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一种不确定性条件下的自主式知识学习模型

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Abstract
It is a very difficult problem in machine learning to learn uncertain knowledge automatically without prior domain knowledge. In this paper, a theory is developed to express, measure and process uncertain information and uncertain knowledge according to uncertainty measure of decision table and decision rule. Based on the Skowron's default rule generation algorithm, a self-learning model and the method is developed to solve this problem. Simulation results illustrate the efficiency of this self-learning method.

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摘要
在没有领域先验知识条件下的不确定知识主动式学习是机器学习领域中的一个难题.通过研究决策表和决策规则的不确定性,建立基于粗集表示、度量和处理不确定性信息和知识的理论,并且结合Skowron的缺省规则获取算法,提出一种不确定性条件下的数据自主式学习模型和方法,以解决这一问题.通过仿真实验,验证了该自主式学习方法的有效性.

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References:

[1] Pawlak Z. Rough set. International Journal of Computer and Information Sciences, 1982,11(5):341~356.

[2] Pawlak Z, Grzymala-Busse J, Slowinski R, Ziarko W. Rough sets. Communications of the ACM, 1995,38(11):89~95.

[3] Pawlak Z. Vagueness—A rough set view. In: Mycielski J, Rozenberg G, Salomaa A, eds. Structures in Logic and Computer Science: A Selection of Essays in Honor of A. Berlin: Springer-Verlag, 1997. 106~117.

[4] Mollestad T, Skowron A. A rough set framework for data mining of propositional default rules. In: Ras ZW, Michalewicz M, eds. Foundations of Intelligent Systems of the 9th International Symposium (ISMIS'96). Berlin: Springer-Verlag, 1996. 448~457.

[5] Wang GY. Uncertainty measurement of decision table information systems. Computer Science, 2001,28(5):23~26 (in Chinese with English abstract).

[6] Wang GY. Rough Set Theory and Knowledge Acquisition. Xi'an: Xi'an Jiaotong University Press, 2001 (in Chinese).

[7] Wang GY, Wu Y, Liu F. Generating rules and reasoning under inconsistencies. In: Proceedings of the IEEE International Conference on Industrial Electronics, Control and Instrumentation. Nagoya, 2000. 2536~2541. http://www.nuee.nagoya-u.ac.jp/institute/IECON2K/.

[8] Hou LJ, Wang GY, Nie N, Wu Y. Discretization in rough set theory. Computer Science, 2000,27(12):89~94 (in Chinese with English abstract).

附中文参考文献:

[5] 王国胤.决策信息系统中的不确定性度量.计算机科学,2001,28(5):23~26.

[6] 王国胤.Rough集理论与知识获取.西安:西安交通大学出版社,2001.

[8] 侯利娟,王国胤,聂能,吴渝.粗糙集理论中的离散化问题.计算机科学,2000,27(12):89~94.