

GRA_Net: a deep learning model for classification of age and gender from facial images

ABSTRACT

The problem of gender and age identification has been addressed by many researchers, however, the attention given to it compared to the other related problems of face recognition in particular is far less. The success achieved in this domain has not seen much improvement compared to the other face recognition problems. Any language in the world has a separate set of words and grammatical rules when addressing people of different ages. The decision associated with its usage, relies on our ability to demarcate these individual characteristics like gender and age from the facial appearances at one glance. With the rapid usage of Artificial Intelligence (AI) based systems in different fields, we expect that such decision making capability of these systems match as much as to the human capability. To this end, in this work, we have designed a deep learning based model, called GRA_Net (Gated Residual Attention Network), for the prediction of age and gender from the facial images. This is a modified and improved version of Residual Attention Network where we have included the concept of Gate in the architecture. Gender identification is a binary classification problem whereas prediction of age is a regression problem. We have decomposed this regression problem into a combination of classification and regression problems for achieving better accuracy. Experiments have been done on five publicly available standard datasets namely FG-Net, Wikipedia, AFAD, UTKFace and AdienceDB. Obtained results have proven its effectiveness for both age and gender classification, thus making it a proper candidate for the same against any other state-of-the-art methods.

Keyword: Age identification; Gender classification; Gated residual attention network; Facial image; MAE; Regression