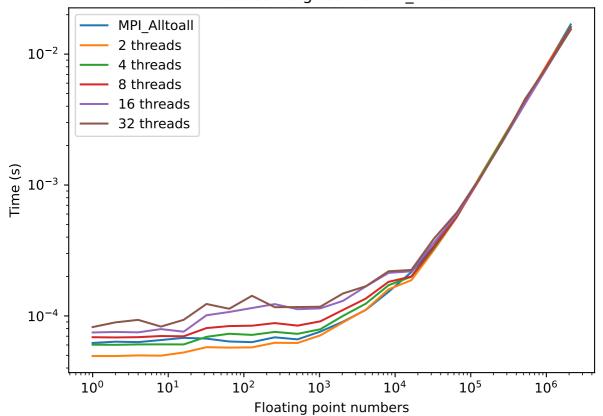
Threaded Neighbor vs GPU-Aware Neighbor_alltoallv



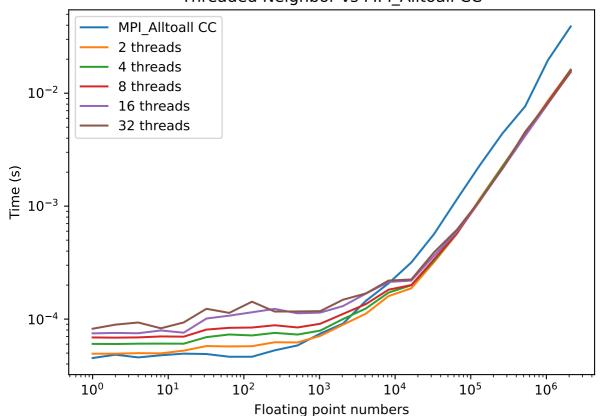
Threaded Neighbor vs CC Neighbor_alltoallv



Threaded Neighbor vs MPI_Alltoall



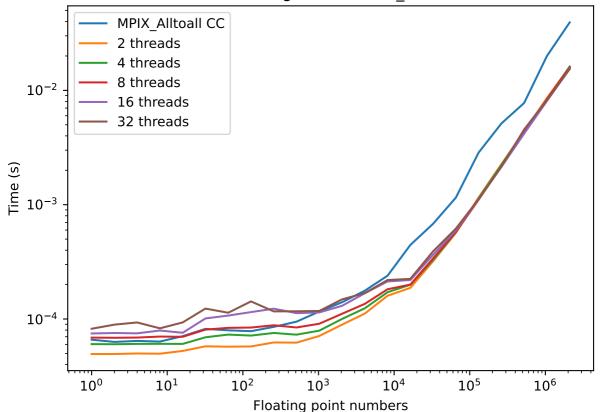
Threaded Neighbor vs MPI_Alltoall CC



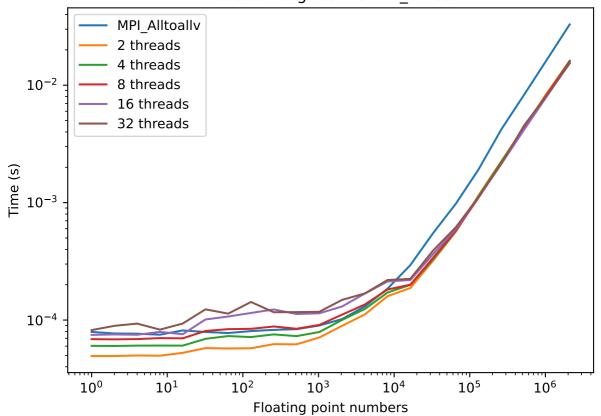
Threaded Neighbor vs MPIX_Alltoall 10^{-1} MPIX_Alltoall 2 threads 4 threads 8 threads 16 threads 10-2 32 threads Time (s) 10^{-3} 10^{-4} 10⁰ 10¹ 10² 10³ 10⁵ 10⁶ 10^{4}

Floating point numbers

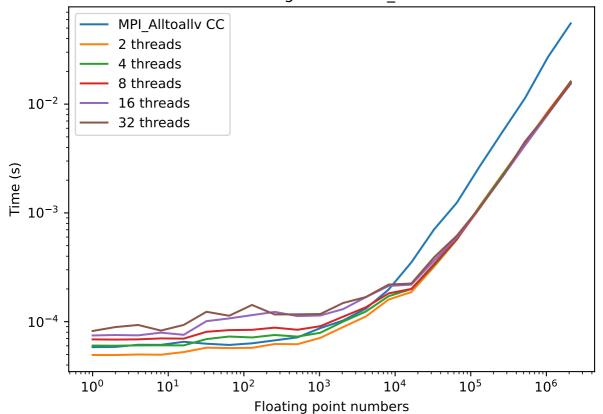
Threaded Neighbor vs MPIX_Alltoall CC



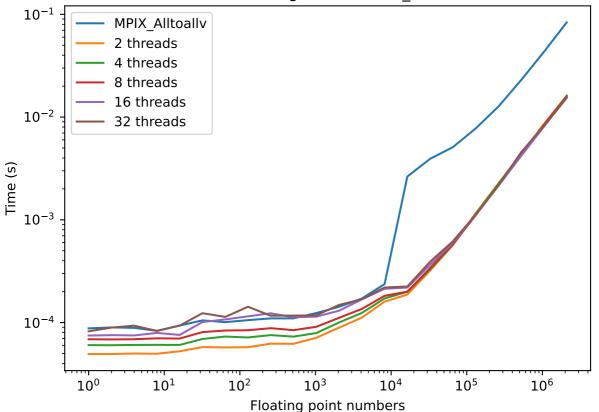
Threaded Neighbor vs MPI_Alltoallv



Threaded Neighbor vs MPI_Alltoallv CC







Threaded Neighbor vs MPIX_Alltoallv CC

