

Название: The Input Material Flow Model of the Transport Conveyor
Другие названия: Модель входного потока материала транспортного конвейера
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Реферат: This paper discusses the problem of forming a data set for training a neural network used to build a model of a multi-section conveyor. The analysis of the models, which are used by designing the flow parameters control system of the transport system, is given. The conditions of applying a neural network in the transport conveyor model are justified and determined. Methods for generating a data set for training a neural network are discussed. As the main approach, the use of production data obtained from functioning transport conveyors is considered. Statistically processed data can be used to build generators of stochastic processes that model the incoming material flow for the transport system. The development of these generators to form the input flow of the material of the transport system opens up the possibility of analyzing and monitoring conveyor models in various modes of its configuration. A statistical analysis of the incoming material flow of the transport system was carried out and its number characteristics were determined. The correlation function characterizing the input flow of material for the transport system is considered. The introduction of dimensionless parameters to describe the input material flow made it possible to scale the results of work for a wide class of conveyor-type transport systems.

В данной работе рассматривается проблема формирования набора данных для обучения нейронной сети, используемой для построения модели многосекционного конвейера. Дан анализ моделей, используемых при проектировании системы управления потоковыми параметрами транспортной системы.

Обоснованы и определены условия применения нейронной сети в модели транспортного конвейера. Обсуждаются методы формирования набора данных для обучения нейронной сети. В качестве основного подхода рассматривается использование производственных данных, полученных с функционирующих транспортных конвейеров. Статистически обработанные данные могут быть использованы для построения генераторов стохастических процессов, моделирующих поступающий поток материала для транспортной системы. Разработка этих генераторов для формирования входного потока материала транспортной системы открывает возможность анализа и мониторинга моделей конвейера в различных режимах его конфигурации. Проведен статистический анализ входящего потока материала транспортной системы и определены его количественные характеристики. Рассмотрена корреляционная функция, характеризующая входной поток материала для транспортной системы. Введение безразмерных параметров для описания входного потока материала позволило масштабировать результаты работы на широкий класс транспортных систем конвейерного типа.

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