Realizing FIFO communication when mapping Kahn process networks onto the cell.


Summary: Kahn Process Networks (KPN) are an appealing model of computation to specify streaming applications. When a KPN has to execute on a multi-processor platform, a mapping of the KPN model to the execution platform model should mitigate all possible overhead introduced by the mismatch between primitives realizing the communication semantics of the two models. In this paper, we consider mappings of KPN specification of streaming applications onto the Cell BE multi-processor execution platform. In particular, we investigate how to realize the FIFO communication of a KPN onto the Cell BE in order to reduce the synchronization overhead. We present a solution based on token packetization and show the performance results of five different streaming applications mapped onto the Cell BE.

Keywords: Models of Computation; Kahn Process Networks; distributed FIFO communication; the Cell BE platform
doi:10.1007/978-3-642-03138-0_34