

I. OSOBNÍ A STUDIJNÍ ÚDAJE

Příjmení: **Vyskočil**Jméno: **Tomáš**Osobní číslo: **406439**Fakulta/ústav: **Fakulta elektrotechnická**Zadávající katedra/ústav: **Katedra počítačů**Studijní program: **Otevřená Informatika**Studijní obor: **Umělá Inteligence**

II. ÚDAJE K DIPLOMOVÉ PRÁCI

Název diplomové práce:

Optimalizace skladových zásob založená na predikci poptávky

Název diplomové práce anglicky:

Inventory Optimization Based on Demand Prediction

Pokyny pro vypracování:

Many companies periodically distributing various goods from their warehouses typically face the problem of restocking their warehouses such that in any time, their goods are available for distribution, however, no unnecessary items are held in the warehouse (i.e., the space taken by the stocked goods is minimal). This well-known problem of inventory optimization can be complemented with a prediction module which predicts the demand for each stocked item. The student should explore these problems and design an approach solving the inventory optimization problem including item prediction. More specifically, the student should:

1. Understand the problem of inventory optimization and demand prediction
2. Study various algorithmic approaches to inventory optimization and demand prediction
3. Develop an algorithm for demand prediction based on historical data provided by thesis supervisor
4. Integrate demand prediction with an inventory optimization model such that the model considers costs of unavailability, resupply costs as well as warehousing costs
5. Demonstrate the performance of the inventory optimization model on a set of possibly real-world scenarios

Seznam doporučené literatury:

- [1] Chen, Xin, and David Simchi-Levi. "Coordinating inventory control and pricing strategies with random demand and fixed ordering cost: The finite horizon case." *Operations Research* 52.6 (2004): 887-896.
- [2] Ben-Daya, M., and M. Hariga. "Integrated single vendor single buyer model with stochastic demand and variable lead time." *International Journal of Production Economics* 92.1 (2004): 75-80.
- [3] Schmitt, Amanda J., Lawrence V. Snyder, and Zuo-Jun Max Shen. "Inventory systems with stochastic demand and supply: Properties and approximations." *European Journal of Operational Research* 206.2 (2010): 313-328.
- [4] Khashel, Mehdi, and Mehdi Bijari. "A novel hybridization of artificial neural networks and ARIMA models for time series forecasting." *Applied Soft Computing* 11.2 (2011): 2664-2675.
- [5] Box, George EP, et al. "Time series analysis: forecasting and control." (2015)


Jméno a pracoviště vedoucí(ho) diplomové práce:

Ing. Ondřej Vaněk, Ph.D., centrum umělé Inteligence FEL

Jméno a pracoviště druhé(ho) vedoucí(ho) nebo konzultanta(ky) diplomové práce:

Datum zadání diplomové práce: **19.02.2018**

Termín odevzdání diplomové práce: _____

Platnost zadání diplomové práce: **30.09.2019**
podpis vedoucí(ho) práce
podpis vedoucí(ho) ústavu/katedry
podpis děkana(ky)