Lima Neto, Eufrasio de A.; **de Carvalho, Francisco de A. T.**; **Freire, Eduarda S.**
Applying constrained linear regression models to predict interval-valued data. (English)
Zbl 1137.62357
Furbach, Ulrich (ed.), KI 2005: Advances in artificial intelligence. 28th annual German conference on AI, KI 2005, Koblenz, Germany, September 11–14, 2005. Proceedings. Berlin: Springer (ISBN 3-540-28761-2/pbk). Lecture Notes in Computer Science 3698. Lecture Notes in Artificial Intelligence, 92-106 (2005).

Summary: *L. Billard* and *E. Diday* ["Regression analysis for interval-valued data", H. A. L. Kiers (ed.) et al., Data analysis, classification, and related methods. Papers from the 7th conference of the International Federation of Classification Societies (IFCS-2000), Berlin: Springer. Studies in Classification, Data Analysis, and Knowledge Organization. 369–374 (2000; Zbl 1026.62073)] were the first to present a regression method for interval-valued data. *F. de Carvalho*, *E. Lima Neto* and *P. Camilo* ["A new method to fit a linear regression model for interval-valued data", Lect. Notes Comput. Sci. 3238, 295–306 (2004; Zbl 1132.68617)] et al presented a new approach that incorporated the information contained in the ranges of the intervals and that presented a better performance when compared with the Billard and Diday method. However, both methods do not guarantee that the predicted values of the lower bounds ($\hat{y}_{Li}$) will be lower than the predicted values of the upper bounds ($\hat{y}_{Ui}$). This paper presents two approaches based on regression models with inequality constraints that guarantee the mathematical coherence between the predicted values $\hat{y}_{Li}$ and $\hat{y}_{Ui}$. The performance of these approaches, in relation with the methods proposed by Billard and Diday [loc. cit.] and de Carvalho et al. [loc. cit.], will be evaluated in framework of Monte Carlo experiments.

For the entire collection see [Zbl 1089.68008].

MSC:

62J05	Linear regression; mixed models	
68T05	Learning and adaptive systems in artificial intelligence	
62-07	Data analysis (statistics) (MSC2010)	

Cited in **3** Documents

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