Properties and Bounds on P/T Nets
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Short description and motivation

A complementary approach to exact or approximation techniques for the analysis of *timed or stochastic Petri net models* is the computation of *bounds* for their *performance measures.* Performance bounds are useful in the preliminary phases of the design of a system, in which many parameters are not known accurately. Several alternatives for those parameters should be quickly evaluated, and rejected those that are clearly bad. Exact (and even approximate) solutions would be computationally very expensive. Bounds become useful in these instances since they usually require much *less computation effort.*

In this tutorial, *net-driven* techniques for the computation of bounds for the main performance indices of timed Petri net models are considered. Special attention is given to the intimate relationship between qualitative and quantitative aspects of Petri nets. In particular, the intensive use of *structure theory* of net models allows to obtain very *efficient computation* techniques.

The contents of the tutorial are the following: (1) Preliminary comments; (2) Introducing the ideas: Marked Graphs case; (3) Generalization: use of visit ratios; (4) Improvements of the bounds; (5) A general linear programming statement.

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