1 Performance analysis

Figure 1 shows the performance of radixsort for gnu compared to quick sort on cpu for different array sizes. Figure 2 shows all the data. We excluded the last few data points to focus on the intersection of the two plots. As we can see from Figure 1, radix sort on GPU is slower than quick sort on CPU for arrays with less than $600,000$ entries and faster for arrays with more than $600,000$ entries. The GPU radix sort has a higher communication overhead than the CPU quick sort. This communication overhead overshadows the increase in performance as for small arrays it takes a very large fraction of the execution time. From figure 2 we can see how the GPU speedup grows as the array size grows since the percentage of execution time taken by the the communication overhead slowly goes to zero.

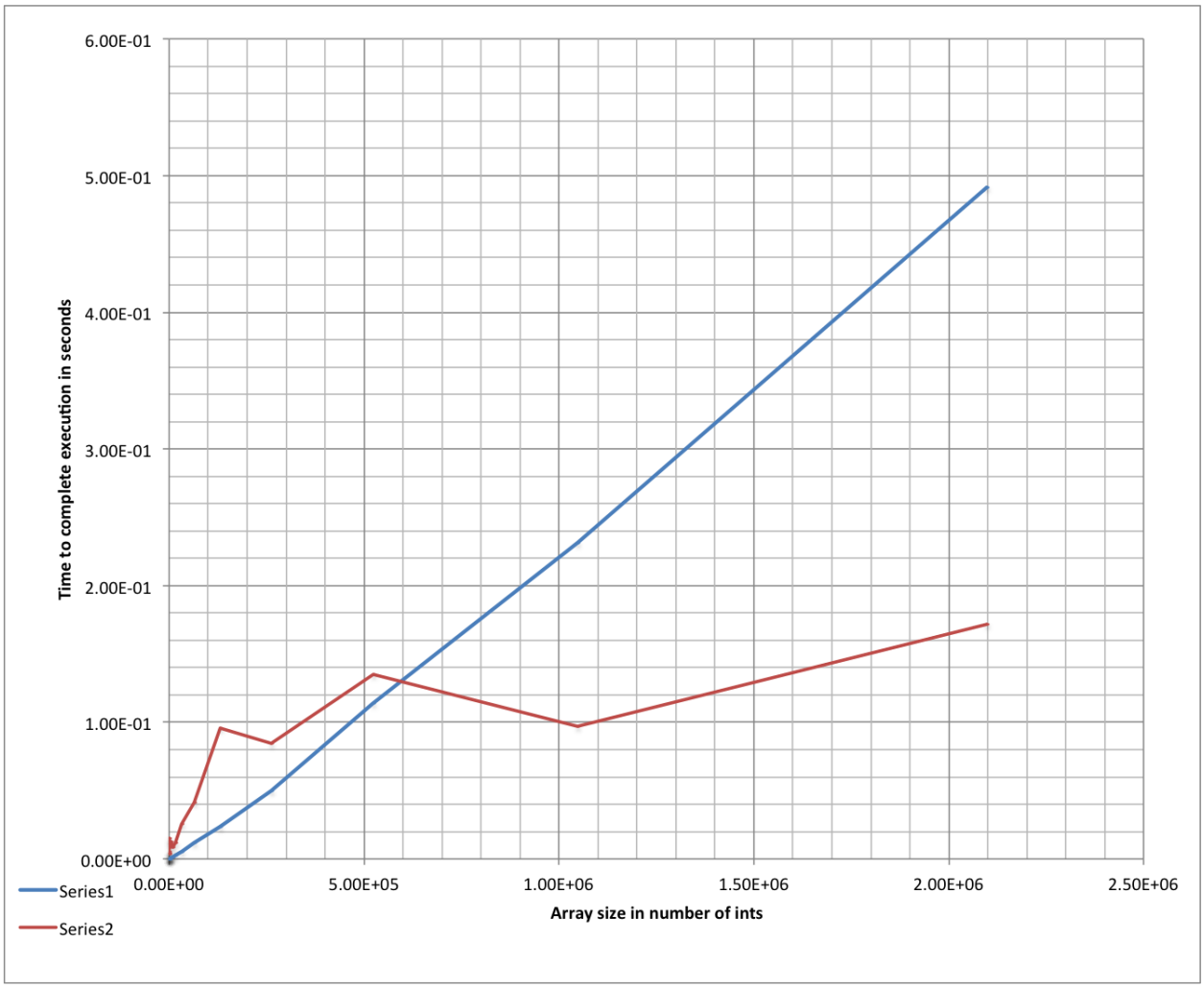

Figure 1: series 1: CPU; series 2: GPU

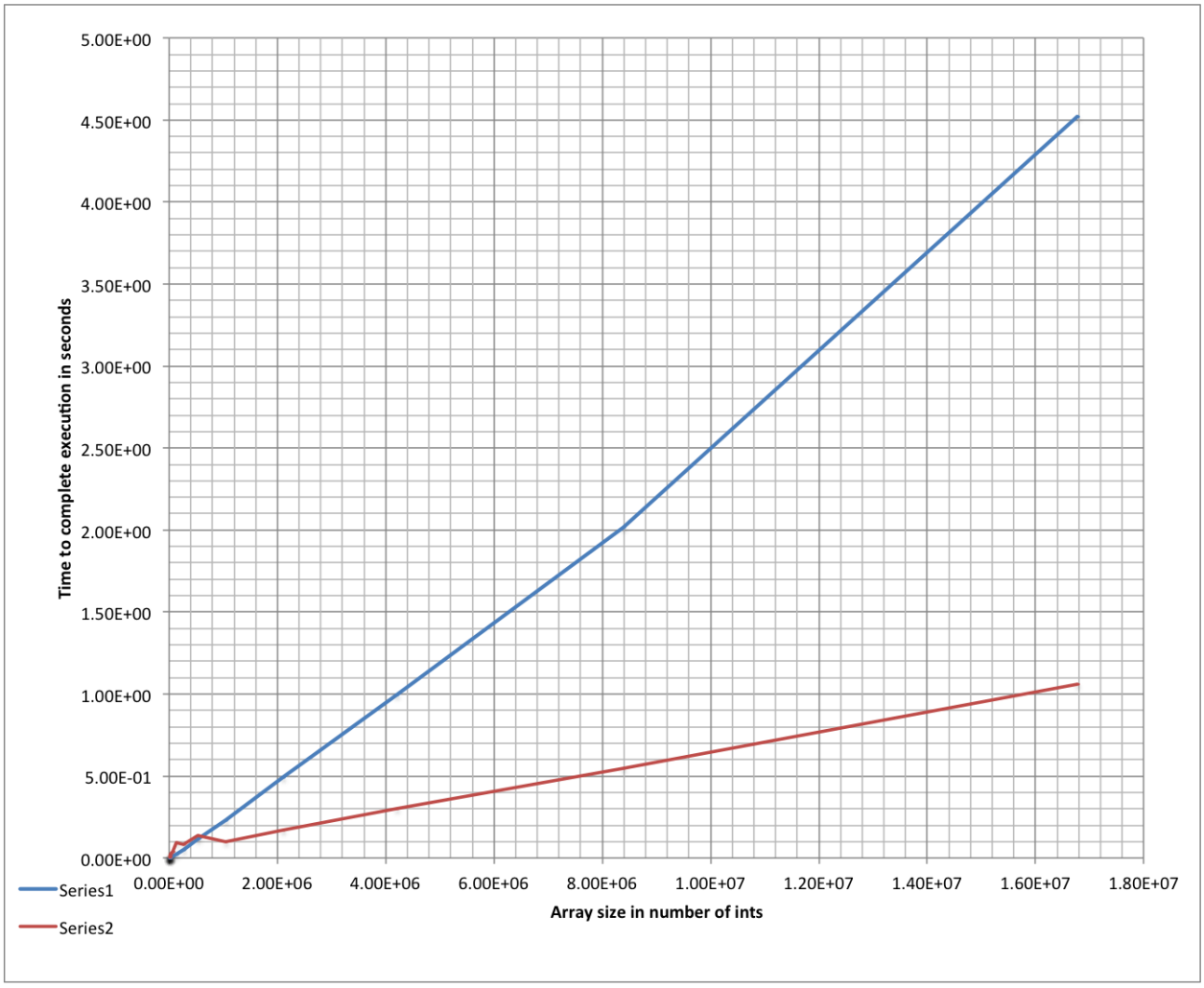

Figure 2: series 1: CPU; series 2: GPU