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A Petri Net Model to Obtain the Throughput of Unreliable Production Lines in the Buffer Allocation Problem

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Abstract : A production line designer faces with several challenges in manufacturing system design. One of them is the assignment of buffer slots in between every machine of the production line in order to maximize the throughput of the whole line, which is known as the Buffer Allocation Problem (BAP). The BAP is a combinatorial problem that depends on the number of machines and the total number of slots to be distributed on the production line. In this paper, we are proposing a Petri Net (PN) Model to obtain the throughput in unreliable production lines, based on PN mathematical tools and the decomposition method. The results obtained by this methodology are similar to those presented in previous works, and the number of machines is not a hard restriction.

Keywords : buffer allocation problem, Petri Nets, throughput, production lines
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