

TIME SERIES MODELING ON THE BASE OF DATA FUZZY ANALYSIS

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By specific example of the time series of «Marginality of sales» indicator there are considered known fuzzy forecasting models which differ in rules of fuzzification and/or defuzzification. In the context of this study this paper presents a new approach to defuzzification of outputs of fuzzy time series on the base of applying the fuzzy set point-estimation method. As compared with some well-known defuzzification rules proposed method improves the statistical quality of time series forecasting.

Keywords: time series, fuzzy set, fuzzy predict, fuzzy relationship, point estimate.

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References

- [1] Marcos M.C. Oracle Data Mining and Analytics. Blog on Data Mining and Analytics, with a special focus on Oracle [Electronic resource]. *Analytics paves the way to transform databases into Knowledge bases*. URL: <http://oracledmt.blogspot.com> (last access 14.05.2014).
- [2] Minayev Yu.M., Filimonova O.Yu., Benameur Lies. Metody i algoritmy resheniya zadach identifikatsii i prognozirovaniya v usloviyakh neopredelennosti v neurosetevom logicheskom bazise [Methods and algorithms for solving the problems of identification and forecasting in the face of uncertainty in neural network logical basis]. Moscow, Goryachaya liniya-Telekom, 2003. 205 p. (in Russian)

- [3] Song Q., Chissom B.S. Forecasting enrollments with fuzzy time series - Part I. *Fuzzy Sets and Systems*, 1993, vol. 54, no. 54. Pp. 1–9.
- [4] Song Q., Chissom B.S. Fuzzy time series and its models. *Fuzzy Sets and Systems*, 1993, vol. 54, no. 3. Pp. 269–277.
- [5] Song Q., Chissom B.S. Forecasting enrollments with fuzzy time series – part II. *Fuzzy Sets and Systems*, 1994, vol. 62, no. 1. Pp. 1–8.
- [6] Kumar N., Ahuja S., Kumar V., Kumar A. Fuzzy time series forecasting of wheat production. *International Journal on Computer Science and Engineering*, 2010, vol. 2, no. 3. Pp. 635–640.
- [7] Chen S.M. Forecasting enrollments based on fuzzy time series. *Fuzzy Sets and Systems*, 1996, vol. 81, no. 3. Pp. 311–319.
- [8] Chen S.M. Forecasting enrollments based on high-order fuzzy time series. *Cybernetics and Systems: an International Journal*, 2002, vol. 33, no. 1. Pp. 1–16.
- [9] Cheng C.H., Chang J.R., Yen C.A. Entropy-based and trapezoid fuzzification fuzzy time series approaches for forecasting IT project cost. *Technological Forecasting & Social Change*, 2006, vol. 73, no. 5. Pp. 524–542.
- [10] Poulsen J.R. Fuzzy Time Series Forecasting – Developing a new forecasting model based on high order fuzzy time series. AAUE: CIS 4, 2009. 67 p.
- [11] Rzaev R.R. Neuro-nechetkoe modelirovanie ekonomicheskogo povedeniya [Neuro-fuzzy modeling of economic behavior]. Verlag: LAP Lambert Academic Publishing GmbH & Co, 2012. 104 p. (in Russian)
- [12] Rzaev R.R. Intellektual’nyi analiz dannykh v sistemakh podderzhki prinyatiya reshenii [Data Mining in Decision Support Systems]. Verlag: LAP Lambert Academic Publishing GmbH & Co, 2013. 130 p. (in Russian)

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