

A Study of Bottlenecks in the Jackson Network

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Abstract

Computing systems and communication systems receive information and service within the systems repeatedly. In queueing theory, these systems have been illustrated as queueing networks. The queueing networks are divided into the open queueing networks, the closed queueing networks and the mixed queueing networks. This research investigated the closed queueing networks, which are the typical model of queueing networks. First, construction of the closed queueing networks and the bottlenecks were examined. Second, by increasing branches, the bottlenecks were changed within the closed queueing networks. Finally, correspondence level between the closed queueing networks and events was improved. As a result, it was able to create a smaller bottleneck in the networks. There have been many requests to apply queueing theory to real life situations. Findings from this research should be useful for the applications to real life situations.