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Age invariant face recognition methods: A review

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### **Abstract**

Face recognition is one of the biometric technologies that is mostly used in surveillance and law enforcement for identification and verification. However, face recognition remains a challenge in verifying and identifying individuals due to significant facial appearance discrepancies caused by age progression. Especially in applications that verify individuals from their passports, driving licenses and finding missing children after decades. The most critical step in Age- Invariant Face Recognition (AIFR) is extracting rich discriminative age-invariant features for each individual in face recognition applications. The variation of facial appearance across aging can be solved using three methods, namely, generative (aging simulation), discriminative (feature-based) and deep neural networks methods. This work reviews and compares the state-of-art AIFR methods to address the work that has been done to minimize the effect of aging in face recognition application during the pre-processing and feature extraction stages to extract rich discriminative age-invariant features from facial images of individuals (subjects) captured at different ages, shortfalls and advantages of these methods. The novelty of this work lies in analyzing the state-of-art work that has been done during the pre-processing and/or feature extraction stages to minimize the difference between the query and enrolled face images captured over age progression.