

1999 Ptolemy Miniconference

Process Networks in Ptolemy II

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Process Networks¹ - Description

- Network of sequential processes
- Processes communicate only through unbounded, unidirectional FIFO channels
- Processes cannot poll channels for presence of data
- Processes block when trying to read data from an empty channel until a token becomes available.

1. G. Kahn, "The semantics of a simple language for parallel programming," *Info. Proc. 74*, vol.4, pp.471-5, 1974

Properties and Applications

- Properties
 - Network is deterministic
 - High level of concurrency
- Applications
 - Embedded dataflow applications
 - Hardware architectures
 - Concurrent digital control processes with dynamic behavior

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Extensions to PN in Ptolemy II

- Notion of global time
 - Models real-time behavior of a system
- Mutations
 - Deterministic mutations in timed PN
 - Non-deterministic mutations in untimed PN
 - Model applications with migrating code, agents, and arrivals and departures of customers and services.

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Demonstration of PN in Ptolemy II

- Run-Length encoding and decoding of an image.
 - Demonstrates
 - A typical application of PN.
 - Infrastructure for PN in Ptolemy II
 - Graph visualization support in Ptolemy II