A FUZZY-BASED APPROACH FOR THE LATIN MUSICAL GENRES INTELLIGENT CLASSIFICATION

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Abstract. This paper presents the construction of a fuzzy system for the automatic classification of Latin Musical genres. Although many techniques have already been proposed, no general solution to the problem exists, mainly due to the imprecise definition of musical genres. The Latin genres to be classified are extracted by [19] and they are called: tango, salsa, forró, axé, bachata, bolero, merengue, gaúcha, sertanejo and pagode. The system inputs features can be split into three groups: beat related (which includes the relative amplitudes and the beats per minute), timbre texture (the first five MFCCs) and pitch related (which includes the maximum periods and amplitudes of the pitch histograms). For each one of the ten musical genres, a fuzzy classification system is constructed for each of the three input groups. In the final step of this process, a membership percentage of an instance for each genre is obtained. The increasing number of musical genres, as well as their fusion and the influence that they receive and exert, motivates the use of fuzzy logic, since it is possible to consider uncertainties and the fuzziness among genres boundaries. The results of the classification are promising, as they suggest minor errors and classify data in a way close to the description of human decision criteria.

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