" Using Clustering in Optimization of Distributed Industrial Data Systems Performance "[1]

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Abstract

Due to the advancement of control products and systems, programmable logic controllers are used to control many inter-functional production blocks. These blocks are connected through an industrial network. They are also managed by high quality central block named the supervisor.

The problem of system performance appears when the number of workstation forming the network increases too much. At that time, the supervisor will not be able to serve all workstations with the needed speed.

In this paper, we used genetic algorithms to overcome this problem through suggestion of the collection of many similar workstations to form a cluster. These clusters will be connected with the supervisor. In its role, it will manage the whole system. We also identified a group of equations used to specify the suitable fitness function.

Results showed a remarkable enhancement development in the system performance after clustering. We also studied the effect of changing many parameters on the general performance of the system, like changing the number of workstations.

Key words: Supervisor, Workstation, Genetic Algorithms, Clustering.

[1] For the paper in Arabic see pages (207-242).

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