

Back to results | 1 of 113 Next >

View at Publisher |  | Export | Download | More...

Proceedings - 2015 IEEE 2nd International Conference on Cybernetics, CYBCONF 2015

3 August 2015, Article number 7175931, Pages 196-200

2nd IEEE International Conference on Cybernetics, CYBCONF 2015; Gdynia; Poland; 24 June 2015 through 26 June 2015; Category numberCFP1530U-ART; Code 116050

Linguistic variable elimination for a heart failure dataset

(Conference Paper)

Bohacik, J. , Matiasco, K. , Benedikovic, M.

Department of Informatics, University of Zilina, Zilina, Slovakia

Abstract

[View references \(18\)](#)

Patients with heart failure often suffer disabling symptoms. In addition to these symptoms, half of all patients diagnosed with heart failure die within four years. The prevalence of heart failure is currently about 2%-3% of the adult population and it is expected to grow. It is interesting to predict if a patient with heart failure dies soon so that life-threatening situations and costs are minimized. In this paper, a data mining method for discovering fuzzy rules with different truth level thresholds in linguistic variable elimination for prediction of death on the basis of data available in hospitals is presented. Cognitive uncertainties are taken into consideration through the use of fuzzy sets, membership functions and membership degrees. The accuracy of the prediction of the death for a patient with heart failure and the interpretability of fuzzy rules are discussed. Our study shows, in comparison to other data mining methods, that it is useful for this type of prediction. © 2015 IEEE.

Author keywords

fuzzification; fuzzy rules; heart failure; linguistic variable elimination

Indexed keywords

Engineering controlled terms: Computational linguistics; Cybernetics; Data mining; Forecasting; Fuzzy inference; Fuzzy rules; Heart; Linguistics; Membership functions; Patient monitoring

Adult populations; Data mining methods; Fuzzifications; Heart failure; Interpretability; Linguistic variable; Membership degrees

Engineering main heading: Cardiology

ISBN: 978-147998322-3 **Source Type:** Conference Proceeding **Original language:** English

DOI: 10.1109/CYBCONF.2015.7175931 **Document Type:** Conference Paper

Volume Editors: Jedrzejowicz P., Czarnowski I., Hong T.-P., Nguyen N.T. **Sponsors:** Gdynia Maritime University, Gdynia

Maritime University's Students and Alumni Foundation, IEEE Poland Section, IEEE Systems, Man, and Cybernetics

Society (SMC) **Publisher:** Institute of Electrical and Electronics Engineers Inc.

References (18)

[View in search results format](#)

Page Export | Print | E-mail | Create bibliography

- Bohacik, J.
- 1 **Discovering fuzzy rules in databases with linguistic variable elimination**
(2010) *Neural Network World*, 20 (1), pp. 45-61. **Cited 2 times.**



- Candelieri, A., Conforti, D., Perticone, F., Sciacqua, A., Kawecka-Jaszcz, K., Styczkiewicz, K.

Cited by 0 documents

Inform me when this document is cited in Scopus:

[Set citation alert](#) | [Set citation feed](#)

Related documents

Use of cumulative information estimations for risk assessment of heart failure patients

Bohacik, J. , Kambhampati, C. , Davis, D.N.
(2014) IEEE International Conference on Fuzzy Systems

Analysis of fuzzy decision trees on expert Fuzzified heart failure data

Bohacik, J. , Kambhampati, C. , Davis, D.N.
(2013) Proceedings - 2013 IEEE International Conference on Systems, Man, and Cybernetics, SMC 2013

Fuzzy rule-based system applied to risk estimation of cardiovascular patients

Bohacik, J. , Davis, D.N.
(2013) Journal of Multiple-Valued Logic and Soft Computing

[View all related documents based on references](#)

Find more related documents in Scopus based on:

[Authors](#) | [Keywords](#)

About Scopus

What is Scopus
Content coverage
Scopus Blog
Scopus API

Language

日本語に切り替える
切换到简体中文
切换到繁體中文

Customer Service




Help and Contact
Live Chat

About

Elsevier
Terms and Conditions
Privacy Policy



- Candelieri, A., Conforti, D., Sciacqua, A., Perticone, F.
- 3 **Knowledge discovery approaches for early detection of decompensation conditions in heart failure patients**
(2009) *ISDA 2009 - 9th International Conference on Intelligent Systems Design and Applications*, art. no. 5364868, pp. 357-362.
ISBN: 978-076953872-3
doi: 10.1109/ISDA.2009.204
[View at Publisher](#) 
- (2005) *Clinical Effectiveness and Evaluation Unit of the Royal College of Physician: Managing Chronic Heart Failure: Learning from Best Practice*. Cited 2 times.
4 Sudbury, Suffolk, UK: The Lavenham Press Ltd
- Das, R., Turkoglu, I., Sengur, A.
- 5 **Effective diagnosis of heart disease through neural networks ensembles**
(2009) *Expert Systems with Applications*, 36 (4), pp. 7675-7680. Cited 81 times.
doi: 10.1016/j.eswa.2008.09.013
[View at Publisher](#) 
- Das, R., Turkoglu, I., Sengur, A.
- 6 **Diagnosis of valvular heart disease through neural networks ensembles**
(2009) *Computer Methods and Programs in Biomedicine*, 93 (2), pp. 185-191. Cited 26 times.
doi: 10.1016/j.cmpb.2008.09.005
[View at Publisher](#) 
- Finney, H., Newman, D.J., Price, C.P.
- 7 **Adult reference ranges for serum cystatin C, creatinine and predicted creatinine clearance**
(2000) *Annals of Clinical Biochemistry*, 37 (1), pp. 49-59. Cited 150 times.
[View at Publisher](#) 
- Ishibuchi, H., Kaisho, Y., Nojima, Y.
- 8 **Complexity, interpretability and explanation capability of fuzzy rule-based classifiers**
(2009) *IEEE International Conference on Fuzzy Systems*, art. no. 5277380, pp. 1730-1735. Cited 10 times.
ISBN: 978-142443597-5
doi: 10.1109/FUZZY.2009.5277380
[View at Publisher](#) 
- Ketchum, E.S., Jacobson, A.F., Caldwell, J.H., Senior, R., Cerqueira, M.D., Thomas, G.S., Agostini, D., (...), Levy, W.C.
- 9 **Selective improvement in seattle heart failure model risk stratification using iodine-123 meta-iodobenzylguanidine imaging**
(2012) *Journal of Nuclear Cardiology*, 19 (5), pp. 1007-1016. Cited 18 times.
doi: 10.1007/s12350-012-9603-0
[View at Publisher](#) 
- Klir, G.J.
- 10 **Where do we stand on measures of uncertainty, ambiguity, fuzziness, and the like?**
(1987) *Fuzzy Sets and Systems*, 24 (2), pp. 141-160. Cited 78 times.
doi: 10.1016/0165-0114(87)90087-X
[View at Publisher](#) 
- Kvet, M.
- 11 (2015) *International Conference on Circuits, Systems, Communications and Computers*, pp. 75-83.
- Lee, D.S., Austin, P.C., Rouleau, J.L., Liu, P.P., Naimark, D., Tu, J.V.
- 12 **Predicting Mortality among Patients Hospitalized for Heart Failure: Derivation and Validation of a Clinical Model**
(2003) *Journal of the American Medical Association*, 290 (19), pp. 2581-2587. Cited 783 times.
doi: 10.1001/jama.290.19.2581
[View at Publisher](#) 

- Lee, D.S., Stitt, A., Austin, P.C., Stukel, T.A., Schull, M.J., Chong, A., Newton, G.E., (...), Tu, J.V.
13
Prediction of heart failure mortality in emergent care: A cohort study
(2012) *Annals of Internal Medicine*, 156 (11), pp. 767-775. Cited 44 times.
<http://www.annals.org/content/156/11/767.full.pdf+html>
View at Publisher 
- Lopez-Sendon, J.
14
(2011) *Medicographia*, 33 (4), pp. 363-369. Cited 12 times.
- Pecchia, L., Melillo, P., Bracale, M.
15
Remote health monitoring of heart failure with data mining via CART method on HRV features
(2011) *IEEE Transactions on Biomedical Engineering*, 58 (3 PART 2), pp. 800-804. Cited 31 times.
doi: 10.1109/TBME.2010.2092776
View at Publisher 
- Phillips, K.T., Street, W.N.
16
Predicting outcomes of hospitalization for heart failure using logistic regression and knowledge discovery methods.
(2005) *AMIA ... Annual Symposium proceedings / AMIA Symposium. AMIA Symposium*, p. 1080. Cited 3 times.

- Quinlan, J.R.
17
(1987) *International Workshop on Machine Learning*, pp. 31-37. Cited 77 times.
- Witten, I.H., Frank, E., Hall, M.A.
18
(2011) *Practical Machine Learning Tools and Techniques (3rd Edition)*. Cited 113 times.
Burlington, MA, USA: Morgan Kaufman Publishers

Bohacik, J.; Department of Informatics, University of Zilina, Slovakia;
email: Jan.Bohacik@fri.uniza.sk
© Copyright 2015 Elsevier B.V., All rights reserved.