GridKa
School 2016

Data Science on Modern Architectures

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Concurrent Programming in C++

Wednesday, August 31, 2016 1:00 PM (5 hours)

In this course we will introduce how to program for concurrency in C++, taking advantage of modern CPUs ability to run multi-threaded programs on different CPU cores. Firstly, we will explore the new concurrency features of C++14 itself, which will also serve as a general introduction to multi-threaded programming. Students will learn the basics of asynchronous execution, thread spawning, management and synchronisation. Some elementary considerations about deadlocks and data races will be introduced, which will illustrate the common problems that can arise when programming with multiple threads. After this the Threaded Building Block template library will be introduced. We shall see how the features of this library allow programers to exploit multi-threading at a higher level, not needing to worry about so many of the details of thread management.

Students should be familiar with C++ and the standard template library. Some familiarity with makefiles and/or CMake would be useful.

Presenter: Dr STEWART, Graeme (University of Glasgow)