

Smote and OVO multiclass method for multiple handheld placement gait identification on smartphone's accelerometer

ABSTRACT

Gait identification has been a well-known type of biometric recognition for many purposes. However, the usage and its application are still limited due to uncertainty factors that lead to its lack of use. One of the factors is the position of the smartphone. Current research uses pouch, pocket and other parts of the body but not handheld. The second factor is the nonstationary data that resemble the person which contains only a few meaningful dataset for learning purposes. The third factor is the ability of the classifier itself whether is it efficient enough in tackling the multiclass problem. In this research, investigation on the handheld smartphone position is proposed. Besides that SMOTE is applied to the dataset to increase its sample data before the training procedure. For classification, OVO multiclass structure is proposed instead of using a single classifier algorithm. From the result, it shows that handheld placement of the smartphone is viable for gait recognition. At the same time, using SMOTE and OVO methods do increase the accuracy of the gait identification

Keyword: SMOTE; OVO; Handheld placement; Gait identification; Smartphone position