Technical Writing and Speaking in English Sustaining Energy.*

Danilo Carastan do Santos

Université Grenoble Alpes, Grenoble INP, Inria, LIG, France

February 2025

Exercise 1: For each of the sentences below, rewrite them in such a way that they sustain more energy.

1. The rest of this paper is organized as follows. A presentation of the related works in parallel sorting algorithms is performed in Section 2. The proposed methodology for efficient parallel sorting is presented in Section 3. The experimental protocol and results are shown and discussed in Section 4 and conclusions and future work prospects are presented in Section 5.

2. Figure 3 explains the parallel sorting procedure. The comparison between the integer values are done in parallel by the worker threads. It should be pointed out that, due to the fact that several threads are executed in parallel in the processor, the data present in the cache have the potential to be evicted by the cache management protocols.

3. The disciplines of Artificial Intelligence and Computer Architecture are mixed together, and a new cache coherence protocol is proposed in this research project. Significant advances in the state of the art can be achieved by this mixture. At the present time of writing of this project, there are no Artificial Intelligence cache coherence protocols in the already existing works in the field.

*Thanks to Anderson Andrei Da Silva and Quentin Guilloteau for providing the initial content

4. At this point in time, there are more than 20 billion Internet of Things (IoT) devices that are connected through the Internet. The deployment of such many devices not only increases the complexity of the IoT infrastructure, but also the global energy consumption of IoT is negatively affected.

5. The objective of this paper is to perform a comparison of cache management algorithms over parallel architectures. The authors present a discussion about not only the trade-offs between algorithms, but as well but as well about the influence of the hardware heterogeneity in the performance of the cache management algorithms. At the light of this comparison, Artificial Intelligence (AI) algorithms are explored and a novel cache management algorithm is proposed. The experiments show that cache management algorithms that are created in conjunction with AI methods have the ability to completely eliminate cache misses, and significant performance improvements are a result of this conjunction.