

DATA SCIENCE ALGORITHMS IN BUSINESS PROCESSES MODELING

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Successful business involves making decisions under uncertainty using a lot of information. Modern modeling approaches based on Data Science algorithms are necessary for the effective management of business processes. Data science involves principles, processes, and techniques for understanding business processes through the analysis of data. The main goal of this article is to improve decision making using data science algorithms. In research, there are described basic approaches of Data Science – Supervised learning models and Unsupervised learning models, their main algorithms and their practical implementation in modeling business processes.

There are set of frequently used algorithms described in the paper. Linear, logistic regression models, decision trees as a classical example of supervised learning and k-means and hierarchical clustering as – unsupervised learning. Linear models are good for their native results and could be very easily interpreted by even non-expert. Also, everyone likes to use decision trees, as they could be visualized and presented as a set of rules. It is actually

what business needs. For more complex and non-linear tasks, another approaches could be used, for example support vector machines, random forest, neural networks and so on.

Next, unsupervised learning are described with two basic approaches: k-means and hierarchical clustering. When k-means is very fast and easy to understand, hierarchical clustering gives us more flexibility and more stable and interesting results.

In the end, one more frequently used area in data science is described – timeseries. Whether we should predict demand or some financial metric, temperature or number of flies for some airport – we could use timeseries approaches. ARIMA and Prophet are two very powerful algorithms for that.

Application of Data Science algorithms gives an opportunity for deep analyses and understanding of business processes, gives structuring of problems, provides systematization of business processes. Business processes modeling, based on the Data Science algorithms, enables us to substantiate solutions and even automate the processes of business decision making.