How to Measure Communication Cost in Stream Programs.

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Abstract

The stream programming model is widely used in multimedia, graphics, and signal processing domains. In this model, a program is represented as a set of autonomous actors that communicate through data channels also known as streams. Mapping stream programs onto multicore platform requires a cost model that takes both actor execution time and communication time into account. Cache coherence protocols are used to communicate between cores in multicore architectures and hence there is no notion of an explicit communication. We can only measure the communication cost by measuring the execution time of actors. To measure the communication cost through actor execution time, we need a specific set up of experiments. It is important to reduce the number of required experiments to measure the communication costs. In this work, we present a new technique to minimize the number of experiments.

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