

Advanced algorithms and programming methods - 2 [CM0470] - Prof. A. Torsello

[Home](#) / [I miei corsi](#) / [CM0470_2](#) / [Assignments 2018](#) / [Assignment 3: Concurrency and Parallelism](#)

Assignment 3: Concurrency and Parallelism

Due date: September 2019

Extend the matrix library so that the operations can be performed concurrently.

There are two forms of concurrency to be developed:

- Concurrent operations:** In multiple matrix operations like $(A+B) * (C+D)$ the addition $A+B$ and $C+D$ can be performed asynchronously in any order (or in parallel) before the final multiplication. Same goes for sequence of multiplications like $A*B*C*D$ if the optimized multiplication order happens to be $(A*B) * (C*D)$.
- Parallel matrix multiplication:** With large matrix multiplication the access times through the polymorphic wrapper can induce a sizable overhead. one way around this is to access big fixed-size submatrices with each call.
With this optimization matrix A is composed of several submatrices (A_{ij}) , each fetched with a single polymorphic call. Matrix multiplication can be expressed easily in this form, so $C=A*B$ becomes $C_{ij} = \sum_k A_{ik} * B_{kj}$, where now $*$ denotes the usual matrix multiplication for the submatrices.
Now, each C_{ij} can be computed independently from the other and in parallel.

Ultime modifiche: giovedì, 20 dicembre 2018, 09:00

[◀ Results Assignment 2](#)

Vai a...



[Results for Assignment 3 ▶](#)



