

Automatic Age Progression: Methodologies and Performance Evaluation

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Abstract

Age progression is the process of predicting the future facial appearance of faces appearing in images. The ability to produce accurate age progressed faces is important in a number of key applications including the identification of missing persons, development of age-invariant face recognition systems and automatic update of photographs in smart documents. Automatic age-progression is a challenging task, mainly due to the diversity of aging variation and the dependence of the aging process on external factors that include health conditions and hereditary trends.

Recently an escalated research interest in the area is recorded and as a result a number of face aging algorithms were reported in the literature. In this paper we present key techniques reported in the literature with emphasis on techniques developed by the author. In particular we present a face-aging algorithm based on the definition of aging trajectories (the so called aging functions) and algorithms based on modelling the distributions of faces belonging to different subjects and different age groups.

Special emphasis is given to the topic of performance evaluation of age progression methodologies based on dedicated metrics. Work in this area is considered an important research direction in the field, since it will enable the evolution of the most promising age progression methodologies.