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Foot Recognition Using Deep Learning for Knee Rehabilitation

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Abstract : The use of foot recognition can be applied in many medical fields such as the gait pattern analysis and the knee exercises of patients in rehabilitation. Generally, a camera-based foot recognition system is intended to capture a patient image in a controlled room and background to recognize the foot in the limited views. However, this system can be inconvenient to monitor the knee exercises at home. In order to overcome these problems, this paper proposes to use the deep learning method using Convolutional Neural Networks (CNNs) for foot recognition. The results are compared with the traditional classification method using LBP and HOG features with kNN and SVM classifiers. According to the results, deep learning method provides better accuracy but with higher complexity to recognize the foot images from online databases than the traditional classification method.

Keywords : foot recognition, deep learning, knee rehabilitation, convolutional neural network
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