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Fuzzy Rule Miner: A Software Library Used in Project Based Teaching of Topics Related to Knowledge Discovery in Databases

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2018 16TH INTERNATIONAL CONFERENCE ON EMERGING ELEARNING TECHNOLOGIES AND APPLICATIONS (ICETA)

Edited by: [Jakab, F](#)

Pages: 75-80

Published: 2018

Document Type: Proceedings Paper

Conference

Conference: 16th International Conference on Emerging eLearning Technologies and Applications (ICETA)

Location: Stary Smokovec, SLOVAKIA

Date: NOV 15-16, 2018

Sponsor(s): IEEE, Czechoslovakia Sect; ELFA

Abstract

A group of fuzzy rules is a human-interpretable knowledge representation which is used in various fields of study such as control and knowledge discovery in databases, e.g. for inferring on output based on input variables. It makes use of the notions of fuzzy logic such as fuzzy sets, membership functions and membership degrees. Truth values represented by membership degrees may be any real number between 0 and 1. Effective definition of membership degrees through membership functions for particular applications requires a tool able to set membership functions and to generate inputs for various knowledge discovery algorithms. Similarly, various algorithms for making fuzzy rules and validating are required as well. In addition, modifications have to be possible as research in this scientific area is active. Since many fuzzy rule related algorithms and their modifications are not available for development of programs, software library Fuzzy Rule Miner is presented in this paper. This software library is written in Java and it can be used for helping students with fuzzy logic related calculations, fuzzy rule discovery and the use of fuzzy rules. It can also serve as a support library for complex software programs working with fuzzy rules.

Keywords

Author Keywords: [education tool](#); [fuzzy rules](#); [knowledge discovery](#)

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Funding

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Funding Agency	Grant Number
Faculty of Management Science and Informatics, University of Zilina, Slovakia	FVG/7/2018

[View funding text](#)

Publisher

IEEE, 345 E 47TH ST, NEW YORK, NY 10017 USA

Categories / Classification

Research Areas: Computer Science; Education & Educational Research

Web of Science Categories: Computer Science, Interdisciplinary Applications; Education & Educational Research; Education, Scientific Disciplines

Document Information

Language: English

Accession Number: WOS:000457680400010

ISBN: 978-1-5386-7914-2

Other Information

IDS Number: BL9MM

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