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Weighted instance-based learning using representative intervals.

Gelbukh, Alexander (ed.) et al., MICAI 2007: Advances in artificial intelligence. 6th Mexican international conference on artificial intelligence, Aguascalientes, Mexico, November 4–10, 2007. Proceedings. Berlin: Springer (ISBN 978-3-540-76630-8/pbk). Lecture Notes in Computer Science 4827. Lecture Notes in Artificial Intelligence, 420-430 (2007).

Summary: Instance-based learning algorithms are widely used due to their capacity to approximate complex target functions; however, the performance of this kind of algorithms degrades significantly in the presence of irrelevant features. This paper introduces a new noise tolerant instance-based learning algorithm, called WIB- K , that uses one or more weights, per feature per class, to classify integer-valued databases. A set of intervals that represent the rank of values of all the features is automatically created for each class, and the nonrepresentative intervals are discarded. The remaining intervals (representative intervals) of each feature are compared against the representative intervals of the same feature in the other classes to assign a weight. The weight represents the discriminative power of the interval, and is used in the similarity function to improve the classification accuracy. The algorithm was tested on several datasets, and compared against other representative machine learning algorithms showing very competitive results.

Keywords: Feature Weighting; Instance-Based Learning; K -NN

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