

專題演講

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題目：Asymptotic Performance Modeling for Application-Architecture

摘要：

Building on previous results, this talk introduces an abstract performance model for characterizing heterogeneous many-core processor architectures. The modelling approach focuses in particular on the couple application-architecture in view of developing a methodology for their co-design. Two groups of parameters are first introduced based on typical high-end computer architecture. A set of suitability functions are then defined using those parameters. Each suitability function characterizes the application code performance for several basic architecture building blocks, such as those for scalar computation, pipelining, multiprocessing, hierarchical memory, and message passing.

The abstract models of these building blocks are described by linear formulae with asymptotic properties. The architecture description is given in terms of the asymptotic performance and the half-performance parameters, while the application description is based on the generated workload and the problem size. The aggregate performance model for a specific couple application-architecture can then be constructed via composition of the basic building blocks, which is particularly useful for application-architecture co-design.