

Wilson, D. Randall; Martinez, Tony R.

Reduction techniques for instance-based learning algorithms. (English) Zbl 0954.68126

Mach. Learn. 38, No. 3, 257-286 (2000).

Summary: Instance-based learning algorithms are often faced with the problem of deciding which instances to store for use during generalization. Storing too many instances can result in large memory requirements and slow execution speed, and can cause an oversensitivity to noise. This paper has two main purposes. First, it provides a survey of existing algorithms used to reduce storage requirements in instance-based learning algorithms and other exemplar-based algorithms. Second, it proposes six additional reduction algorithms called DROP1-DROP5 and DEL that can be used to remove instances from the concept description. These algorithms and 10 algorithms from the survey are compared on 31 classification tasks. Of those algorithms that provide substantial storage reduction, the DROP algorithms have the highest average generalization accuracy in these experiments, especially in the presence of uniform class noise.

MSC:

[68T05](#) Learning and adaptive systems in artificial intelligence

[68W05](#) Nonnumerical algorithms

Cited in **41** Documents

Keywords:

instance-based learning algorithms; DROP algorithms

Full Text: [DOI](#)