Implementation of Inference Engine in Adaptive Neuro Fuzzy Inference System to Predict and Control the Sugar Level in Diabetic Patient

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Abstract - Fuzzy logic in medical diagnosis is a promising technique usually involves careful examination of a patient to check the presence and strength of some features relevant to a suspected disease in order to take a decision whether the patient suffers from that disease or not. The present work introduces implementation of a simple and effective methodology to develop fuzzy Inference systems for diabetic's diagnosis to estimate the risk factor value of a human being with respect to ranges of sugar level such as Fasting, After meal, before meal and function value of Total Energy Expenditure. The main goal of the paper is to develop data mining techniques to support decision making and to control the controllable risk factors and also overcome the other parts of organs highly affected by diabetes and which in turn reduces the risk of the patients. By applying the powerful technique of ANFIS based on Sugeno method. The research methodology diagram of the proposed research is classified into two levels. In first level, the research can be analyse the BMR, TEE and diet taken in time bases of fluctuation in different time (Fasting, before meal, after meal, bed time), then analyse the scoring sugar level of patient risk 6). In second level, to fixing an insulin range for reducing the risk of patient health based on the score of sugar level in first level. The result shows, how a fuzzy logic controller is used to control the controllable risk factors to regularize the blood sugar level and also how a patient can control the contributing factors of inactivity of dosage of insulin, to find the life time postponement of other organs affected by diabetes, to protect the patient from risk of blood sugar level.

Keyword - ANFIS, Fuzzy controller, Sugeno method, BMR, TEE, Activity factor.

I. INTRODUCTION

The main goal of the paper is to develop data mining techniques to support decision making and to control the controllable risk factors and also overcome the other parts of organs highly affected by diabetes and which in turn reduces the risk of the patients. By applying the powerful technique of ANFIS based on Sugeno method, where the evaluation of knowledge domain is uncertain, vague and ambiguous for analyzing the risk factor of human health condition.

The developed control strategy is not only simple, but also reliable and may be easy to implement in real time applications using some interfacing like fasting, after meal, before meal, bed time value of diet taken, Basal Metabolic Rate (BMR) can be estimate based on the collection of height, weight, age and gender and Total Energy Expenditure (TEE) can be measured by product of BMR and activity factor of the patients.[1]

The constructed fuzzy inference system was used to train, test and check the data to monitor the patient according to the risk level, for immediate action to overcome the problem of high and low measure of Diet taken and TEE function in different range and to increase the life time of the patient from the risk. This approach is contributed to medical decision-making and the development of computer-assisted diagnosis in medical domain and identifies the major risk of the patient in earlier.[2-4]