Abstract

Gait sequence analysis from the input binary silhouettes, has various applications, such as person identification, human action recognition, event recognition and classification. The gait feature extraction is a key step in gait analysis. The 'Topic Model', used for text classification, is one of the potential semantic approaches to study gait sequence analysis. The proposed algorithm uses Latent Dirichlet Allocation (LDA), a 'Topic Model', to analyse the gait sequence for person identification. This has been achieved by proposing a novel transformation method that transforms the gait sequence into word representation suitable for topic models like LDA. The latent dirichlet allocation algorithm, then calculates the word-topic and topic-image distributions, using the words generated by transforming the gait sequences using a transformation method. Finally, the image-topic-word distributions are used to identify person. The performance of the proposed latent dirichlet allocation algorithm, has been illustrated using CASIA dataset A, dataset B and TUM-IITKGP gait dataset, resulting in an average classification rate of 82.2% using dataset B, and 85%, 85%, and 85% for lateral, oblique and frontal view respectively with respect to dataset A and 90% using TUM-IITKGP gait dataset.
References

1. Dong, M., Cong, Z., Yanru, B., Baikun, W., and Yong, H. 2009. Gait Recognition Based on Multiple Views Fusion of Wavelet Descriptor and Human Skeleton Model. IEEE International Conference on Virtual Environments, Human-Computer Interfaces and Measurements Systems. 246-249.
Silhouette. IEEE Int. Conference on Computer Science and Information Technology. 476-479.


Index Terms

Computer Science  Information Sciences

Keywords

Gait Analysis, Gait Sequence, Latent Dirichlet Allocation, Person Identification, Primary Gait Sequence.