عنوان مقاله:

Gender Determination of Fowls by Using Bio-acoustical Data Mining Methods and Support Vector Machine

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خلاصه مقاله:

Sexing is a difficult task for most birds (especially ornamental birds) involving expensive, state-of-the-art equipment and experiments. An intelligent fowl sexing system was developed based on data mining methods to distinguish hen from cock hatchlings. The vocalization of one-day-old hatchlings was captured by a microphone and a sound card. To obtain more accurate information from the recordings, time-domain sound signals were converted into the frequency domain and the time-frequency domain using Fourier transform and discrete wavelet transform, respectively. During data-mining from signals of these three domains, ۲۵ statistical features were extracted. The Improved Distance Evaluation (IDE) method was used to select the best features and also to reduce the classifier's input dimensions. Fowls' sound signals were classified by Support Vector Machine (SVM) with a Gaussian Radial Basis Function (GRBF). This classifier identified and classified cocks and hens based on the selected features from time, frequency and time-frequency domains. The highest accuracy of the SVM at time, frequency and time-frequency domains was ۶۸.۵۱, ۷۰.۳۷ and ۹۰.۷۴ percent, respectively. Results showed that the proposed system can successfully distinguish between Hen and Cock hatchlings. The results further suggest that signal processing and feature selection methods .can maximize the classification accuracy

کلمات کلیدی:

Gender determination, Non-invasive sexing, Animals behavior, Fowls vocalization, Signals processing