Effects of handling missing values of VOCS gases emitted from human for human detection

ABSTRACT

The main objective of this paper is to investigate the effects of replacing missing values of Volatile Organic Compounds (VOC) that represent gases emitted from human on the accuracy of classifying individual person. These missing values will be replaced with three possibilities, which include 0, 1, and Random number between 0 and 1. The effects of using these predefined values on the classification accuracy are investigated by conducting experiments that involve applying a list of classification methods to classify 15 humans using human odour. Each person is characterized by their own pre-selected 15 gases emitted from their sweats. In this paper, we also study and determine the minimum number of gases that is required to produce acceptable results to correctly classify an individual person based on the gases emitted from their bodies. Based on the results obtained from the conducted experiments, the maximum and minimum allowable numbers of missing gases in human odour samples in reference to human emitted gases are 4 and 3. The best accuracy result when missing values are introduced in the odour dataset is the ensemble Bagged Trees