

Data Analytics, Model Generation And Optimization Algorithms A Perfect Match?

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ABSTRACT

To provide a timely and cost-effective reaction to the ever changing planning tasks within production and logistics, automated planning and optimization methods gain more and more acceptance with industrial applications. Every OR-based solution for production- and logistics planning requires a mathematical model of the relations of the different parameters and variables. Presently the creation of the model is performed by human experts. Due to the complexity and high frequency of changes within the logistics and productions processes, a detailed modeling for these processes by humans often is not possible or is too costly. In the approach presented here a robust model with good accuracy and reduced complexity is created automatically by data analysis.

The result is the prediction of the systematic behavior of logistics processes that allows to keep the model up to date at almost no additional cost. Subsequently the obtained model is used as an input for automated optimization algorithms. The presented approach combines methods from Data Analysis, Artificial Intelligence and Mathematical Optimization. An application for car manufacturing processes is provided. The prospects for the generalized application in many environments are outlined.