

## INTELLECTUAL MODEL OF KNOWLEDGE MANAGEMENT IN THE CONDITIONS OF THE HETEROGENEITY OF INFORMATION SPACE

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*Data retrieval processes have shifted towards open processes with visualization and parameter setting and a predictive model. Data and models in hyperspace can be visualized for end users using popular data mining platforms. Numerous studies have shown how adjusting and even creating decision tree classifiers can help end users better understand the dataset and the context in which the data was collected. In order to use the possibilities of such an open approach, the article presents a method of extended intelligence, as well as a bioinspired algorithm based on the adaptive behavior of bats. This method will allow end users to analyze data in an iterative process. Based on the proposed method, knowledge discovery and the accuracy of the predictive model generated by the algorithm increase over time due to interactions between models and end users. The article describes methods of information extraction in data mining. An extended intelligence is described, including algorithms for machine learning and deep learning networks, as well as methods of rational and augmented machine learning, on the basis of which own data will be created, having a limited amount of information for training.*

**Keywords:** data management, knowledge, soft systems, extended intelligence method.

### REFERENCES

1. Emelyanova S.V. *Obrabotka informatsii i analiz dannykh. Programmnaya inzheneriya. Matematicheskoye modelirovaniye. Prikladnyye aspekty informatiki* [Information processing and data analysis. Software engineering. Mathematic modeling. Applied aspects of informatics]. M.: Lenand, 2015. 104 p.
2. Baushev S.V. *Udostoverayushchiye avtomatizirovannyye informatsionnyye sistemy i sredstva. Vvedeniye v teoriyu i praktiku* [Authentication automated information systems and tools. Introduction to theory and practice]. SPb.: BHV, 2016. 304 p.
3. Mezentsev K.N. *Avtomatizirovannyye informatsionnyye sistemy* [Automated information systems]. M.: Academia, 2016. 180 p.
4. Fedorova G.N. *Informatsionnyye sistemy* [Information systems]. M.: Academia, 2016. 158 p.
5. *Bazy dannykh. Intellektual'naya obrabotka informatsii* [Databases. Intellectual information processing] / V.V. Korneev, A.F. Gareev, S.V. Vasyutin, V.V. Reich. M.: Publishing house "Knowledge", 2000. 352 p.
6. Redko V.G. *Evolutsiya, nevronnyye seti, intellekt: modeli i kontseptsii evolyutsionnoy kibernetiki* [Evolution, neural networks, intellect: models and concepts of evolutionary cybernetics]. M.: Komkniga, 2005. 304 p.
7. Kureichik V.V., Kureichik V.M., Gladkov L.A., Sorokoletov P.V. *Bioinspirirovannyye metody v optimizatsii: uchebnoye posobiye* [Bioinspired methods in optimization: textbook]. M.: Fizmalit, 2009.
8. Kureichik V.V., Zaporozhets D.Yu. *Royevoy algoritm v zadachakh optimizatsii* [Swarm algorithm in optimization problems] // Bulletin of the Southern Federal University. Technical sciences. 2010. T. 108. No. 7. P. 28-32.

9. Yurevich Zaporozhets D., Victorovna Zaruba D., Kureichik V.V. Hybrid bionic algorithms for solving problems of parametric optimization // World Applied Sciences Journal. 2013. 23 (8). Pp. 1032-1036.
10. Kuliev E.V., Denisenko V.A., Khamukov Yu.Kh. *Kognitivnaya arkhitektura bioinspirirovannogo poiska dlya metodov intellektual'nogo prinyatiya resheniya* [Cognitive architecture of bioinspired search for methods of intellectual decision-making] // Informatics, Computing and Engineering Education. 2016. No. 2 (26). Pp. 1-8.
11. Kuliev E.V., Lezhebokov A.A., Kravchenko Yu.A. *Royevoy algoritm poiskovoy optimizatsii na osnove modelirovaniya povedeniya letuchikh myshey* [Swarm algorithm of search optimization based on modeling the behavior of bats] // Izvestia SFU/Bulletin of SFU/Technical science. 2016. No. 7 (180). Pp. 53-62.

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