Parallel Instance Discrete-Event Simulation
Using a Vector Uniprocessor

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Abstract

This paper examines the possibility of running $N$ simulations in parallel on a vector processor. In such a system each instance of execution runs identical code but with a different input data set. The main problem which is addressed is the choice of block selection policy, that is, the choice of which indivisible block of code to execute next. This paper investigates four block selection policies by simulating the execution of such a system. A stochastic flow-graph representation was chosen to model the execution of a simulation. A two-level block selection policy was found to have the best potential speedup of the four block selection policies. The speedup levels achieved were not large, and decreased when there were a large number of unique event types (and therefore handlers) in the simulation system.