An Analytical Method for Generating a Data Set for a Neural Model of a Conveyor Line

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Abstract— Models using neural networks are a rather promising class of models for designing highly efficient control systems for a dynamic distributed transport system of the conveyor type. An important problem in constructing a model of a conveyor-type transport multi-section system is the formation of a data set for training a neural network. This study discusses a method for generating data for training a neural network based on an analytical model of a conveyor-type transport system. A detailed analysis of the most common models of the transport conveyor is performed and the choice of an analytical model for the formation of a training data set is theoretically justified. An algorithm for calculating the flow parameters of individual sections of the transport system is proposed. An estimation of the transition period is given. Graphical representation of a data set for training a neural network using an analytical model of a transport system is demonstrated.

Keywords— conveyor, flow control, artificial intelligence, dynamic distributed system, ANN model

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