

GA-based Corrective Maintenance Scheduling for Port Facilities with Multiple Maintenance Modes

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Abstract

Due to the special geographical environment and overloaded working conditions of the port, it is essential to maintain the health of the port facilities as they suffer from various faults. In order to ensure the smooth operation of the port, it is necessary to properly arrange the maintenance of the facilities when there are multiple maintenance modes. This article explores the port facility maintenance scheduling problem when the equipment is broken down, i.e. corrective maintenance. Through the workload analysis of port equipment, the maintenance model is established. In the proposed model, the neural network algorithm is used to quantify the weights of the equipment, and the genetic algorithm is used to minimize the total weighted completion time of the maintenance tasks with multiple maintenance modes. A practical example is presented to show the practicability of the proposed corrective maintenance model. The results demonstrated that the proposed model is capable of optimizing the total maintenance time as well as fulfilling the operation requirements.

Keywords

Corrective maintenance, neural network, genetic algorithm, port facility, maintenance modes

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