

Ethnicity distinctiveness through iris texture features using Gabor filters

Mabuza-Hocquet, Gugulethu P
Nelwamondo, Fulufhelo V
Marwala, Tshilidzi

ABSTRACT:

Research in iris biometrics has been focused on utilizing iris features as a means of identity verification and authentication. However, not enough research work has been done to explore iris textures to determine soft biometrics such as gender and ethnicity. Researchers have reported that iris texture features contain information that is inclined to human genetics and is highly discriminative between different eyes of different ethnicities. This work applies image processing and machine learning techniques by designing a bank of Gabor filters to develop a model that extracts iris textures to distinctively differentiate individuals according to ethnicity. From a database of 30 subjects with 120 images, results show that the mean amplitude computed from Gabor magnitude and phase provides a correct ethnic distinction of 93.33% between African Black and Caucasian subjects. The compactness of the produced feature vector promises a suitable integration with an existing iris recognition system.