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Dear Editor,

I am writing to submit our paper entitled "*A Comprehensive Performance Evaluation of the BinLPT Workload-Aware Loop Scheduler*" for consideration for publication in Concurrency and Computation: Practice and Experience's Special Issue for the *XVIII Simpósio em Sistemas Computacionais de Alto Desempenho (WSCAD-SSC)* . This work is an extended version of the paper "*BinLPT: A Novel Workload-Aware Loop Scheduler for Irregular Parallel Loops*" . We believe that it includes enough new contributions to justify the journal publication.

In our original work, we proposed a new workload-aware scheduling strategy called BinLPT to overcome drawbacks of existing related strategies. BinLPT strategy relies on three features to deliver superior performance: (i) user-supplied estimations of the workload of the loop; (ii) a greedy heuristic that adaptively partitions the iteration space in several chunks; and (iii) a scheduling scheme based on the LPT and on-demand techniques. Based on this original work, we add the following new contributions in this extended version:

- We introduce a multiloop support feature to the original implementation of BinLPT. This new functionality enables the HPC engineer to reuse workload estimations across different parallel loops as well as to have different workload estimations for each one. Based on the multiloop feature, we discuss how we were able to integrate BinLPT into a large-scale real-world-application: an Elastodynamics Simulator. Furthermore, we present a performance evaluation of this simulator running on the Santos Dumont supercomputer.
- We present a comprehensive performance evaluation of BinLPT based on three different techniques. First, we used simulations to understand the performance of BinLPT in a great number of scenarios. Next, we relied on a synthetic kernel to uncover the upper bound performance gains of our strategy. Finally, we employed three scientific kernels, each of which featuring distinct characteristics, to study the performance of BinLPT. We considered several performance factors in our analysis and a wide variety of workloads, and we run all experiments with a 192-core NUMA machine to provide a rich analysis.

Furthermore, we have re-worked existing sections to better detail the internals and implementation of BinLPT. Our results unveiled that BinLPT better balances the workload of a loop, and this behaviour is strengthened by the algorithmic complexity of the loop. Overall, BinLPT delivers up to 37.15% and 9.11% better performance than baselines in the application kernels and elastodynamics simulations, respectively.

Thank you for receiving our manuscript and considering it for review. We appreciate your time and look forward to your response.

Best regards,

Pedro Henrique