



Developing Genetic Algorithms using Different MapReduce Frameworks: MPI vs. Hadoop*

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Abstract—MapReduce is a quite popular paradigm, which allows to no specialized users to use large parallel computational platforms in a transparent way. Hadoop is the most used implementation of this paradigm, and in fact, for a large amount of users the word Hadoop and MapReduce are interchangeable. But, there are other frameworks that implement this programming paradigm, such as MapReduce-MPI. Since, optimization techniques can be greatly beneficiary of this kind of data-intensive computing modeling, in this paper, we analyze the performance effect of developing genetic algorithms (GA) using different frameworks of MapReduce (MRGA). In particular, we implement MRGA using Hadoop and MR-MPI frameworks. We analyze and compare both implementations considering relevant aspects such as efficiency and scalability to solve a large dimension problem. The results show a similar efficiency level between the algorithms but Hadoop presents a better scalability.

Index Terms—