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PROCESSING ECG DATA USING MULTIVARIATE DATA ANALYSIS

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Abstract. *In this paper it is present an efficient technique for ECG data processing, based on fuzzy and non-fuzzy multivariate analysis methods. The present study shows the theoretical advantages of fuzzy algorithm in clinical utility for computer criteria in ECG studies at patients with heart disease. It can be starting point for new ECG devices with computer multivariate data analysis.*

Keywords: ECG data processing, fuzzy, clustering algorithm, multivariate analysis methods

1. Introduction

Fuzzy multivariate data analysis has been extensively used in a lot of research in chemistry and chemo metrics [3,18,19], medical sciences [13,21], health and environment [16,20], software engineering [5,6,15,24,22].

The paper is organized as follows. Section 2 covers fuzzy and non-fuzzy multivariate analysis methods useful for ECG data processing. Section 3 presents an overview of previous experiments with multivariate analysis of ECG data. The paper ends with concluding remarks.

2. Fuzzy and crisp multivariate analysis methods modelling of the proposed adjustment scheme

2.1 Fuzzy sets and fuzzy clustering

The theory of fuzzy sets was introduced in 1965 by Lotfi A. Zadeh [26] as a natural generalization of the classical set concept. Let *X* be a data set, composed of *n* data items characterized by the values of s characteristics. A fuzzy set on *X* is a mapping *A*: *X* --> [0, 1]. The value *A(x)* represents the membership degree of the data item *x* from *X* to the class *A*.

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