Comparative Analysis of Fuzzy Expert Systems for Diabetic Diagnosis

International Journal of Computer Applications
Foundation of Computer Science (FCS), NY, USA

Volume 132

Number 6

Year of Publication: 2015

Authors:
Vishali Bhandari, Rajeev Kumar

10.5120/ijca2015907424

Abstract

Diabetes is a situation when a body is not capable to produce insulin, which is needed to control glucose. Diabetes will also develop heart disease, kidney disease, blindness, nerve damage, and blood vessel damage. This paper uses Mamdani-type and Sugeno-type fuzzy expert systems for a diabetes diagnosis. Fuzzy expert system is a group of membership functions and rules. Fuzzy expert systems are tilting toward numerical processing. This paper recapitulates the essential distinction between the Mamdani-type and Sugeno-type fuzzy expert systems by using the input parameters such as age, obesity, RBS(Random Blood Sugar), family history and diet. The MATLAB fuzzy logic toolbox is used for the imitation of both the models. The accuracy, sensitivity, specificity and precision of the Mamdani-type fuzzy expert system is 95.48%, 96.36%, 93.33% and 97.24%, respectively, and the accuracy, sensitivity, specificity and precision of the Sugeno-type fuzzy inference system is 96.77%, 97.27%, 95.55% and 98.16%, respectively.

References
Comparative Analysis of Fuzzy Expert Systems for Diabetic Diagnosis


11. W Luangruangrong, A Rod took, S Chimmanee, “Study of Type 2 Diabetes Risk Factors Using Neural Network For Thai People and Tuning Neural Network Parameters”, 2012 IEEE International Conference on Systems, Man, and Cybernetics, October 14-17


19. J Singla, “Comparative Study of Mamdani-Type and Sugeno-Type Fuzzy Inference Systems for Diagnosis of Diabetes”, 2015 International Conference on Advances in Computer Engineering and Applications (ICACEA) IMS Engineering College, Ghaziabad, India
21. www.bupa.co.uk/health-information/directory/t/type-1-diabetes

Index Terms

Computer Science
Fuzzy Systems

Keywords

Diabetes; Mamdani; Sugeno, disease