Concurrency and Parallelism
Cilk$^+$ Parallel Patterns Implementation

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Abstract—The parallel computation paradigm has been evolving, ... Consequently, nowadays, computers have a vast amount of parallel computation functionalities (thread and vector parallelism). However, making use of these functionalities to build complex algorithms can sometimes be a difficult task, due to them being low level primitives and sometimes platform dependent. Thus, parallel functions and libraries can provide an easy and generic way to better utilize these resources, when available. Therefore, we developed a parallel patterns library, that implements some of the most famous parallel patterns, and that can be easily integrated in any .. . In order to be able to be used in a vast amount of use cases, these implementations are independent both from the data types they are manipulating (and the amount of available cores ?).

What was our approach?

Finally, we conducted a preliminary experimental evaluation on the performance of the different implemented alternatives, comparing them with their corresponding sequential version, that showed ... .

What is the problem? make use of the available multithreaded/core functuanlaties of a compter by implementing parallel functions(patterns) that resort to optional parallelism with the available cores. Why is it interesting/challenging? The implementations must be independet from the number of cores What is your approach? Build functions that ... What were the results? What did you learn? Nothing

/par In the following document we will describe the reasoning behind the development of our project, we also present results and analysis of the tests we ran. In recent years, we witnessed a huge growth on the amount data to be processed and analyzed, society has become more and more *connected* and, now more than ever, demands for high grade of efficiency! Hardware performance has also evolved —processor architecture has switching from building bigger and clockwise fast to have more cores and threads. All these changes are a big motivation to build and take parallel programming has a standard. /par We were proposed to implement a series of well know parallel patterns in the most efficient way as possible.

(o que aprendemos, iventem ai qql coisa)...

1. Introduction

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mds
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2. Architecture

3. Implementation

4. Experimental Evaluation

4.1. Experimental Setting

4.2. Experimental Results

5. Conclusion

The conclusion goes here.

Acknowledgments

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Comments

References

[1] J. Leitão, P. Ákos Costa, M. Cecília Gomes, and N. Preguiça, "Towards Enabling Novel Edge-Enabled Applications," *ArXiv e-prints*, May 2018.