Sha, Edwin Hsing-Mean; **Steiglitz, Kenneth**
Maintaining bipartite matchings in the presence of failures. (English) ｜Zbl 0794.90020｜
Networks 23, No. 5, 459-471 (1993).

Summary: We present an on-line distributed reconfiguration algorithm for finding a new maximum matching incrementally after some nodes have failed. Our algorithm is deadlock-free and, with k failures, maintains at least $M - k$ matching pairs during the reconfiguration process, where M is the size of the original maximum matching. The algorithm tolerates failures that occur during reconfiguration. The worst-case reconfiguration time is $O(k \min(|A|, |B|))$ after k failures, where A and B are the node sets, but simulations show that the average-case reconfiguration time is much better. The algorithm is also simple enough to be implemented in hardware.

MSC:

90B25   Reliability, availability, maintenance, inspection in operations research
90B15   Stochastic network models in operations research

Keywords:

on-line distributed reconfiguration algorithm; maximum matching

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