ARTIFICIAL ECHO STATE NETWORK FOR PREDICTING EXTRAORDINARY SITUATIONS IN BEHAVIOR OF A ROLLING STOCK CARRIAGE EQUIPMENT

Ivanova E.I.*, **Sorokin S.V.****

* JSC "Tver Railway Carriage Plant", Tver, Russia
** Department of Information Technologies, Tver State University, Tver, Russia

Article describes artificial echo state network for prediction extraordinary situations in behavior of a rolling stock carriage equipment of rail transport.

Keywords: information system, rail transport, diagnostics, forecast, decision making, soft computing, artificial network, echo state network.

References

[1] *Rasporyazhenie Pravitel'stva RF ot 17.06.2008 №877-r «O Strategii razvitiya zheleznodorozhnogo transporta v Rossiiskoi Federatsii do 2030 goda»* [RF Government Decree of 17.06.2008 N877-p "Strategy of Railway Transport Development in Russian Federation until 2030"].
URL: http://doc.rzd.ru/doc/public/ru?layer_id=5104&id=3997.

[2] Ivanova E.I., Sorokin S.V. Optimizatsiya bazy dannykh i postroenie modeli prognozirovaniya neispravnostei vagonnogo oborudovaniya na osnove neirosetevykh tekhnologii i metodov evolyutsionnogo programmirovaniya dlya informatsionnoi sistemy upravleniya zheleznodorozhnym transportom [Database optimization and building of prediction models of railway wagon equipment malfunctions based on neural network technology and methods of evolutionary programming for the railways management system] // *Nechetkie sistemy i myagkie vychisleniya* [Fuzzy Systems and Soft Computing], 2012, vol. 7, issue 2, pp. 89–98.

[3] Breiman L., Friedman J.H., Olshen R.A., Stone C.J. *Classification and regression trees.* Monterey, CA, Wadsworth & Brooks/Cole Advanced Books & Software, 1984.

[4] Breiman L. Random forests. *Machine Learning*, 2011, vol. 45, issue 1, pp. 5–32.

[5] Lukosevicius M. A practical guide to applying echo state networks. *Neural Networks: Tricks of the Trade.* Springer, 2012, pp. 1–20.

[6] Jaeger H. Adaptive nonlinear system identification with echo state networks. *Advances in Neural Information Information Processing Systems*, 2003, vol. 15, pp. 593–600.