Feature Selection Using Support Vector Machines and Independent Component Analysis for Wound Infection Detection by Electronic Nose

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When mice are used as experimental subjects in the detection of wound infection based on electronic nose (Enose), the background, i.e., the smell of the mice themselves, is very strong, and most useful information is buried in it. A new feature selection technique specifically designed to work with support vector machine (SVM) and independent component analysis (ICA) is introduced. The features that represent background and noise are eliminated to improve classification accuracy. To assess this new method, two other datasets are used as validation, and four other feature selection methods are compared. The result shows that this method is effective and practical for feature selection in the detection of wound infection. Besides, this method is also useful in dimensionality reduction.

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